Westgate 2040 - Drogheda, Co. Louth

Environmental Impact Assessment Report

Volume 2 – Main Report

December 2023

Comhairle Contae Lú
Louth County Council

Rialtas na hÉireann
Government of Ireland

Tionscadal Éireann
Project Ireland
2040

Contents

Client
Louth County Council

Our reference
LOUX3001

December 2023

List of abbreviations

AQS	Advise Quality Standard
CSO	Central Statistics Office
CIEEM	Chartered Institute of Ecology and Environmental Management
CO_2	Carbon Dioxide
DMRB	Design Manual for Road and Bridges
DoEHLG	Department of The Environment, Heritage and Local Government
EC	European Commission
EcIA	Ecology Impact Assessment
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EPA	Environmental Protection Agency
ESRI	Economic and Social Research Institute
GDP	Gross Domestic Product
GHG	Green House Gases
HDV	Heavy Duty Vehicle
HSA	Health and Safety Authority
IAQM	Institute of Air Quality Management
LCC	Louth County Council
LCDP	Louth County Development Plan 2021-2027
MAD	Major Accidents and Disasters
MDD	Modified Domestic Demand
NIS	Natura Impact Statement
NHA	Natural Heritage Area
NSL	Nearest Sensitive Location
NWPP	National Waste prevention Plan
pCEMP	Preliminary Construction Environmental Management Plan
SPA	Special Protection Area
SUDS	Sustainable Urban Drainage System
WHO	World Health Organisation

1. Introduction

Overview

1.1 This Environmental Impact Assessment Report (EIAR) accompanies a planning application made in accordance with a Section 175 and 177AE by Louth County Council (referred to as 'LCC'/'the Applicant' throughout) for an urban regeneration project on a 1.89ha site within the 'Westgate Vision Area' of Drogheda, Co. Louth.

Purpose of an EIAR

1.2 An Environmental Impact Assessment Report (EIA) is defined by the Planning and Development Act 2000, as amended as '*a report of effects, if any, which proposed development, if carried out, would have on the environment and shall include information specified in Annex IV of the Environmental Impact Assessment Directive'.*

1.3 The purpose of an EIAR is to predict, consider, assess, and communicate any likely significant effects (direct and indirect) on the environment arising from a proposed project/development.

1.4 An EIAR is described by the Environmental Protection Agency (EPA) as being '*…the principal document prepared by an applicant for authorisation and submitted to a competent authority for consideration in the EIA process (which in turn forms part of the consent process*)'[1]. This EIAR has been prepared to assist parties to understand if any likely significant environmental effects would arise from the proposed project.

1.5 Chapter 2 of this Report provides a detailed overview of the prevailing legislative, policy and guidance context/requirements for the EIA process and EIARs. This EIAR has been prepared in accordance with the relevant legislative, policy and guidance requirements as identified in Chapter 2.

The Applicant

1.6 As noted above, the Applicant for this planning application is Louth County Council (LCC). The Council address is at the main office located at Millennium Centre, County Hall, Dundalk, Co. Louth, A91 KFW6.

1.7 LCC holds title to a considerable extent of the land within the boundary of the application site. However, the application site also includes a small area of land owned by third parties, these being the Office of Public Works and the owner of 56 Narrow West Street.

1.8 In this regard, the Letters of Consent are attached as appendices to the Cover Letter accompanying the planning application package:

[1] https://www.epa.ie/news-releases/news-releases-2022/epa-publishes-guidelines-on-the-information-to-be-contained-in-environmental-impact-assessment-reports.php

- Letter of Consent signed by Yvonne Fawcett, P.P Seamus O'Neill, Office of Public Works; and

- Letter of Consent signed by David Courtney (landowner of 56/57 West Street, Drogheda).

Project Background

1.9 LCC intends to carry out public realm regeneration/improvement works on lands within the Westgate Vision Area of Drogheda in accordance with international and national best practice. The overall objective of the project (known as the 'Westgate 2040 Project') is to act as a catalyst to support positive regeneration, compact growth and sustainable development in the 'Westgate Vision Area' and the wider Drogheda Town Centre.

1.10 This planning application represents the next stage of the Westgate Vision, launched by Louth County Council in 2018, which is a targeted planning response aimed at channelling and attracting investment into this core area of Drogheda.

1.11 The Project Brief includes the following key objectives:

- Create a quality gateway / arrival space, public spaces, pedestrian linkages and public realm.

- Ensure inclusivity for all members of the community; the very young, the youth, the old, the mobility impaired, socially disadvantaged, the pedestrian and cyclist.

- Develop proposals which meet the design principles of national and international best practice.

- Promote an environment which leads to both day and night-time activities.

- Improve connectivity and legibility for all members of the community and for visitors/tourists to the town.

- Capitalise on, and respect, the rich heritage of this town centre location.

- Operate / employ sustainable development principles by minimising energy consumption and maximising the use of renewable energy technology.

- The funding for this project is anticipated to be primarily from the Urban Regeneration and Development Fund (URDF), a flagship element of Project Ireland 2040.

The Application Site

1.12 The 1.89ha application site is located in the townland of Moneymore, Drogheda and includes the following roads/streets/lanes/areas and their adjoining footpath/public realm areas: R132/Bridge of Peace/George's Street (including the underpass on the northern side of the River Boyne); George's Square; Father Connolly Way (including part of an existing car park area); Dominick Street; Patrickswell Lane; Old Abbey Lane (including an area to the rear of 56/57 West Street); Scholes Lane; R900/West

Street/Narrow West Street; Fair Street; and Wellington Quay, in the townland of Moneymore, Drogheda, Co Louth.

1.13 The extent and general location of the application site is illustrated in **Figure 1.1** below.

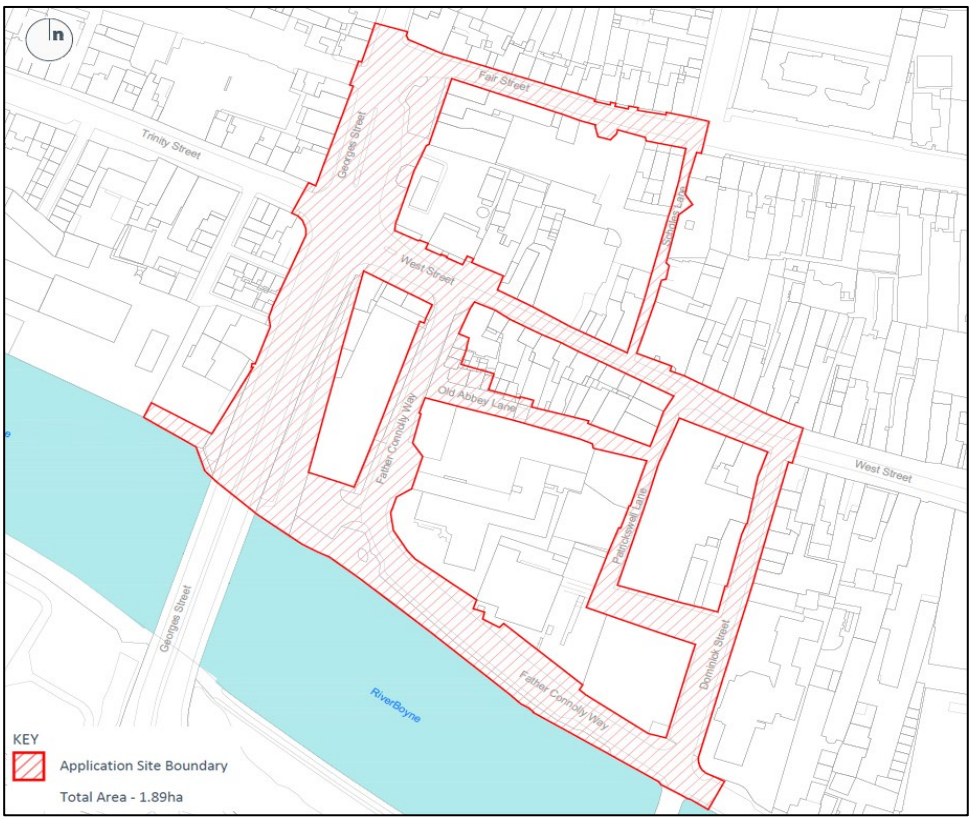

Figure 1.1: Extract of Drawing No. LOUX3001-P-000-101-A - Site Location Plan

1.14 A full description of the application site and the immediate context is provided in Chapter 3 of this EIAR.

Proposed Project

1.15 The proposed development consists of the following:

1. Public realm improvement works comprising: new hard landscaping including resurfacing, soft landscaping including new tree planting, a water feature channel with stepped concrete elements and integrated landscaping, a Corten steel ground insert delineating the location of the former medieval town wall, a wayfinding Corten steel ground insert, Corten steel signs, Corten steel walkways, street furniture, new pedestrian connections, a SUDS rainwater retention pond, cycle lanes, pedestrian footpaths, external steps, tactile paving, road signs, cycle parking stands and provision of new railings;

2. Public realm improvement works will also include the creation of a new urban plaza gateway/arrival area at Georges Square and a new enhanced public amenity area adjacent the River Boyne riverfront including a new pedestrian wooden deck promenade/boardwalk;

3. Demolition of the existing public toilet block at George's Square (between the junctions of George's Street/Fair Street and George's Street/West Street), a section of boundary wall located between Old Abbey Lane and Father Connolly Way and a section of wall located between Dominick Street and Dominick Street car park;

4. A new raised, free-standing, curved walkway located between the R132 and the existing Medieval Wall to provide a universally accessible connection from West Street to the River Boyne riverfront;

5. A new freestanding Corten steel pavilion located adjacent the River Boyne riverfront to create a new mixed use/public space;

6. A new freestanding Corten steel canopy located within, and offset from, the remains of the Old Abbey (being a Protected Structure – ID No. DB-187 and a recorded monument - RMP No. LH024-041011) to create a new flexible community and cultural space;

7. Two freestanding Corten steel structures located at the junction of West Street and the R132/George's Street to mark the location of the former medieval West Gate;

8. Repair and restoration of the old Medieval Wall located adjacent the R132/George's Street (being a Protected Structure – ID No. DB-188 and a recorded monument - RMP No. LH024-041014);

9. Repair and restoration of the Old Abbey (being a Protected Structure – ID No. DB-187 and a recorded monument - RMP No. LH024-041011) including the west gable of its north aisle located within Old Abbey Lane;

10. Reprioritisation of traffic and movement patterns for the streets/roads/lanes/footpaths within the application site to accommodate the proposed public realm improvement works and integrate with the Council's emerging Active Travel projects to the north and south of George's Street/R132;

11. Road improvement works to include alteration of road alignment, resurfacing, shared surface treatments, revised access arrangements, cycle lanes, pedestrian crossing points, parking bays, loading bays, accessible parking bays, bus stops and new public lighting; and

12. All associated site works including: drainage, undergrounding of services and all associated ancillary development works.

1.16 Chapter 5 of this EIAR provides further details on the proposed development.

Format and Structure of the EIAR

1.17 Table 1.1 below sets out the format and structure of Volume 2 of this EIAR and identifies the relevant author for each chapter. Further information with respect to all contributors to the EIAR and their respective qualifications is provided at Chapter 2.

Table 1.1: Structure of the EIAR

Structure of the NTS and Volume 2 of the EIAR	Company	Lead Author
Chapter 1 - Introduction	Turley	Paul McMonagle
Chapter 2 - The EIA Process	Turley	Paul McMonagle
Chapter 3 - Site Location & Context	Turley	Paul McMonagle
Chapter 4 - Key Alternatives Considered	Turley	Paul McMonagle
Chapter 5 - Description of Development	Turley	Paul McMonagle
Chapter 6 - Consultation	Turley	Paul McMonagle
Chapter 7 - Population & Human Health	Turley	Paul McMonagle
Chapter 8 - Biodiversity	RSK	Nick Marchant
Chapter 9 - Land, Soils and Geology	RSK	Sven Klinkenbergh
Chapter 10 - Hydrology and Hydrogeology	RSK	Sven Klinkenbergh
Chapter 11 - Air & Climate	RSK	Srinivas Srimath
Chapter 12 - Noise & Vibration	RSK	Srinivas Srimath
Chapter 13 - Material Assets (Waste)	RSK	Ryan Murphy
Chapter 14 - Material Assets (Traffic & Transportation)	Hegsons	Ken Hegarty
Chapter 15 - Material Assets (Site Services)	NOD Ltd	Delecia Reddy
Chapter 16 - Cultural Heritage and Archaeology	IAC Archaeology	Faith Bailey
Chapter 17 - Architectural Heritage	Mesh Architects	Tom McGimsey
Chapter 18 - Landscape and Visual Impact	Park Hood	Andrew Bunbury
Chapter 19 - Interactions	Turley	Paul McMonagle
Chapter 20 - Cumulative Impacts	Turley	Paul McMonagle
Chapter 21 - Mitigation Measures	Turley	Paul McMonagle

1.18 This EIAR is also accompanied by:

- **Volume 1 - Non-Technical Summary**: provides a summary of the EIAR in non-technical language.

- **Volume 3 - Appendices**: contains all relevant surveys, reports, analysis undertaken in association with the specialist Chapters contained in Volume 2.

EIAR Team

1.19 The EIAR was project managed and co-ordinated by a team of chartered town planners at Turley. Turley co-ordinated the EIA process and liaised between the Project Team, the various environmental specialists and Louth County Council. The specialist environmental chapters of the EIAR have been prepared by suitably qualified and competent environmental experts, as required by the amended Directive 2014/52/EU. **Chapter 2** provides further details on EIA/EIAR requirements and the EIAR team.

Availability of the EIAR

1.20 A copy of this EIAR document and Non-Technical Summary of the EIAR document are available for purchase at the offices of An Bord Pleanála and Louth County Council at a fee not exceeding the reasonable cost of reproducing the document. Details on the EIAR can also be viewed online at the Department of Housing, Local Government and Heritage's EIA Portal and on the Louth County Council's website: www.louthcoco.ie.

Impartiality

1.21 This EIAR document has been prepared with reference to a standardised methodology which is universally accepted and acknowledged. Experienced and competent environmental specialists have been used throughout the EIA process to ensure the EIAR is robust, impartial and objective.

Statement of Difficulties Encountered

1.22 No particular difficulties, such as technical deficiencies or lack of knowledge, were encountered in compiling any of the specified information contained in this EIAR, such that that the prediction of impacts has not been possible. Where any specific difficulties were encountered these are outlined in the relevant chapter of the EIAR.

Forecasting Methods Used for Environmental Effects

1.23 The evidence used to identify the significant effects on the various aspects of the environment, and the methods employed to forecast effects, are standard techniques used by each of the individual disciplines. The general approach adopted was to identify the receiving environment, to add a projection of the "loading" placed on the various aspects of the receiving environment by the development, and to put forward enhancement measures where appropriate to lessen or remove an impact, to determine the net predicted impact. Where specific methodologies are employed within the EIAR assessment, these are referred to in the respective Receiving Environment (Baseline Scenario) sections in the EIAR.

Errors

1.24 While every effort has been made to ensure that the content of this EIAR document is error free and consistent there may be instances in this document where typographical

errors and/or minor inconsistencies do occur. These typographical errors and/or minor inconsistencies are unlikely to have any material impact on the overall findings and assessment contained in this EIAR.

2. The EIA Process

EIA Legislation

2.1 Directive 85/337/EEC came into force in June 1985 and required Member States to ensure that before a development consent is given, any public or private projects which are likely to have significant effects on the environment regarding their nature, size or location, are made subject to an Environmental Impact Assessment (EIA) of their effects on the environment. Directive 2011/92/EU codified Directive 85/337/EEC and its three (1997, 2003 and 2009) subsequent amendments in December 2011.

2.2 Directive 2011/92/EU was then amended by Directive 2014/52/EU in April 2014, which aimed to address certain problems of implementation, reduce unnecessary administrative burdens, simplify the assessment procedure, and reinforce certain levels of environmental protection taking into account emerging challenges such as resource efficiency, climate change, biodiversity, and disaster prevention.

2.3 The amending Directive took effect in Ireland on 16th May 2017 and was transposed into Irish law by the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296/2018)) on 1st September 2018.

2.4 The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 further amended the Planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2001 (as amended) transposing the amended Directive into the Irish planning code.

EIA Guidance

2.5 The abovementioned EIA legislation is supported by a number of guidance documents, circulars, and advice notes, which help to provide direction and clarity in terms of satisfying the requirements of EIA legislation.

2.6 This assessment of environmental impacts has been completed in accordance with the aforementioned prevailing EIA legislation and in accordance with the following guidelines[2].

- Environmental Protection Agency (EPA) - Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022);
- Department of Housing, Planning and Local Government (DHPLG) - Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018);
- Department of Housing, Planning and Local Government (DHPLG) - Circular letter PL 1/2017 - Advice on Administrative Provisions in Advance of Transposition (2017);

[2] Other specialist guidelines are identified in the various specialist EIAR chapters.

- European Commission (EC) - Environmental Impact Assessment of Projects. Guidance on Scoping (2017);
- European Commission (EC) - Environmental Impact Assessment of Projects. Guidance on the preparation of Environmental Impact Assessment Report (2017);
- Environmental Protection Agency (EPA) - Draft Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (2015);
- European Commission (EC) - Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (2013); and
- European Commission (EC) - Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (1999).

2.7 In addition to these guidance documents, all EU Directives and national legislation relating to the specialist areas (e.g. Biodiversity, Air and Climate, Noise) have been considered under each relevant environmental aspect. Specific guidance is addressed in the relevant chapters of this EIAR.

EIA Process

2.8 EIA can be described as a 'process' for predicting effects on the environment caused by a proposed project. Where effects would be unacceptable, design or other mitigation measures can be implemented to avoid or reduce the effects to acceptable levels.

2.9 Article 1(2)(g) of the amended Directive defines EIA as:

> *"Environmental impact assessment **means a process** consisting of:*
>
> *i) the preparation of an environmental impact assessment report by the developer, as referred to in Article 5(1) and (2);*
>
> *ii) the carrying out of consultations as referred to in Article 6 and, where relevant, Article 7;*
>
> *iii) the examination by the competent authority of the information presented in the environmental impact assessment report and any supplementary information provided, where necessary, by the developer in accordance with Article 5(3), and any relevant information received through the consultations under Articles 6 and 7;*
>
> *iv) the reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of the examination referred to in point (iii) and, where appropriate, its own supplementary examination; and*
>
> *v) the integration of the competent authority's reasoned conclusion into any of the decisions referred to in Article 8a."* [**our emphasis**.]

2.10 In this case, the '*competent authority*' refers to An Bord Pleanála and the '*developer*' refers to Louth County Council.

2.11 The EPA's 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2022), hereafter the 'EPA's 2022 Guidelines', state that "…*the EIA process can be considered as involving three main parts…*", as illustrated in **Figure 2.1**:

- *The first consists of a compilation of facts – i.e. the description of the existing environment and the description of the proposed project.*
- *The second consists of predictions of likely effects – this may be carried out on an iterative basis as the design is improved to eliminate excessive adverse effects.*
- *The final part consists of the assessment of the environmental effects as part of a consent process which may decide to grant, condition, refuse or seek additional information.*

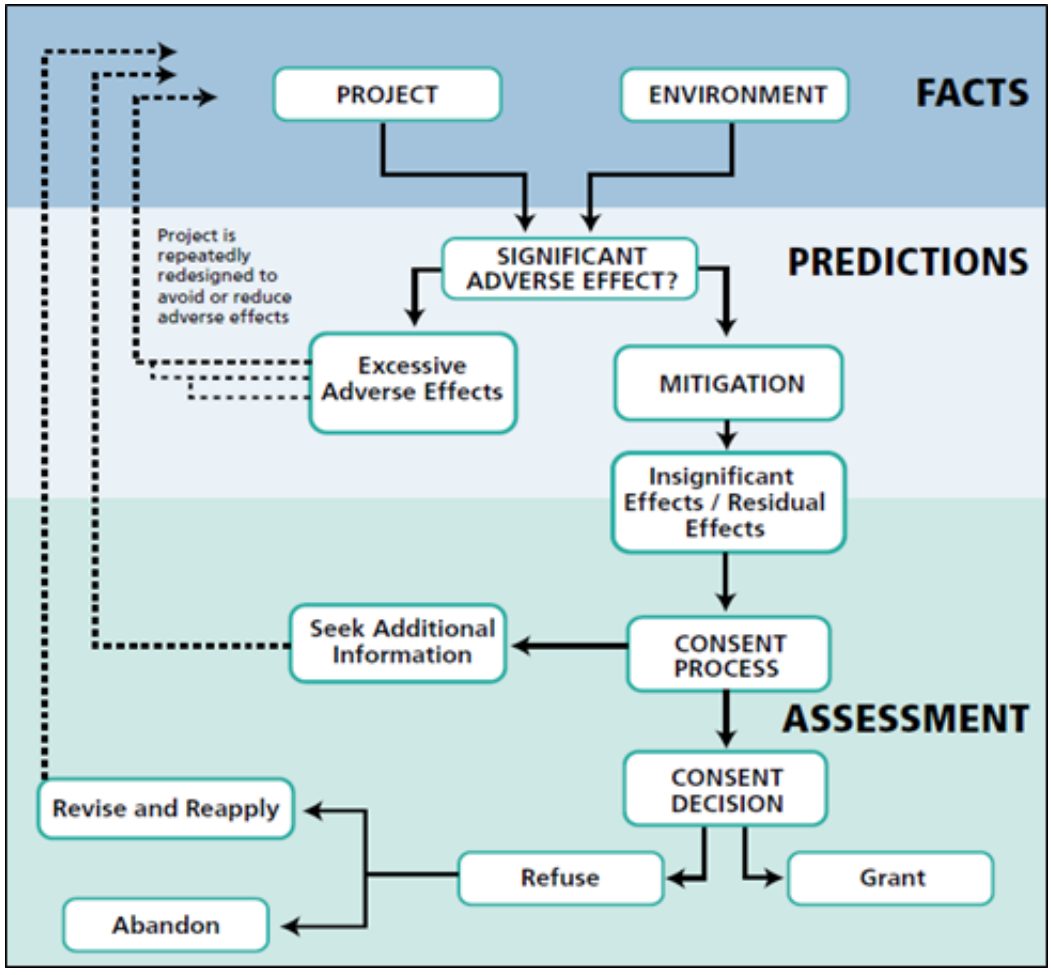

Figure 2.1: EIA Process Flow Chart [Source: EPA's 2022 Guidelines]

2.12 The 2022 Guidelines further advise that that '*EIA provides a system of sharing information about the environment which enables effects to be foreseen and prevented during the design and consent stages. This provides the basis for protecting the environment and informs decision-making*.'

2.13 **Figure 2.2**, which identifies the various stages involved in the EIA process, together with **Figure 2.1**, illustrates how EIA is a systematic analysis of the proposed project in relation to the existing environment during a consent process.

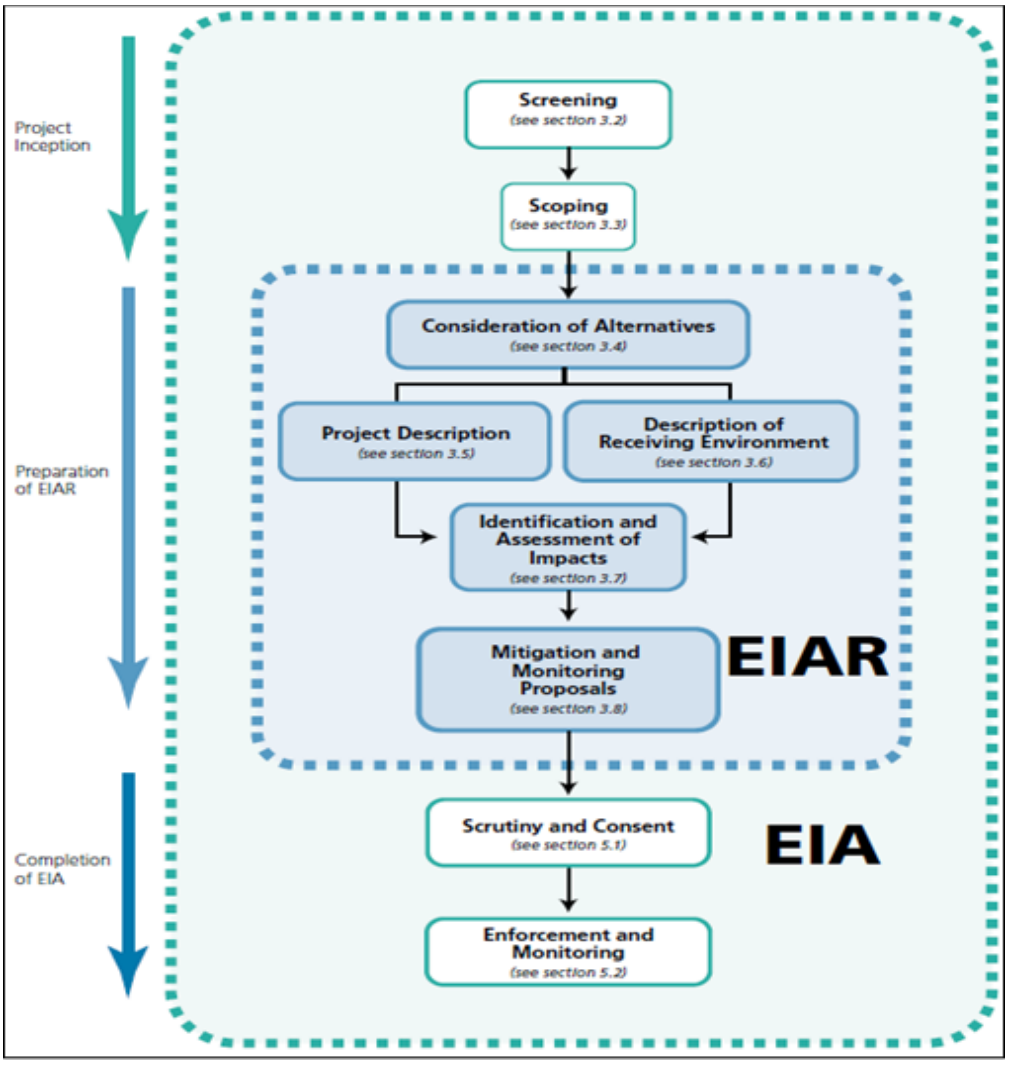

Figure 2.2: Stages of an EIA Process [Source: EPA's 2022 Guidelines]

2.14 The EIA process can be summarised as follows:

- **Screening**: The process of determining whether a proposed project should be subject to EIA.
- **Scoping**: The process of identifying the environmental factors and topics that should be addressed in the EIAR and the relevant assessment methods.
- **Description of the receiving environment**: This stage establishes a robust baseline (a description of the environmental characteristics of the receiving environment plus any relevant trends).

- **Impact assessment**: The primary purpose of the EIAR is to identify, describe and present as assessment of the likely significant direct and/or indirect effects of a proposed project on the environment.

- **Mitigation**: Where appropriate, mitigation measures are identified to avoid, prevent, reduce, or offset any likely significant negative effects identified; as well as any proposed monitoring measures, if required.

- **Consultation:** With statutory bodies, the public and other stakeholders, as appropriate.

- **Decision**: The competent authority (Kildare County Council, in this case) decides, in the context of other considerations (including the outcomes of the consultation process), whether planning permission should be granted.

- **Implementation / enforcement of conditions of development consent**: Assuming the proposed project receives planning permission, the environmental commitments (including any relevant mitigation and monitoring measures) then need to be implemented during either the construction and/or operation stages.

EIA Screening

2.15 EIA Screening represents the first stage of the EIA process. It involves deciding whether an EIA needs to be undertaken or not. Figure 2.3 below provides a step-by-step guide to the main steps involved in the EIA Screening process.

2.16 It is important to note that Recital (27) of Directive 2014/52/EU states that *'The screening procedure should ensure that an environmental impact assessment is only required for projects likely to have significant effects on the environment.'*

2.17 The EPA's 2022 Guidelines advise that the first step in the EIA Screening process is "…*to examine whether the proposal is a project as understood by the Directive. Projects requiring environmental impact assessment are defined in Article 4, and set out in Annexes I and II, of the Directive*[3]".

2.18 The EPA's 2022 Guidelines also confirm that "…*the term project is used to encompass all of the various forms of development, works and activity which are subject to EIA requirements, as set out in the relevant legislation and as understood by the Directive*[4]".

2.19 If a proposed project is not of a type covered by the Directive, then there is no statutory requirement for it to be subject to environmental impact assessment.

[3] Including but not limited to those projects specified in Schedule 5 of the Planning and Development Regulations, 2001 as amended.

[4] ref. Article 1(2)(a) of Amended Directive.

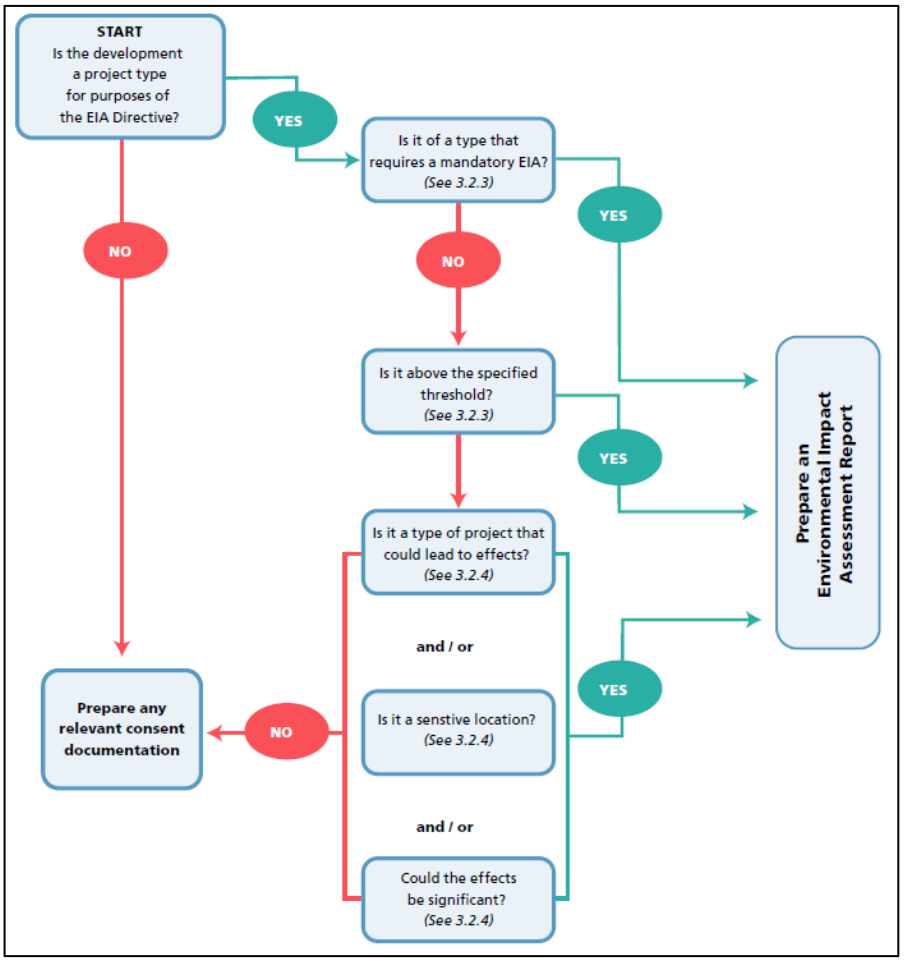

Figure 2.3: EIA Screening Process [Source: EPA's 2022 Guidelines]

2.20 However, the EPA's 2022 Guidelines warn that '…this is a complex issue and regard should be had to the Directive's 'wide scope and broad purpose'[5] and that "*in determining if the proposed project is of a type covered by the Directive it may be necessary to go beyond the general description of the project and to consider the component parts of the project and/or any processes arising from it*".

2.21 The projects listed in Annex I of the EIA Directive are subject to a mandatory EIA. Those listed in Annex II are subject to a screening procedure, followed by an EIA when thresholds established at national level or a case-by-case examination so demand.

2.22 The Annexes contained within the amended Directive have been transposed into Irish law by the provisions of the *Planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2001 (as amended).*

2.23 Specifically, Annex I projects are listed in Part 1 of Schedule 5 of the *Planning and Development Regulations 2001 (as amended) and Annex II projects are listed in Part 2 of Schedule 5 of the Planning and Development Regulations 2001 (as amended).*

[5] Interpretations of definitions of project categories of annex I and II of the EIA Directive, EC, 2015.

2.24 Part 1 of Schedule 5 of the *Planning & Development Regulations 2001* (as amended) lists major project classes for the purposes of mandatory EIA, which typically include industrial, chemical, energy, waste, infrastructure and intensive agricultural developments.

2.25 The proposed project **does not fall** within a development category contained in Part 1 of Schedule 5 and therefore a mandatory EIA is not a requirement under this provision.

2.26 Part 2 of Schedule 5 of the *Planning & Development Regulations 2001* (as amended) sets mandatory thresholds for each project category above which EIA is required. Category 10 of Part 2 relates to 'infrastructure projects' with sub-category 10(b) making specific reference to urban development:

> *"Category 10 - Infrastructure Projects:*
>
> *(b) (iv) Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere".*

2.27 The application site, which measures an area of approx. 1.89ha, and the proposed regeneration works do not trigger any of the thresholds identified in Schedule 5 Part 2 of the Planning and Development Regulations 2001 (the 2001 Regulations) (as amended). However, the proposed works represent 'sub-threshold' development with respect to '*Category 10 - Infrastructure Projects: (iv) Urban development*'.

2.28 The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (the 2018 EIA Regulations) amended the P&D Regulations 2001 (as amended) and introduced a mandatory process for screening of all 'sub-threshold developments' defined as:

> *'…development of a type set out in Part 2 of Schedule 5 which does not equal or exceed, as the case may be, a quantity, area or other limit specified in that Schedule in respect of the relevant class of development'.*

2.29 Article 120(1)(a) of the P&D Regulations 2001 (as amended) states that '*Where a local authority proposes to carry out a subthreshold development, the authority shall carry out a preliminary examination of, at the least, the nature, size or location of the development*'.

2.30 There are 3 potential outcomes for a Preliminary Examination, as set out under Article 120(1)(b) of the P&D Regulations 2001 (as amended), i.e:

> *(b) Where the local authority concludes, based on such preliminary examination, that—*
>
> *(i) there is no real likelihood of significant effects on the environment arising from the proposed development, it shall conclude that an EIA is not required,*
>
> *(ii) there is significant and realistic doubt in regard to the likelihood of significant effects on the environment arising from the proposed development, it shall*

prepare, or cause to be prepared, the information specified in Schedule 7A for the purposes of a screening determination,

or

(iii) there is a real likelihood of significant effects on the environment arising from the proposed development, it shall—

(I) conclude that the development would be likely to have such effects, and
(II) prepare, or cause to be prepared, an EIAR in respect of the development.

2.31 The project team noted that the overall site area is just marginally below the relevant threshold of '*…2 hectares in the case of a business district*…' and that the site can be reasonably described as being 'sensitive' due to the following:

- its location adjacent, and partly within, the River Boyne SAC;
- there is a potential risk of flooding within parts of the site;
- the site is partly located within 3 no. Architectural Conservation Areas; and
- the site contains a number of National Monuments and Protected Structures and is bound by/adjoins a number of Protected Structures.

2.32 Noting the nature, size and location of the proposed public realm works, it was considered that a sub-threshold EIAR be prepared in accordance with the requirements set out in Schedule 6 of the 2001 Regulations (as amended) to accompany and be submitted with the planning application.

EIA Scoping

2.33 The EPA Guidelines state that 'Scoping' is a '*…process of deciding what information should be contained in an EIAR and what methods should be used to gather and assess that information*'.

2.34 Scoping is further defined in the European Commission guidance[6] as:

"The process of identifying the content and extent of the information to be submitted to the Competent Authority under the EIA process".

2.35 Article 3 of the amended Directive states the following with respect to the content of an EIAR and the environmental factors that should be considered:

"1. The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:

[6] Guidance on EIA Scoping, European Commission, 2017.

(a) population and human health;

(b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;

(c) land, soil, water, air and climate;

(d) material assets, cultural heritage and the landscape;

(e) the interaction between the factors referred to in points (a) to (d).

2. The effects referred to in paragraph 1 on the factors set out therein shall include the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned."

2.36 Annex IV of the amended Directive is of note with respect to 'Scoping' an EIAR, and it has been considered in the Scoping of this EIAR.

2.37 An informal scoping exercise was carried out by the submission of a Scoping Report to the Planning Section of Louth County Council. In this document, the environmental aspects that were proposed to be considered in detail in this EIAR were identified on the basis that there is potential for significant effects. **Table 2.1** below documents the scoping exercise undertaken in respect of this EIAR.

Table 2.1: EIAR Scoping – potential for significant effects arising from the proposed project.

Environmental Component	Detailed Assessment Required	Rationale
Population & Human Health	Yes	The proposed development has the potential to impact on population and human health, employment, local community and amenity uses, during the construction and operational phases.
Biodiversity	Yes	The application site is located adjacent a Natura 2000 site. i.e. the River Boyne SAC. There is potential for habitats to be recorded on site and therefore, the proposed development has potential to impact on biodiversity.
Land, Soils and Geology	Yes	The proposed development includes the excavation, movement and deposition of soil as part of the construction process. The impacts on geology and hydrogeology should therefore be assessed in terms of the groundworks, construction, and

Environmental Component	Detailed Assessment Required	Rationale
		operational phase of the proposed development.
Hydrology and Hydrogeology	Yes	The proposed development does have the potential to impact on water (including flood risk, hydrology, and drainage) as there will be ground disturbance associated with the proposed development.
Air & Climate	Yes	Construction and operational phases will have the potential to give rise to air quality impacts, principally relating to traffic impacts associated with the proposed development.
Noise & Vibration	Yes	Construction and operational phases will have the potential to give rise to noise and vibration impacts, principally relating to traffic associated with the proposed development.
Material Assets (Waste)	Yes	The proposed development may generate waste arisings that will require management during construction and operation.
Material Assets (Traffic & Transportation)	Yes	The transportation chapter of the EIAR is required to present an assessment of the potential traffic and transport impacts of the proposed development.
Material Assets (Site Services)	Yes	The Material Assets section of the EIAR will examine the likely significant effects of the construction and operation of the proposed development on intrinsic and valuable assets of material value.
Cultural Heritage (Archaeology)	Yes	The site contains a number of Heritage Assets/Protected Structures. This gives rise to the potential for impact upon any relevant Archaeological sites.
Cultural Heritage (Conservation)	Yes	The site contains a number of Heritage Assets/Protected Structure which give rise to the potential for impact upon Architectural or Cultural Heritage of Drogheda.

Environmental Component	Detailed Assessment Required	Rationale
Landscape and Visual Impact	Yes	The development has the potential to impact on a number of key views that are protected within the Louth County Council Development Plan 2021 – 2027 therefore there is a requirement to assess the Landscape and Visual Impact of the proposed development.
Interactions	Yes	There is the potential for multiple direct or indirect effects (from various environmental aspects) to result in an accumulation or magnified effects from the proposed development.
Cumulative Impacts	Yes	The proposed development will be in proximity to other development permitted and proposed development and thus has the potential to exacerbate or create larger, more significant effects.

Major Accidents & Disasters

2.38 Article 3 of the amended Directive requires that an EIAR shall include '…*the expected effects deriving from the vulnerability of the project* ***to risks of major accidents and/or disasters*** *that are relevant to the project concerned*'. [**our emphasis**.]

2.39 The purpose of this requirement is to ensure that relevant safety and precautionary measures are identified so as to protect the proposed project in the event of a major accidents and/or disasters (MADs) and that appropriate mitigation measures are incorporated to the protect the environment, if such an event were to occur.

2.40 The Institute of Environmental Management and Assessment's (IEMA) document, 'Major Accidents and Disasters in EIA: A Primer', dated September 2020, provides helpful guidance in terms of scoping a MAD into an EIAR:

> *"A major accidents and/or disasters assessment will be relevant to some developments more than others, and for many developments it is likely to be scoped out of the assessment".* [**our emphasis**.]

2.41 The 2020 IEMA document (pg. 12) further advises that the topic may be scoped out if:

- '*There is no source-pathway-receptor linkage of a hazard that could trigger a major accident and / or disaster, or potential for the proposed development to lead to a significant environmental effect; or*
- *All possible MADs are adequately considered elsewhere in the assessment or covered by existing design measures or compliance with legislation and best practice*.'

2.42 The MADs impact assessment typically includes an assessment of the potential effects in relation to 'Seveso Sites', i.e. major industrial establishments with a presence of certain dangerous substances in sufficient quantities. These sites are regulated under the 'Seveso III Directive' (Directive 2012/18/EU) on the control of major-accident hazards involving dangerous substances.

2.43 The SEVESO III Directive provides that appropriate consultation distances must be established for Seveso sites which indicate the area that is liable to be affected by a major accident at the establishment in question.

2.44 The Health & Safety Authority (HSA) is the Central Competent Authority responsible for providing advice, where appropriate, in respect of planning applications that fall within consultation distances of SEVESO sites.

2.45 The closest identified Seveso site to the application site is the Flogas Ireland Limited site, being an Upper Tier Seveso site, which is located at Marsh Road, Drogheda, Co. Louth.

2.46 Table 11.1 of the Louth County Development Plan 2021-2027 titled 'Notified Seveso Establishments' identifies a consultation distance of 600m for this Seveso site. As this Seveso site is located approximately 1.9km[7] east from the application site, the application site is therefore located outside the relevant consultation distance.

2.47 It is further noted that a significant amount of established development is located between the Seveso site and the application site which includes the town of Drogheda, the River Boyne, a railway line, road infrastructure, established residential neighbourhoods, port developments and etc.

2.48 Noting the amount of intervening development located, combined with the distance between the application site and the SEVESO site, it is considered that there is no source-pathway-receptor linkage which would lead to a likelihood of the proposed project being affected by a MAD associated with this Seveso site.

2.49 It is also considered, noting the above, and the location/siting, design and nature of the proposed project, that its construction and operation will not likely cause or exacerbate a MAD at this Seveso site. Therefore, potential impacts related to the Seveso site are discounted from further consideration in this EIAR. It is considered, having regard to the nature of the proposed project and its receiving environment, that there is no source-pathway-receptor linkage for a hazard that could trigger an event constituting a MAD.

2.50 As such, an assessment of impacts specifically in relation to MADs has been scoped out of this EIAR. The risk/effects of any potential accidents and/or natural events are addressed in the relevant specialist chapters of this EIAR, for example the potential for flood risk is addressed in 'Chapter 10 - Hydrology and Hydrogeology' (and the accompany Site Specific Flood Risk Assessment prepared by Nicholas O'Dwyer Ltd).

Appropriate Assessment

2.51 Article 6 of the Habitats Directive, which was translated into Irish law by the European Union (Birds and Natural Habitats) Regulations 2011-2015 (the Birds and Natural

[7] Using the closest site boundary of the application site and the closest site boundary of the Seveso site.

Habitats Regulations) and the Planning and Development Act, 2000-2021 (as amended), lays out the specifications for an appropriate assessment (AA).

2.52 A Natura Impact Statement (NIS) has been prepared by RSK and is submitted as part of the planning application package to address the relevant policy objectives and requirements with respect to Appropriate Assessment and European Sites.

2.53 The NIS confirms that the southern boundary of the application site adjoins the River Boyne and River Blackwater SAC, and that a small section of the application site is located within the SAC. However, none of the qualifying interests of this SAC are located within the overlapping section of the application site and the SAC, and so there will be no direct effects on the SAC.

2.54 The NIS also identifies three other European Sites located within 4km of the subject site, these being: Boyne Estuary SPA (4080) – 2.2km east; River Boyne and River Blackwater SPA (4232) – 2.6 km west; and Boyne Coast and Estuary SAC (1957) 3.4km east.

2.55 The NIS concludes, subject to the implementation of the recommended mitigation measures, that the proposed development will not adversely affect the integrity of any European site, either alone or in combination with other plans or projects. Please refer to 'Chapter 8 – Biodiversity' of this EIAR and the accompanying Natura Impact Statement for further details.

EIAR Content and Methodology

2.56 This EIAR is structured in accordance with, and contains all relevant information as required by, the prevailing European/national EIA legislation, policy and guidance. Annex IV of the amended Directive, Schedule 6 of the 2001 Regulations (as amended) and the EPA's 2022 Guidelines are of particular note with respect to the methodology and content of an EIAR.

2.57 The EPA's 2022 Guidelines state the following with respect to the purpose of an EIAR:

> *"The main purpose of an EIAR is to identify, describe and present an assessment of the **likely significant effects** of a project on the environment. This informs the CA's assessment process, its decision on whether to grant consent for a project and, if granting consent, what conditions to attach".* [**our emphasis**.]

2.58 Annex IV(5) of the amended Directive[8], as reproduced below, provides guidance in terms of the 'likely significant effects' that are to be considered as part of an EIAR:

> *"A description of the likely significant effects of the project on the environment resulting from, inter alia:*
>
> *a) the construction and existence of the project, including, where relevant, demolition works;*
>
> *b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;*

[8] See also Schedule 6(2)(e) of the 2001 Regulations (as amended).

c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;

d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);

e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;

f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;

g) the technologies and the substances used.

The description of the likely significant effects on the [environmental] factors should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project."

2.59 The EPA's 2022 Guidelines further advise that '*Effects should be described by reference to the individual environmental factors and their sensitivities*' and note that it is useful to consider the criteria listed in Annex III of the amended Directive[9], which states:

'a) 'the magnitude and spatial extent of the impact (for example geographical area and size of the population likely to be affected);

b) the nature of the impact;

c) the transboundary nature of the impact;

d) the intensity and complexity of the impact;

e) the probability of the impact;

f) the expected onset, duration, frequency, and reversibility of the impact;

g) the cumulation of the impact with the impact of other existing and/or approved projects;

h) the possibility of effectively reducing the impact.'

2.60 The assessment of effects in this EIAR is based on the source-pathway-receptor model. The EPA's 2022 Guidelines provide the following definitions with respect to these terms at 'Appendix I – Glossary of Terms':

- '**Source**: The activity or place from which an effect originates'.

[9] See also Schedule 7(3) of the 2001 Regulations (as amended).

- '**Pathway**: The route by which an effect is conveyed between a source and a receptor'.

- '**Receptor**: Any element in the environment which is subject to impacts'.

2.61 In accordance with the EPA's 2022 Guidelines, the criteria for describing specific effects on the environment are set out in Table 2.1 below, unless stated otherwise within the respective specialist chapters.

Table 2.2: Descriptions of Effects [Source: Table 3.4 of the EPA's 2022 Guidelines]

Criteria Quality of Effects	Definition It is important to inform the non-specialist reader whether an effect is positive, negative or neutral
Positive Effects	A change which improves the quality of the environment (for example, by increasing species diversity, or improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
Neutral Effects	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative/Adverse Effects	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem, or damaging health or property or by causing nuisance).
Significance of Effects	Significance' is a concept that can have different meanings for different topics – in the absence of specific definitions for different topics the following definitions may be useful (also see Figure 2.4 below).
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.
Profound Effects	An effect which obliterates sensitive characteristics.
Extent and Context of Effects	Context can affect the perception of significance. It is important to establish if the effect is unique or, perhaps, commonly or increasingly experienced.
Extent	Describe the size of the area, the number of sites and the proportion of a population affected by an effect.

Criteria	Definition
Context	Describe whether the extent, duration or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)
Probability of Effects	Descriptions of effects should establish how likely it is that the predicted effects will occur so that the CA can take a view of the balance of risk over advantage when making a decision.
Likely Effects	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely Effects	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Duration and Frequency of Effects	'Duration' is a concept that can have different meanings for different topics – in the absence of specific definitions for different topics the following definitions may be useful.
Momentary Effects	Effects lasting from seconds to minutes.
Brief Effects	Effects lasting less than a day.
Temporary Effects	Effects lasting less than a year.
Short-term Effects	Effects lasting one to seven years.
Medium-term Effects	Effects lasting seven to fifteen years.
Long-term Effects	Effects lasting fifteen to sixty years.
Permanent Effects	Effects lasting over sixty years.
Reversible Effects	Effects that can be undone, for example through remediation or restoration.
Frequency of Effects	Describe how often the effect will occur (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually).
Types of Effects	
Indirect Effects (a.k.a. Secondary or Off-site Effects)	Effects on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
Cumulative Effects	The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.
'Do-nothing Effects'	The environment as it would be in the future should the subject project not be carried out.
'Worst-case' Effects	The effects arising from a project in the case where mitigation measures substantially fail.
Indeterminable Effects	When the full consequences of a change in the environment cannot be described.
Irreversible Effects	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.

Criteria	Definition
Residual Effects	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
Synergistic Effects	Where the resultant effect is of greater significance than the sum of its constituents (e.g. combination of SOx and NOx to produce smog).

2.62 In accordance with the EPA's 2022 Guidelines, the significance of an effect is determined by comparing the character of the predicted effect to the sensitivity of the receiving environment (see **Figure 2.4** below), unless stated otherwise within the respective specialist chapters.

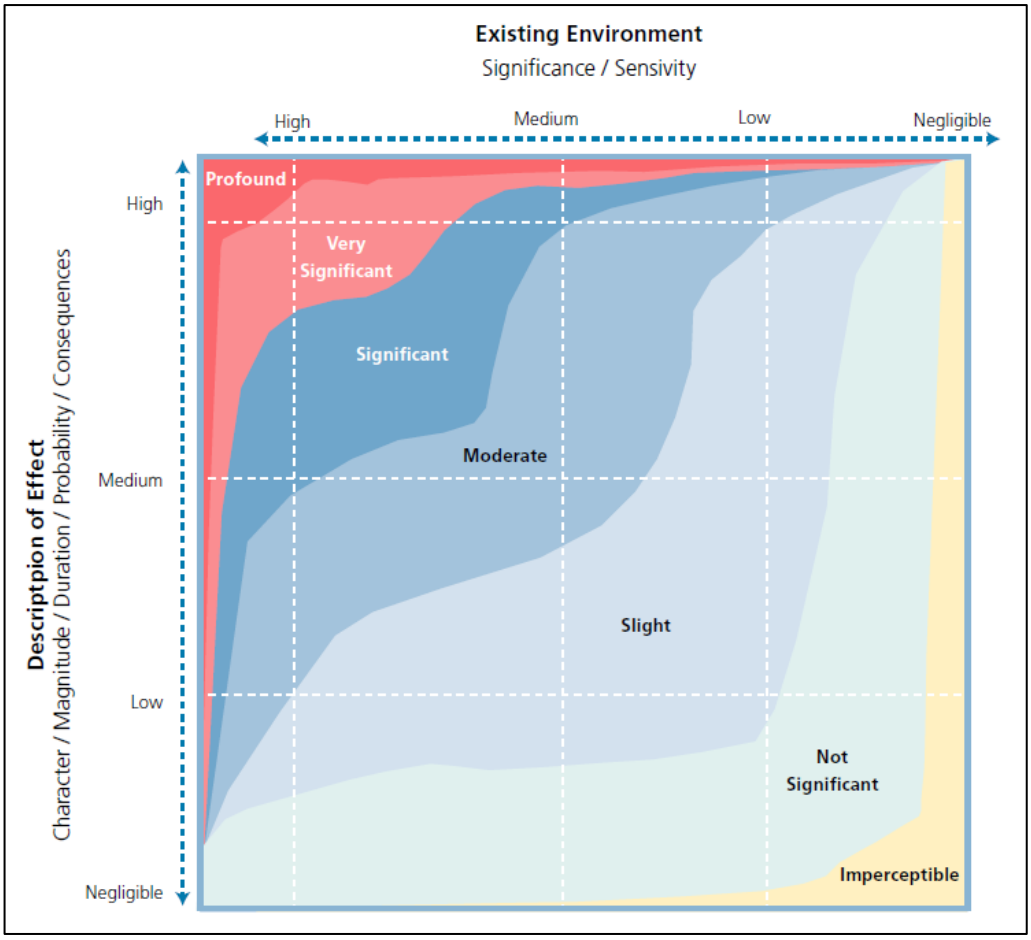

Figure 2.4: Chart Showing Typical Classifications of the Significance of Effects [Source: Figure 3.4 of the EPA's 2022 Guidelines]

2.63 This EIAR has been prepared in full accordance with the stated requirements of the amended EIA Directive, the Planning and Development Act 2000 (as amended), the Planning and Development Regulations 2001 (as amended) and the relevant EIA guidance documents.

2.64 Turley co-ordinated the preparation of this EIAR in association with competent expert members of the Project Team, as identified in **Table 2.3** below.

Table 2.3: Contributors to the EIAR

Name	Company	Qualification
Rosemary Daly	Turley	• BSc (Hons)Environmental Planning • Postgraduate Diploma in Town and Country Planning • MSc Rural Development • MRTPI
Paul McMonagle	Turley	• BA (Hons) English and Geography • MRUP • MIPI • MRTPI
Catherine Norris	Turley	• BSc (Hons) Social Science • M(Hons) Planning and Urban Design • MIPI • MRTPI
Leo Kilkenny	Turley	• BA (Hons) English and Politics • MRUP • MIPI • MRTPI
Nick Marchant	RSK Group/NM Ecology	• MSc in Ecosystem Conservation Landscape Management • BSc in Environmental Science
Lisa Colleen McClung	RSK Group	• B.Sc. (Environmental Studies) • MSc Environmental Science
Sven Klinkenbergh	RSK Group	• B.Sc. Environmental Science & P.G. • P.G. Dip. Environmental Protection
Jayne Stephens	RSK Group	• B.Sc. (Environmental Science), • PhD (Environmental Microbiology).
Mairéad Duffy	RSK Group	• B.Sc. (Environmental Science) • M.Sc. (Climate Change)
Lissa Colleen McClung	RSK Group	• B.Sc. (Environmental Studies) • M.Sc. (Environmental Science)
Aarron Hamilton	RSK Group	• IOA Diploma in Acoustics and Noise Control • Member of the Institute of Acoustics (AMIOA)
James Mangan	RSK Group	• IOA Diploma in Acoustics and Noise Control • Corporate member of the Institute of Acoustics (MIOA)
Dr Srinivas Srimath	RSK Group	• MSc Environmental Engineering • Phd Air Quality
Robert Clarke	RSK Group	• A full member of the Institute of Air Quality Management
Ryan Murphy	RSK Group	• MSc Environmental Engineering

Ken Hegarty	Hegsons Design Consultancy Ltd	• BE Civil & Environmental Engineering • MEng Sc Transport Planning • CEng MIEI • MCIHT
Delecia Reddy	Nicholas O'Dwyer Ltd	• BTech in Civil Engineering. • National Diploma in Civil Engineering • MIEI
Faith Bailey	IAC Archaeology	• MA Cultural Landscape Management, • BA (Hons) Archaeology • MIAI • MCIfA • Licence eligible archaeologist
Jacqui Anderson	IAC Archaeology	• MA, • BA, • MIA
Tom McGimsey	Mesh Architects	• BA Architecture • MSC Historic Preservation • RIAI (Architecture & conservation)
Andrew Bunbury	Park Hood	• BA Landscape Architecture • DipLA Landscape Architecture • CMLI
Conor Thallon	Park Hood	• BA Landscape Architecture • DipLA Landscape Architecture • CMLI

3. Application Site and Context

Introduction

3.1 Annex IV of the amended Directive lists information that is to be contained in an EIAR. Annex IV(1) of the amended Directive requires the following:

> *'Description of the project, including in particular:*
> *(a) a description of the location of the project;…'*

3.2 In accordance with Annex IV(1) of the amended Directive, this Chapter provides information on the application site and its immediate/surrounding context. However, it should be noted that each of the specialist environmental chapters within this EIAR provided a detailed overview of the baseline/existing environment for each of their respective environmental topics.

3.3 For example, Chapter 17 provides a detailed overview of the architectural heritage within the application site. In accordance with the EPA's 2022 Guidelines, this Chapter does not seek to reproduce/repeat the contents of each specialist Chapter. Please refer to the relevant specialist environmental chapters for further site context.

Site Description

3.4 The application site, as illustrated in **Figure 3.1**, is located within the 'Westgate Vision Area' of Drogheda and covers an area of approx. 1.89 hectares.

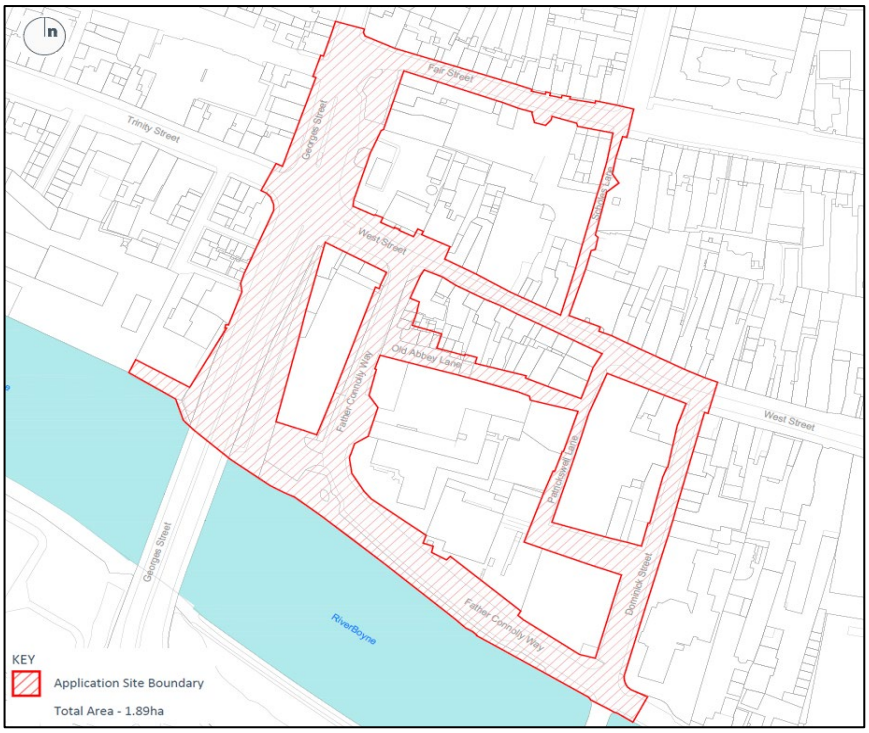

Figure 3.1: Extract - Drawing No. LOUX3001-P-000-101-A - Site Location Plan

3.5 The application site is located in the townland of Moneymore, Drogheda and includes the following roads/streets/lanes/areas and their adjoining footpath/public realm areas: R132/Bridge of Peace/George's Street (including the underpass on the northern side of the River Boyne); George's Square; Father Connolly Way (including part of the existing car park area); Dominick Street; Patrickswell Lane; Old Abbey Lane; Scholes Lane; R900/West Street/Narrow West Street; Fair Street; and Wellington Quay.

3.6 The application site contains the following key site features/land uses/public realm areas:

- George's Square which includes a public parking area, public footpaths, public toilets, a bus stop area and adjoins existing premises;
- Medieval Wall ruins adjacent to the eastern side of the Bridge of Peace/George's Street (R132);
- The 'Old Abbey' ruins within Old Abbey Lane including the freestanding gable ruin;
- Lands beneath and adjacent to the Bridge of Peace/George Street on the northern side of the River Boyne;
- Road infrastructure including carriageways, footpaths, retaining walls, junctions, bus stops, loading bays, car parking spaces, etc;
- Public utilities such as post boxes, street lighting, overhead electrical cabling and poles, underground services, CCTV cameras, electrical boxes, manholes, signage, parking meters, etc;
- Street furniture including public art, seating/benches, planter boxes, raised flower beds, bins, bicycle parking, hanging flower baskets, water fountain, railings, etc;
- The embankment of the River Boyne;
- Hard landscaped areas including stepped, sloping and level components; and
- Soft landscaped areas including grass, trees, shrubs, bushes, flowers, etc.

3.7 The application site also comprises third party lands, being the rear of 56/57 West Street and a small area of the Office of Public Work's (OPW) existing car park adjacent the former town wall/River Boyne/Father Connolly Way.

Adjoining/Surrounding Area

3.8 The application site is immediately bound by the River Boyne to the south and a diverse mix of urban development to the north, east and west. **Figure 3.2** is an aerial image looking south west across the application site towards the River Boyne and also shows the immediate surroundings.

Figure 3.2: Aerial Image of Subject Site and Immediate Surroundings (Source: www.westgatevision.ie)

3.9 Notable buildings and structures in the adjoining/surrounding area include:

- the Abbey Shopping Centre;
- Barlow House (Drogheda Arts Centre),
- Drogheda Courthouse;
- Drogheda Garda Station;
- Drogheda Civic Offices;
- the Dominican Church;
- the Bridge of Peace; and
- Mill Lane Apartments (under construction) and
- St. Dominick's Bridge (recently refurbished).

Wider Area

3.10 The wider area comprises the urban footprint of Drogheda Town Centre. **Figure 3.3** is an aerial image looking north west across the application site and also shows the site's wider urban setting.

3.11 Notable buildings within the wider area include:

- Drogheda Town Centre Shopping Centre (and cinema);
- St. Dominic's Park;

- Boyne Shopping Centre (and cinema);
- Our Lady of Lourdes Hospital;
- St. Peter's Cathedral;
- St. Peter's Church; and
- St. Peter's National School.

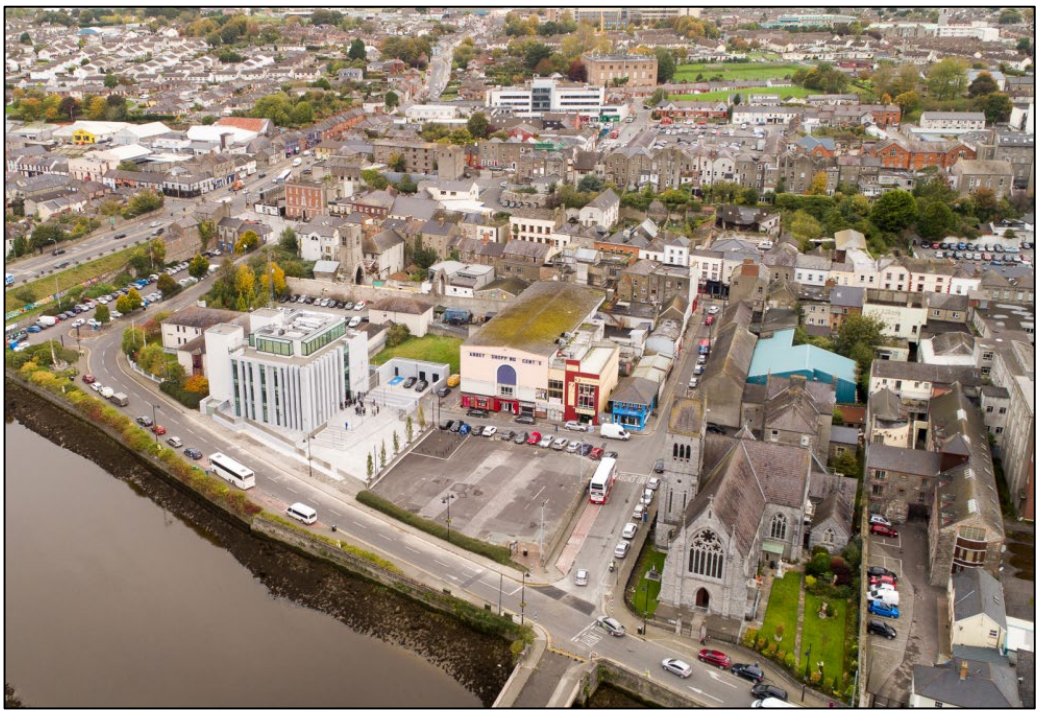

Figure 3.3: Aerial Image of Subject Site and Wider Surroundings (Source: www.westgatevision.ie)

Drogheda

3.12 The application site is located within Drogheda, a town that is located predominantly within the southern edge of Co. Louth, but it is noted that a portion of the town's southern fringes are located within the northern edge of Co. Meath.

3.13 The location of Drogheda within Co. Louth is illustrated in **Figure 3.4** below, being an extract of 'Map 2.1 - Core Strategy Map' of the Louth County Development Plan (LCDP) 2021-2027.

3.14 Drogheda is one of the oldest and most distinguished urban centres in Ireland with a history stretching back to its founding in 1194. Drogheda takes its name from the Gaelic 'Droichead Atha' meaning "Bridge of the Ford", referring to the town's strategic location at a bridging point on the River Boyne, between the provinces of Ulster and Leinster.

3.15 Drogheda was founded by colonising Knights, Hugh de Lacy and Bertram de Verdon, who founded respectively the Meath and Louth sides of the town around the year 1180. The

Borough as it is known today, came into existence in 1415 when the two separate settlements previously operating independently on the north and south sides of the Boyne River, were united by a single constitution and local authority. Drogheda went on to become one of the largest walled towns in Ireland for a time surpassing the size even of Dublin.

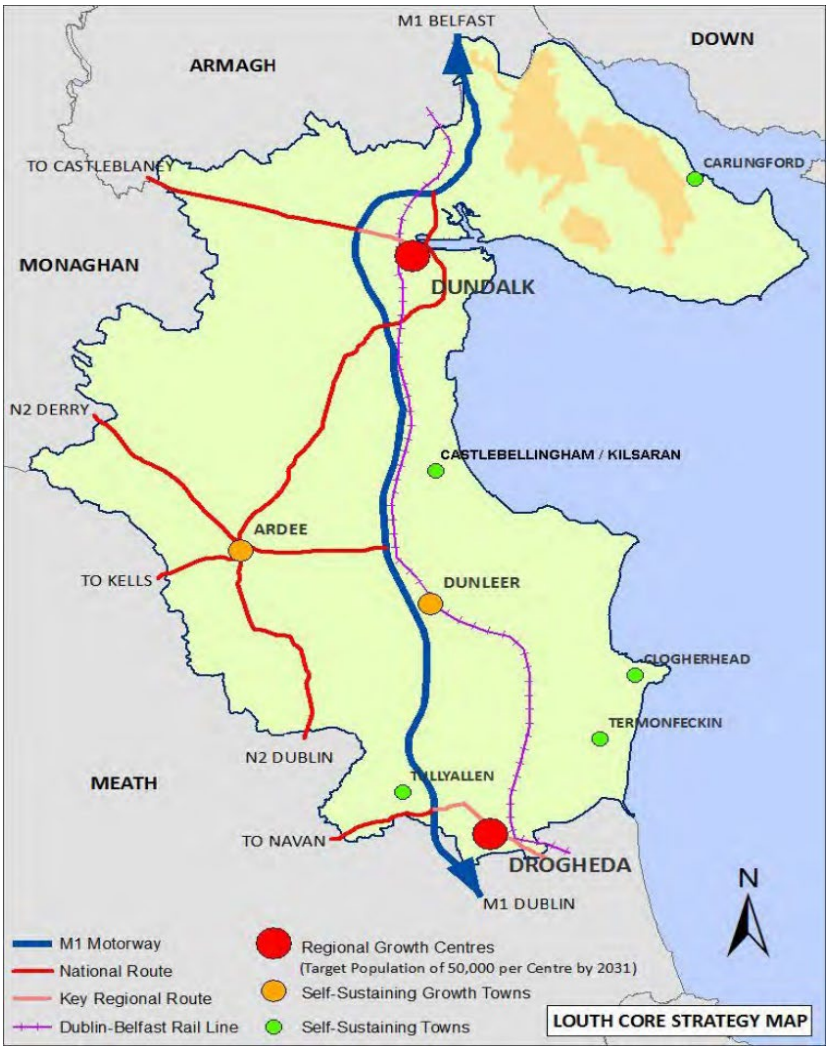

Figure 3.4: Extract of 'Map 2.1 - Core Strategy Map' of the LCDP 2021-27

3.16 Drogheda has found itself at the centre of many of the most seismic events to have shaped Irish history. The best known of these events is the 1649 siege of Drogheda and subsequent massacre by an English Army led by Oliver Cromwell. To the west of the Borough, the Battle of the Boyne was fought in 1690 whilst the prehistoric megalithic World Heritage Sites at Bru na Boinne are also in close proximity to the Borough.

3.17 Drogheda is currently identified as a 'Regional Growth Centre' within national, regional and local planning policy which recognises its growth potential as a driver of regional development. The town is also located along the strategic Dublin-Belfast Corridor.

3.18 A key priority for Drogheda is to promote the continued sustainable and compact growth of the town as a regional driver of city scale with a target population of 50,000 by 2031.

3.19 This priority is supported by objectives to regenerate the town centre, promote compact growth and enhance the role of Drogheda as a self-sustaining strategic employment centre on the Dublin-Belfast Economic Corridor.

3.20 **Table 3.1** provides an overview of some key statistics for Drogheda.

Table 3.1: Overview of Key Statistics - Drogheda [Source: Table 2.18 of the LCDP]

DROGHEDA	
Population 2016	34,199
Projected Population 2027	41,113
Projected population increase	6,914
Housing Stock	13,741
Projected Housing Stock 2027	16,311
Projected Housing Stock increase 2021-2027	2,606
Residents Workers 2016	16,108
Total Jobs 2016	12,361
Job: Workforce Ratio 2016[9]	0.76
Resident workforce working in Dublin City and suburbs 2016	2,662 (16.5%)

Planning History

3.21 A review of historical planning permissions was undertaken to identify whether there have been previous applications on or adjacent to the application site that either impact on the prospects of planning permission being granted for the proposed development, or that could be impacted upon by the proposed development.

3.22 The purpose of considering site planning history is to ensure the regeneration proposals devised for the Westgate Vision Area are cognisant of existing or emerging planned developments.

3.23 For the purposes of this review, a search was undertaken of all planning applications, recorded on Louth County Council's online planning portal as extant permissions or were otherwise under consideration at the time of writing of this report. A further review of An Bord Pleanála's website was undertaken to identify any other relevant applications.

3.24 Due to the extent of the site area and the nature of the proposed works it should be noted that the planning history search excludes small scale applications such as:

- Incomplete planning application.
- Minor change of use applications.
- New residential schemes of less than 10 units.
- New commercial schemes (including change of use) of less than 3000 sqm).
- Retention applications.

- Minor amendments to permitted applications.
- Minor signage applications.
- Other development types of scale that would not exacerbate significant environmental / planning concerns (including car parking proposals, internal reconfigurations etc.)

Planning History - Application Site

3.25 Planning applications previously submitted within the boundary of the application site include for signage and advertising structures and the creation/retention of new shop fronts. These planning applications appear to be historical and minor in nature.

3.26 There does not appear to be any recent significant planning history within the boundary of the application site which would be material with respect to the consideration of the proposed development either individually or in-combination with other recent developments/applications.

Planning History - Adjoining and Surrounding Area

3.27 **Table 3.2** provides details on notable planning applications, including Part 8 planning applications, submitted within the adjoining and surrounding area of the application site within the last 10 years.

Table 3.2: Recent Planning History for the Adjoining/Surrounding Area

Planning Reference	Site Location	Proposed Development	Decision
22/831	14 Fair Street, Drogheda, Co Louth	The overall development will provide 9 no. apartments (4 no. 1 bed, 5 no. 2 bed units).	Grant Permission with conditions
21/625	Peters Hill, Drogheda, Co Louth	Part 8 - Louth County Council proposes to carry out the development of a public meeting space at Peter's Hill, provision of a bespoke sculptural art work and all associated services necessary for the aforementioned works.	Approved
20/1055	70 West Street, Drogheda, Co Louth	Permission for the construction of a first floor and second floor extension to the rear of the property, internal alterations at first and second floor for the provision of two no. apartment units and all associated site works.	Refused
20/763	Mill Lane Trinity Street Bridge of Peace, Drogheda, Co Louth	Permission to vary development permitted under P.A. Ref. 18/1056. The proposed development consists of an increase in the number of storeys from 10 to 11 storeys, an increase in the number of apartments from 41 no. to 49 no. The number of	Approved

		car parking spaces permitted under P.A Ref. 18/1056 are unaltered.	
18/1056	Nos.1 & 2 Mill Lane, Mill Lane, Trinity Street and R132/Bridge of Peace, Drogheda, Co. Louth	The development will include the demolition, excavation and clearance of all existing buildings and structures on site, including derelict buildings and the construction of 41no.apartments. The development provides for all associated site works, lighting, parking, open space, landscaping, and boundary treatments.	Approved
18/727	Drogheda Civic Offices, Fair Street, Drogheda, Co. Louth	Part 8: 1. Refurbishment of the existing council office building - 52-53 Fair Street (Single Storey PROTECTED STURCTURE-ref DB-069A; NIAH ref.no.13618043). 2. Refurbishment of the former council chamber building - 54 Fair Street (Two Storey PROTECTED STRUCTURE ref - DB-069b & NIAH ref.no.13618044). 3. Refurbishment of the Former Community Services Building - 55-56 Fair Street (Two Storey PROTECTED STRUCTURE ref no. DB-082. NIAH ref. 13618045).	Approved
18/598	68-69 West Street, Drogheda, Co. Louth	Part 8: Change of use of existing ground and part upper floor retail unit to office with public counter area and ancillary facilities, external signage and associated site development works.	Approved
17/243	48 - 51 Narrow West Street, Drogheda	Change of Use/Refurbishment/Extension - Commercial to Residential.	Approved
15/369	103 George's Street &, 36-38 Fair Street, Drogheda	Change of use - Restaurant to Residential at 1st Floor Level.	Approved
14/510044	South side of Bridge of Peace, Drogheda	Part 8: Permission to construct a skateboard park, construction of associated fencing, lighting & access pathways.	Approved
13/510084	Wellington Quay, Drogheda, County Louth	In accordance with the provisions of Part 9, Planning & Development Regulations 2001 (S.I. 600 of 2001), (as amended), The Commissioners of Public Works Ireland propose to carry out the following works to construct a new Courthouse. The development will consist of the construction of a new courthouse of approximately 1385m² on a site of 1910m², to include 2 no Courtrooms & ancillary accommodation.	Approved

13/510003	Dominic's Park, Rathmullen Road, Drogheda	Permission for development that will consist of a bandstand & associated site works	Approved

3.28 **Table 3.3** provides details on planning applications within the adjoining/surrounding area of the application site submitted directly to an Bord Pleanála for assessments.

Table 3.3: An Bord Pleanála related Applications in Adjoining/Surrounding Area

Planning Reference	Site Location	Proposed Development	Decision
315460	Townlands of Mell and Moneymore, Drogheda, Co. Louth	Development which involves the construction of the Boyne Greenway - North Bank	Pending
315072	Townlands of Mell and Moneymore, Drogheda, Co. Louth	Construction of the Boyne Greenway - North Bank.	Application withdrawn
309668	Land adjacent to Scotch Hall Shopping Centre, Drogheda	275 no. apartments, creche and associated site works.	Approved
308224	St. Dominick's Bridge, Moneymore, Drogheda.	Refurbishment of St. Dominick's Bridge, Co. Louth	Approved
307652	Ship Street in Drogheda to Mornington Village	Construction of the Boyne Greenway, pedestrian and cycleway linking Drogheda Town to Mornington Village	Refused
305819	Lands at Newtownstalaban, Drogheda.	217 no. residential units (137 no. houses, 80 no. apartments) creche and associated site works.	Approved
305552	Rathmullan Road, Drogheda, Co. Meath.	Construction of 661 no. residential units, childcare facility and associated site works.	Annulled
305110	Newtown, Railway Terrace, Drogheda.	450. no residential units (81 no. houses and 369 no. apartments), creche and associated site works.	Annulled
306389	Nos.1 & 2 Mill Lane, Mill Lane, Trinity Street, R132/Bridge of Peace, Drogheda, Co. Louth	Demolition, excavation and clearance of existing buildings and structures on site, including derelict buildings and construction of 41 apartments, a Natura Impact Statement has been submitted.	Appeal withdrawn S.140(1)(a)
312544	26, 28, 29, 30 & 31 George's Street &	Demolition of 5 no. houses and construction of 57 no. apartments, creation of new	Grant permission

	Trinity Gardens, Drogheda, Co Louth.	vehicular entrance, ESB substation and all associated site works.	with revised conditions
303616	Corrigan's Public House, George's Street, Bolton Street, Drogheda.	Change of use from public house to offices	Grant permission with revised conditions

Planned Projects

3.29 The EPA document Guidelines on the information to be contained in Environmental Impact Assessment Reports states that '*It may also be appropriate to consider other projects that are planned but not yet permitted*'.

3.30 On this basis, this assessment has also taken into consideration relevant planned projects, which included the following wider active travel proposals being progressed by LCC in conjunction with the National Transport Authority (NTA):

- The R132 active travel project to the north of the Westgate 2040 area – LCC is aiming to submit a planning application in March 2024 for this project.

- The R132 active travel project to the south of the Westgate 2040 area – LCC is aiming to submit a planning application in June 2024 for this project.

3.31 The abovementioned projects are of particular note for the Westgate 2040 regeneration project as the 100m stretch of the R132 that is located within the application site has been designed to integrate with, and enable, the proposals for the wider active travel projects to the north and south of the application site.

4. Consideration of Alternatives

Introduction

4.1 The consideration of alternatives is necessary to evaluate the likely environmental consequences of a range of development strategies for the site within the constraints imposed by environmental and planning conditions.

Legislative Context

4.2 Article 5 (1) of the 2014 Directive requires the consideration of reasonable alternatives which are relevant to the project and take into account effects on the environment. Article 5 (1) states that:

> *'Where an environmental impact assessment is required, the developer shall prepare and submit an environmental impact assessment report. The information to be provided by the developer shall include at least…'*
>
> *'…a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment.'*

4.3 Schedule 6 of the Planning and Development Regulations, 2001 (as amended) sets out the information which is to be contained in an EIAR and Part 1 (d) of Schedule 6 states that the following shall be included:

> *'A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.'*

4.4 In accordance with EPA Guidelines, different types of alternatives may be considered at several key stages during the process. As environmental issues emerge, alternative designs may need to be considered early on in the process or alternative mitigation options may need to be considered towards the end of the process.

4.5 The EPA Guidelines advise that:

> *'The objective is for the developer to present a representative range of the practicable alternatives considered. The alternatives should be described with 'an indication of the main reasons for selecting the chosen option'. It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option. A detailed assessment (or 'mini-EIA') of each alternative is not required*.'

4.6 The consideration and examination of alternatives is set out below.

Methodology

4.7 The EPA Guidelines indicate that 'alternatives' should be considered under the following headings:

- 'Do-Nothing' Alternative
- Alternative Locations
- Alternative Design/Layout
- Alternative Processes
- Alternative Mitigation Measures

'Do-Nothing' Alternative

4.8 The 'Do-Nothing' alternative considers the likely scenario that would arise, assuming the proposed development was not progressed, i.e. if nothing were done. Note that this chapter discusses the 'Do-Nothing' scenario in terms of development (or lack thereof) in the absence of the proposals. The likely impacts of a 'Do-Nothing' scenario in relation to the various environmental topics (e.g. cultural heritage, biodiversity, traffic and so on) are discussed in the respective specialist chapters of this EIAR. In this case, the 'Do-Nothing' scenario might entail:

- **Scenario A**: a continuation of the existing conditions and use of the subject lands (i.e. underutilised public realm and riverfront areas, vacancy/dereliction, car dominated environment, underutilised built and natural heritage); or
- **Scenario B**: development of an alternative proposal (likely to be similar in nature to the current proposal) and related planning application in the future.

Scenario A – No Development

4.9 If Scenario A occurred, i.e. if the proposed project was not constructed, this could result in a missed opportunity and a significant loss of potential funding for the regeneration of Westgate and to upgrade the public realm areas, provide enhanced community infrastructure, protect and celebrate important rich heritage and to reprioritise the roads/streets/lanes/footpaths in this area to encourage more sustainable modes of transport, such as active travel.

4.10 This scenario would not align with the current 'D1 – Regeneration' land use zoning for this area or the wider social, environmental or economic policies contained within the Louth County Development Plan (LCDP) 2021 – 2027.

4.11 Ultimately, the overall objective of the 'Westgate 2040' project, which is to act as a catalyst to support positive regeneration, compact growth and sustainable development in the 'Westgate Vision' area, would not be realised and the existing dereliction and decline of the area would likely perpetuate. As a result the 'do-nothing' scenario is not considered to represent a viable option and has been discounted.

Scenario B – An Alternative Proposal

4.12 We consider that Scenario B is the more likely alternative, i.e. if the proposed project were not to come forward at this stage it is likely that LCC would propose a similar development under a separate proposal.

4.13 This course of action is considered to be likely noting that LCC owns the majority of the application site and noting that the LCDP 2021 – 2027 contains policy objectives to deliver regeneration in this area. Indeed, the Growth Strategy of the Plan places a '…*significant focus on promoting the regeneration of the town centre through the identification of specific areas and land for regeneration uses* ***and the progression of regeneration projects such as the Westgate Vision***' [**our emphasis**].

4.14 The impacts of this scenario would depend on the specific nature, siting and design of the proposals but it is likely that these would be similar to the proposed project, noting the policy objectives contained in the LCDP 2021-2027.

Alternative Locations

4.15 This planning application represents the next stage to deliver the 'Westgate Vision', launched by LCC in 2018, as a targeted planning response aimed at channelling investment into this core area of Drogheda.

4.16 As noted above, the overall objective of the 'Westgate 2040' project is to act as a catalyst to support positive regeneration, compact growth and sustainable development in the 'Westgate Vision' area and the wider Drogheda Town Centre.

4.17 The application site comprises key character areas within the 'Westgate Vision' area which have been chosen for redevelopment/regeneration due to their strategic location within the area and their potential to link/complement a number of existing projects in differing stages of development in the town.

4.18 It is considered that there are no alternative locations for the proposed project noting that:

- this area of Drogheda has been identified as a location in urgent need of regeneration for a considerable time;
- the Louth County Development Plan 2021-2027 contains policy objectives to target regeneration of this specific area; and that
- the proposed project will deliver public realm improvements and interventions that have been designed to respond to the constraints and opportunities within this specific area.

Alternative Design Approach (Layout and Design)

4.19 An extensive master planning process was undertaken to establish the optimal redevelopment principles and proposals for the application site. The masterplanning process included an extensive review of the site and the wider area by an integrated multidisciplinary design team, including roads engineers, architects, urban designers,

landscape architects, civil and structural engineers, conservation architects, town planners, ecologists, and etc to identify potential physical, social, environmental, economic and planning constraints and opportunities for the project.

4.20 In addition, in May 2021, LCC undertook extensive engagement and consultation to help inform the vision and design process for the proposed project. Stakeholders and members of the community were engaged to understand their needs and wants in relation to the 'Westgate Vision' area and to gain feedback on design principles, as part of a co-design process.

4.21 To inform this work, a consultation survey was carried out online and a total of 458 completed submissions were received from a diverse range of stakeholders with an interest in the Westgate area or with connections to/within Drogheda in general.

4.22 Having considered the combined results of the qualitative and quantitative data generated from the survey, a number of very clear themes and development ambitions emerged.

4.23 Using the information collated during the initial site analysis stage by the integrated multidisciplinary design team and the clear themes and development ambitions that emerged from the community and stakeholder consultations, an overarching design vision was conceived for the project and 3 no. concept development design options were then prepared for each character area (identified in **Figure 4.1** below) and presented to LCC for consideration.

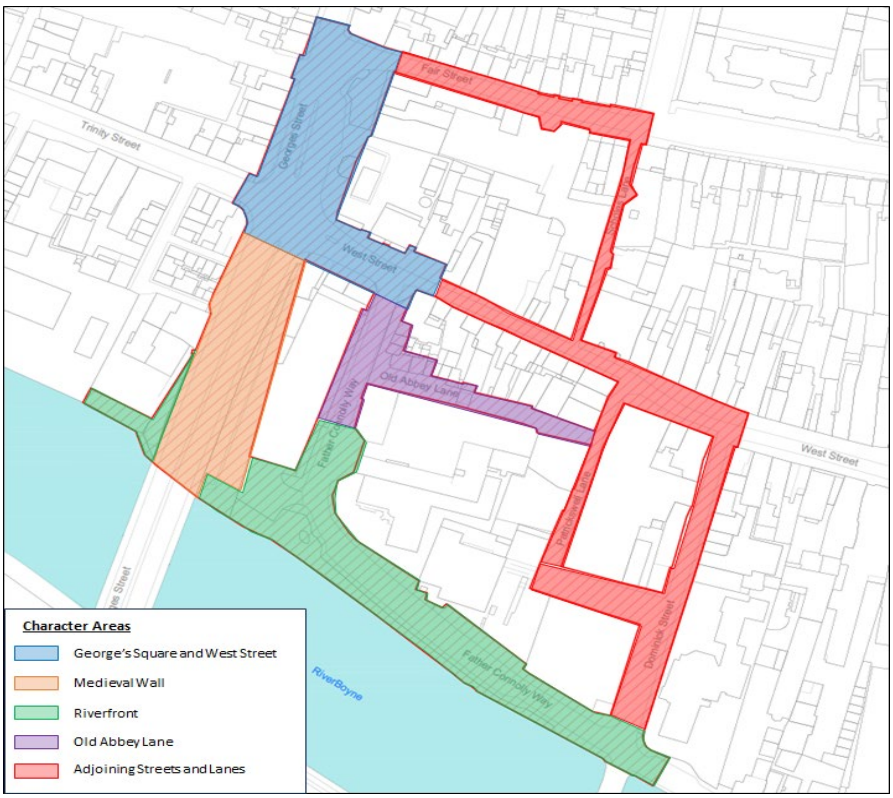

Figure 4.1: Westgate 2040 Character Areas

4.24 Following the conclusion of the concept development stage and selection of the preferred options by LCC, the design team then refined and advanced the preferred options for each character area which form the basis of this planning application and are described in detail in Chapter 5 of this EIAR.

4.25 The following sections provide detail on the alternative concept design options considered for the 4 no. key character areas during the concept development stage of the project and the reasons why they were discounted as the preferred option for the final development proposal.

4.26 It should be noted that no alternative design options were considered for the adjoining streets and lanes as these have been designed to align with the proposed design language and treatment for the 4 no. character areas to ensure a holistic and integrated design approach and deliver a consistent, complementary, harmonious, functional and safe built environment throughout the application site.

4.27 The adjoining streets/lanes have been included as part of the application site as they form part of the wider 'Westgate Vision' area and have a direct physical relationship/ connection with the key character areas (as illustrated in **Figure 4.1**).

George's Square/West Street Character Area

4.28 This character area comprises George's Square, part of George's Street/R132, part of West Street and the junction of Fair Street and George's Street. **Figure 4.2** provides a summary of the 3 no. concept design options considered for this character area.

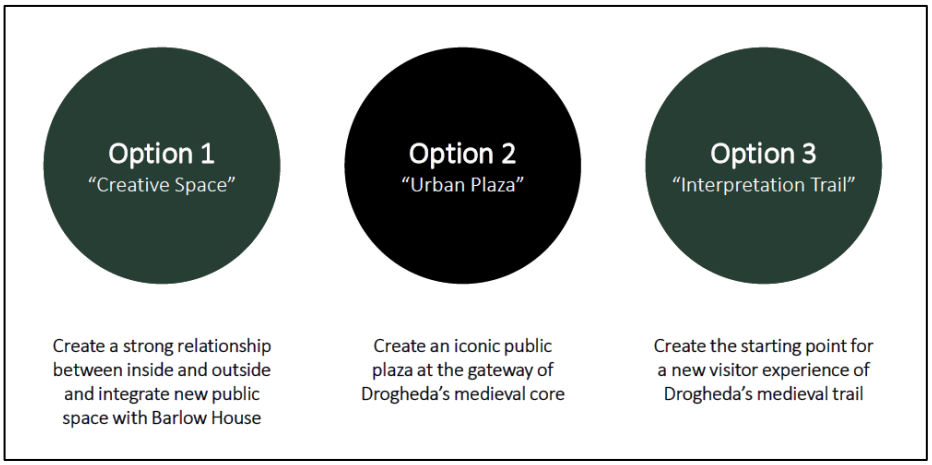

Figure 4.2: Concept Design Options for the Westgate Character Area

4.29 A blended mix of concept design options 1 and 3 was selected as the preferred option for this character area to create an enhanced public realm and amenity area with a new high-quality gateway/arrival space. Noting this, the 'Urban Plaza' option represents the alternative concept design option considered for this area.

Alternative Option - Urban Plaza

4.30 This alternative design option sought to create an iconic public plaza terrace. **Figure 4.3** below identifies and illustrates the principles and proposals associated with this design

option and **Figure 4.4** provides precedent images along with a concept 3D drawing which informed the design approach for this option.

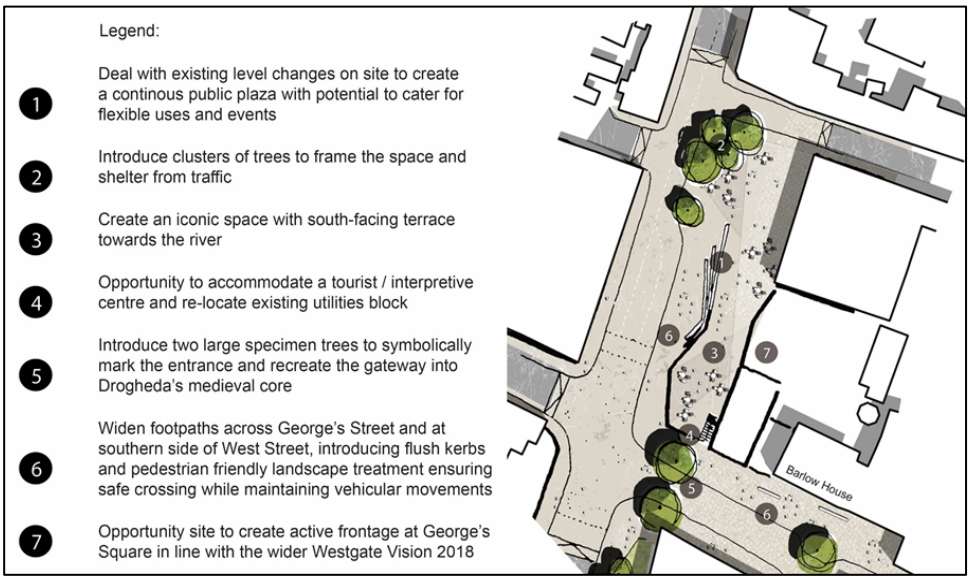

Figure 4.3: Urban Plaza Option – Concept Design Principles and Proposals

Figure 4.4: Urban Plaza Option - Precedent Imagery and Concept 3D Image

4.31 The 'Urban Plaza' concept design option was discounted due to delivery difficulties including the constraints associated with George's Square, such as the difficult topography levels and proximity of George's Street/R132, and the need for additional lands to deliver this option as well as the potential impacts on adjoining lands/buildings outside of the ownership and control of LCC.

4.32 It was considered that a blended mix of concept design options 1 and 3, i.e. the proposed project, would result in a more deliverable design option in line with the brief and vision set for this character area and could achieve a better design outcome for all, including residents, workers, visitors and tourists of Drogheda.

Medieval Wall Character Area

4.33 The Medieval Wall Character Area comprises the area of land located between the former medieval town wall and the embankment of George's Street/R132/Bridge of Peace and part of George's Street/R132/Bridge of Peace.

4.34 **Figure 4.5** provides a summary of the 3 no. concept design options considered for this character area.

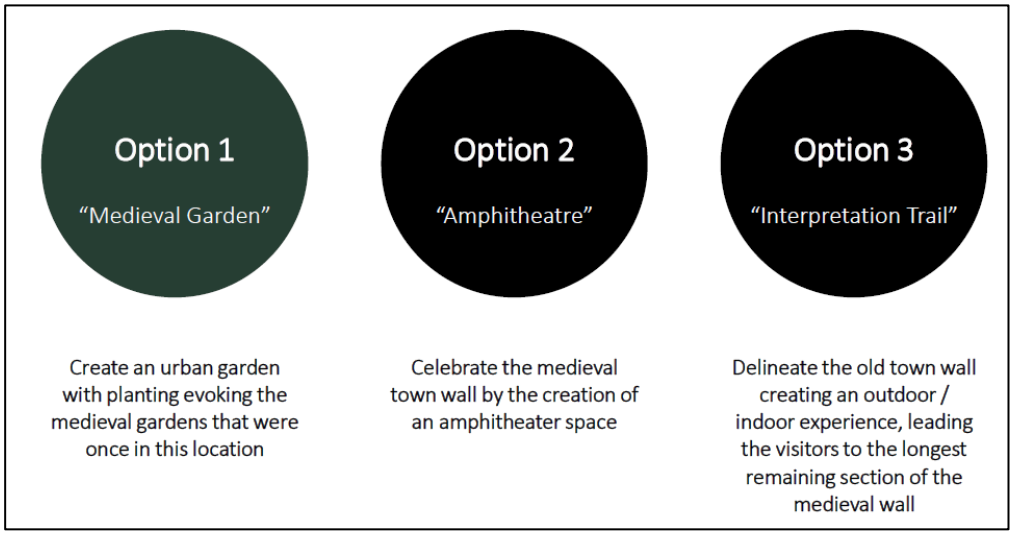

Figure 4.5: Concept Design Options for the Medieval Wall Character Area

4.35 Concept design option 1 was selected as the preferred development option for this character area to create a universally accessible raised walkway within a medieval urban garden setting. Two alternative concept design options were considered for this area, being the 'Amphitheatre' and 'Interpretation Trail' options, as outlined below.

Alternative Option - Amphitheatre

4.36 This alternative design option sought to celebrate the medieval town wall by creating an amphitheatre space within the embankment area between the medieval town wall and the embankment of the R132/George's Street/Bridge of Peace.

4.37 **Figure 4.6** below identifies and illustrates the principles and proposals associated with this design option and **Figure 4.7** provides precedent images along with a concept 3D drawing which informed the design approach for this option.

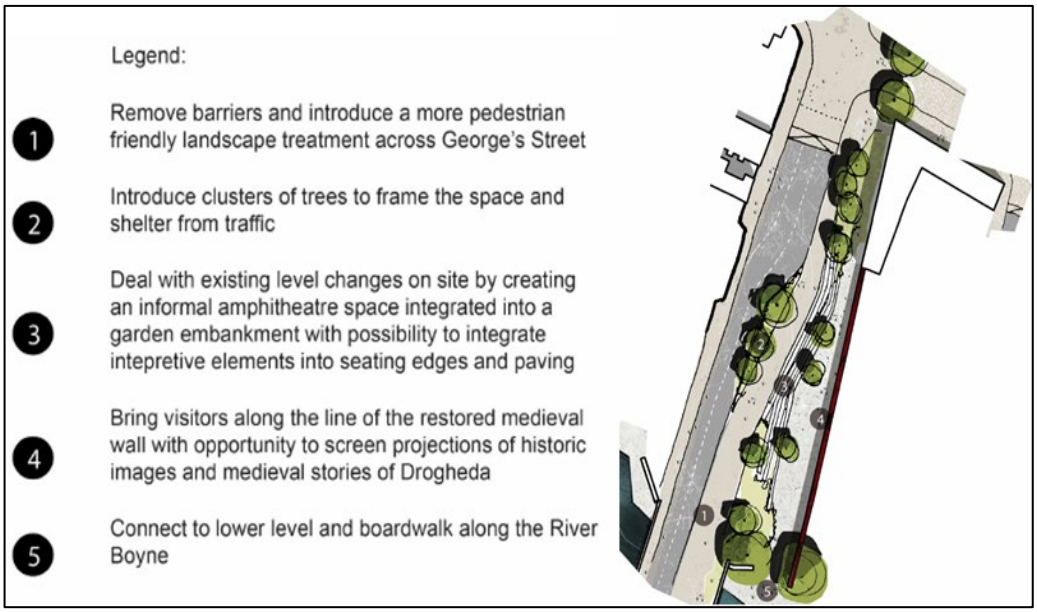

Figure 4.6: Amphitheatre Option – Concept Design Principles and Proposals

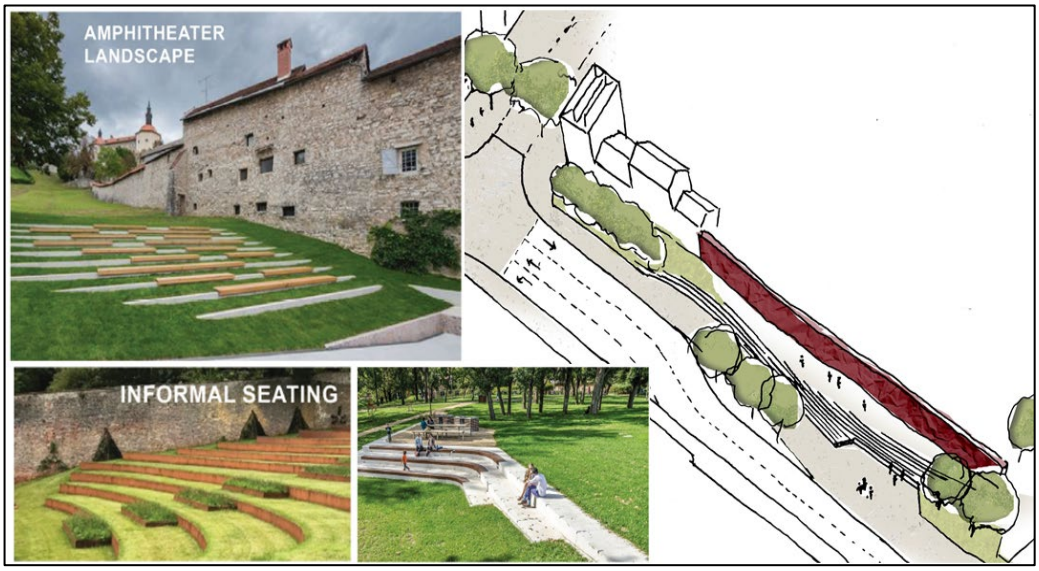

Figure 4.7: Amphitheatre Option - Precedent Imagery and Concept 3D Image

Alternative Option - Interpretation Trail

4.38 This alternative design option sought to delineate the medieval town wall by creating an outdoor/indoor experience which would lead visitors to the medieval wall.

4.39 **Figure 4.8** below identifies and illustrates the principles and proposals associated with this design option and **Figure 4.9** provides precedent images along with a concept 3D drawing which informed the design approach for this option.

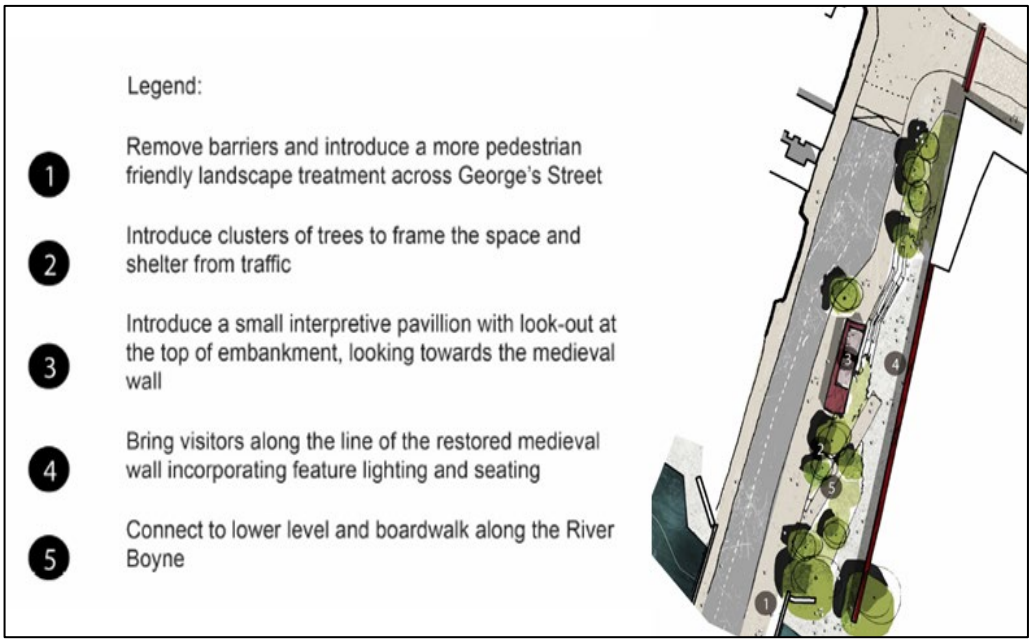

Figure 4.8: Interpretation Trail – Concept Design Principles and Proposals

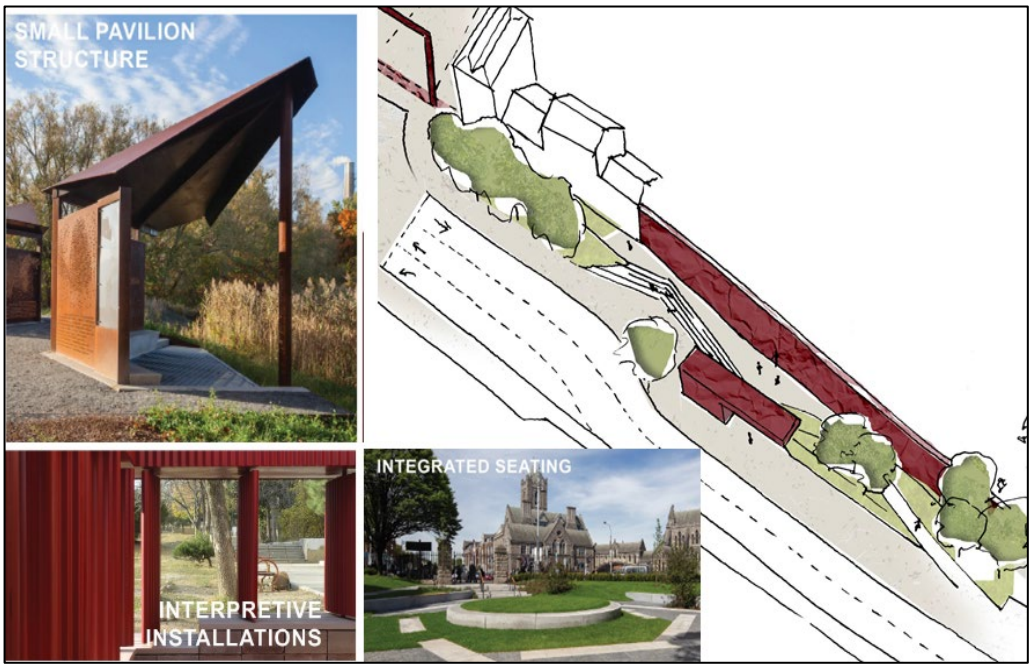

Figure 4.9: Interpretation Trail - Precedent Imagery and Concept 3D Image

4.40 The 'Amphitheatre' and 'Interpretation Trail' concept design options were discounted due to delivery difficulties including the constraints associated with this character area, such as the difficult topography levels and proximity of George's Street/R132, and due to potentially excessive engineering costs and impacts on the existing George's Street/R132 embankment and retaining wall.

4.41 The preferred option, i.e. the 'Medieval Garden' approach was considered to provide a more favourable outcome and a more balanced approach between celebrating and revealing the medieval wall and bringing people closer to an important surviving artefact

of Drogheda's past while also enabling permeability in this area and enhanced connectivity to the riverfront.

Riverfront Character Area

4.42 The Riverfront Character Area comprises lands located along the northern bank of the River Boyne including the underpass of the Bridge of Peace and part of Father Connolly Way. **Figure 4.10** provides a summary of the 3 no. concept design options considered for this character area.

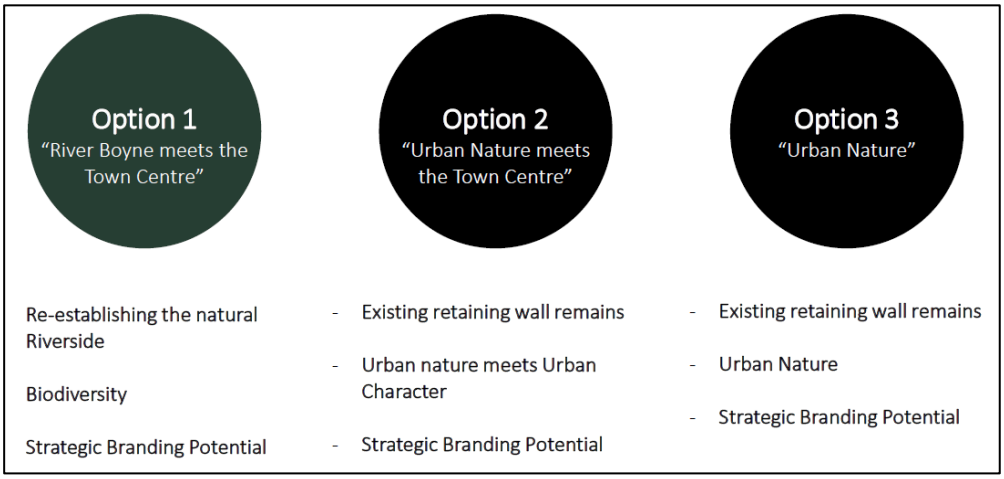

Figure 4.10: Concept Design Options for the Riverfront Character Area

4.43 Concept design option 1 was selected as the preferred development option for this character area to reconnect the town with the riverfront and provide enhanced amenity, functionality and biodiversity in this area.

4.44 Two alternative concept design options were considered for this area, being the 'Urban Nature meets the Town Centre' and 'Urban Nature' options, as outlined below. These two options are very similar in nature with a riverside boardwalk component. The core difference between the two options is the 'Urban Nature' option incorporated an additional landscaped area along the section of boardwalk close to the pedestrian bridge while the 'Urban Nature meets the Town Centre' option incorporated a hard landscaped approach for this section of the boardwalk.

Alternative Option – Urban Nature meets the Town Centre

4.45 This alternative design option sought to retain the existing retaining wall, enhance the relationship between urban nature and the urban character of the area and enhance the potential of the riverfront to provide a unique and strategic branding opportunity.

4.46 **Figure 4.11** below identifies and illustrates the principles and proposals associated with this design option and **Figure 4.12** provides a concept 3D drawing for this option.

Figure 4.11: Urban Nature meets the Town Centre – Concept Design Principles and Proposals.

Figure 4.12: Urban Nature meets the Town Centre - Concept 3D Image.

Alternative Option – Urban Nature

4.47 This alternative design option sought to retain the existing retaining wall, enhance the amount of natural and soft landscaped areas and enhance the potential of the riverfront to provide a unique and strategic branding opportunity.

4.48 **Figure 4.13** below identifies and illustrates the principles and proposals associated with this design option and **Figure 4.14** provides a concept 3D drawing for this option.

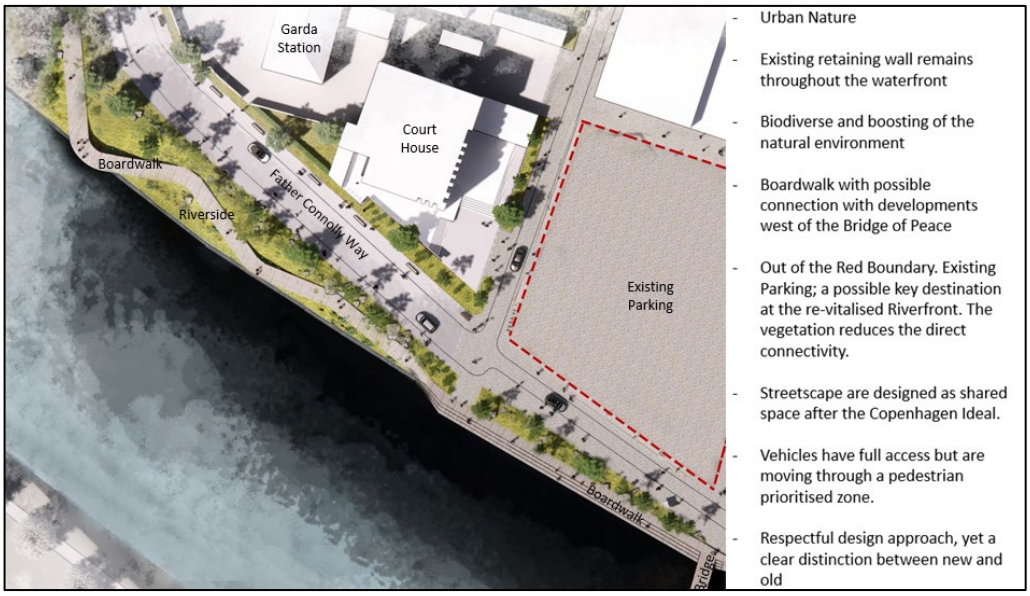

Figure 4.13: Urban Nature – Concept Design Principles and Proposals

Figure 4.14: Urban Nature – Concept 3D Image

4.49 The 'Urban Nature meets the Town Centre' and 'Urban Nature' concept design options were discounted due to potential impacts on the River Boyne embankment and ecological sensitivity as well as potentially excessive engineering costs associated with the raised and cantilevered boardwalk.

4.50 The preferred option 1 was considered to provide a more balanced approach between enhancing connectivity between the town and the riverfront, revitalising the riverfront in a manner which will enable permeability and active travel modes of transport and re-establishing the natural 'look and feel' of the riverfront. The preferred approach was also considered to achieve a more favourable outcome in terms of enhanced amenity, biodiversity and functionality along the riverfront.

The Old Abbey Lane Character Area

4.51 This character area comprises lands located within Old Abbey Lane, the adjoining areas of Father Connolly Way and a small area to the rear of No. 56/57 West Street. **Figure 4.5** provides a summary of the 3 no. concept design options considered for this character area.

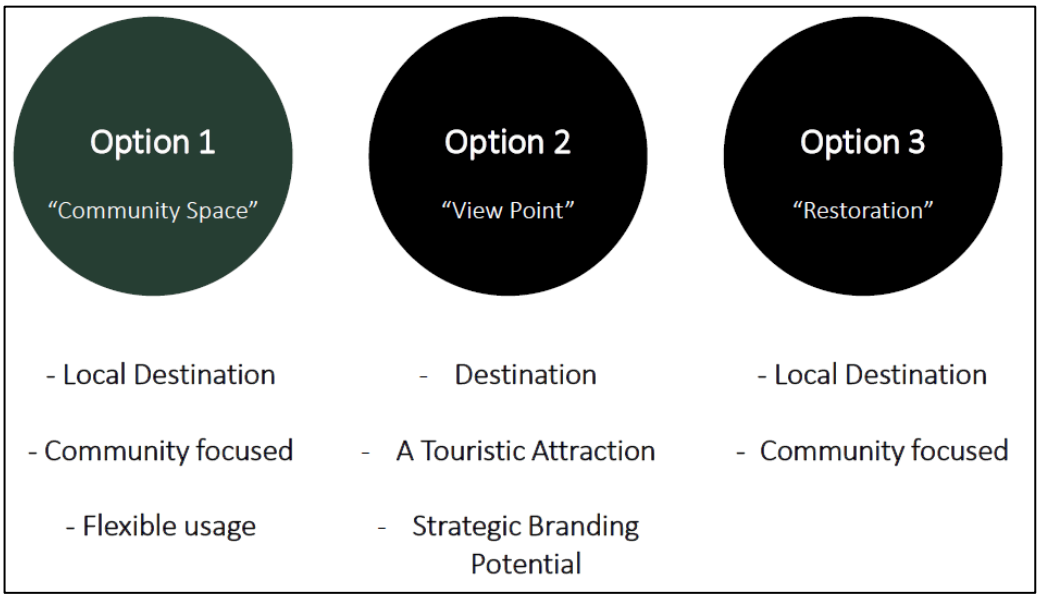

Figure 4.15: Concept Design Options for the Abbey Character Area

4.52 Concept design option 1 was selected as the preferred development option for this character area, i.e. 'Covered Community Space'. Two alternative concept design options were considered for this area, being the 'View Point' and 'Restoration' options, as outlined below.

Alternative Option – View Point

4.53 This alternative design option explored the opportunity to erect a viewing point/platform within the confines of the old Abbey ruins so as to enhance the destination and tourism credentials of the area and provide a unique branding opportunity.

4.54 The principles and proposals associated with this design option included:

- A Cultural Destination
- Start of a possible branding strategy
- New View Point for the Town
- Possible outdoor museum; the past and the future
- Corten Steel celebrating the heritage
- Respectful design approach, yet a clear distinction between new and old
- The vista through the Abbey kept untouched

4.55 Figures **4.16** and **4.17** provide concept 3D drawings for the 'View Point' option.

Figure 4.16: 'View Point' – Concept 3D Image

Figure 4.17: 'View Point' – Concept 3D Image

Alternative Option – Restoration

4.56 This alternative design option explored the potential of a 'do-minimum' approach which was focused mainly on restoration of the existing built heritage within the area and subtle public realm interventions to improve the 'look and feel' and functionality of the area.

4.57 The principles and proposals associated with this design option include:

- External Community space
- Event space, venue for concerts, markets or as an assembly hall for the community in Summer Periods

- Outdoor Garden Space
- Movable Planters
- The vista through the Abbey kept untouched

4.58 **Figures 4.18** and **4.19** provide concept 3D drawings for this option.

Figure 4.18: 'Restoration' – Concept 3D Image

Figure 4.19: 'Restoration' – Concept 3D Image

4.59 The 'View Point' and 'Restoration' concept design options were discounted as it was considered that the preferred option, i.e. a 'Covered Community Space' would provide a superior level of amenity and functionality for Old Abbey Lane for all who visit/use the area when compared with the alternative options.

4.60 Additionally, the preferred option would cater for the arts and cultural community by delivering a flexible and sheltered outdoor events space, which would complement the rich built heritage in this area and provide a further attraction for the area.

Final Proposed Development

4.61 The proposed project constitutes the final alternative and preferred option. A full description of the proposed development is provided in **Chapter 5** of this EIAR.

4.62 As outlined above, the preferred design has been progressed via an iterative process with design amendments arising from non-statutory engagement with the community, local groups and stakeholders including the National Transport Authority and Louth County Council.

4.63 The current scheme takes account of planning, economic, social and environmental considerations arising throughout the design process. The planning application submission, which includes this EIAR, provides a full assessment of the proposed project and concludes that the proposed project is in accordance with the proper planning and sustainable development of the area in which the proposal is situated.

Alternative Processes

4.64 The EPA Guidelines state that '*Within each design solution there can be several different options as to how the processes or activities of the project can be carried out*'.

4.65 Alternative processes is not considered to be relevant for the proposed project or this EIAR having regard to the detailed Master planning and engagement stages/processes that were undertaken and noting the nature, location and design specifics of the proposed project.

Alternative Mitigation Measures

4.66 The mitigation measures which are outlined in the various chapters of the EIAR, and summarised in Chapter 21 of this EIAR, are considered appropriate to the location, nature and extent of the project and its potential impacts. As such, no alterative mitigation measures were required to be considered.

Conclusion

4.67 Having examined various reasonable alternative designs for each character area, it is considered that the proposed development represents the preferred option in terms of achieving the best sustainable development outcome of the site and its surrounding area.

5. Description of Proposed Development

Introduction

5.1 This Chapter provides '*…information on the site, design, size and other relevant features of the project'* in accordance with Article 5(1)(a) of the EIA Directive.

5.2 The assessment provided in the following Chapters, undertaken by the various specialists, is underpinned by the description of the project as set out below.

Overview

5.3 LCC is seeking approval to undertake public realm/urban regeneration works on lands within the Westgate Vision Area of Drogheda, Co. Louth.

5.4 The overall objective of the project (known as the 'Westgate 2040 Project') is to act as a catalyst to support positive regeneration, compact growth and sustainable development in the Westgate Vision Area and the wider Drogheda Town Centre.

5.5 This planning application represents the next stage in delivering the Westgate Vision, launched by LCC in 2018, which is a targeted planning response aimed at channelling investment into this core area of Drogheda Town Centre.

Project Brief

5.6 The Westgate 2040 Project brings forward a vision for urban regeneration and development of the town with the following objectives at the forefront:

5.7 The Project Brief established the following key themes:

- Create a quality gateway / arrival space, public spaces, pedestrian linkages and public realm.
- Ensure inclusivity for all members of the community; the very young, the youth, the old, the mobility impaired, socially disadvantaged, the pedestrian and cyclist.
- Develop proposals which meet the design principles of national and international best practice.
- Promote an environment which leads to both day and night-time activities.
- Improve connectivity and legibility for all members of the community and for visitors/tourists to the town.
- Capitalise on, and respect, the rich heritage of this town centre location.
- Operate / employ sustainable development principles by minimising energy consumption and maximising the use of renewable energy technology.

Description of Development

5.8 The proposed development consists of the following:

1. Public realm improvement works comprising: new hard landscaping including resurfacing, soft landscaping including new tree planting, a water feature channel with stepped concrete elements and integrated landscaping, a Corten steel ground insert delineating the location of the former medieval town wall, a wayfinding Corten steel ground insert, Corten steel signs, Corten steel walkways, street furniture, new pedestrian connections, a SUDS rainwater retention pond, cycle lanes, pedestrian footpaths, external steps, tactile paving, road signs, cycle parking stands and provision of new railings;

2. Public realm improvement works will also include the creation of a new urban plaza gateway/arrival area at Georges Square and a new enhanced public amenity area adjacent the River Boyne riverfront including a new pedestrian wooden deck promenade/boardwalk;

3. Demolition of the existing public toilet block at George's Square (between the junctions of George's Street/Fair Street and George's Street/West Street), a section of boundary wall located between Old Abbey Lane and Father Connolly Way and a section of wall located between Dominick Street and Dominick Street car park;

4. A new raised, free-standing, curved walkway located between the R132 and the existing Medieval Wall to provide a universally accessible connection from West Street to the River Boyne riverfront;

5. A new freestanding Corten steel pavilion located adjacent the River Boyne riverfront to create a new mixed use/public space;

6. A new freestanding Corten steel canopy located within, and offset from, the remains of the Old Abbey (being a Protected Structure – ID No. DB-187 and a recorded monument - RMP No. LH024-041011) to create a new flexible community and cultural space;

7. Two freestanding Corten steel structures located at the junction of West Street and the R132/George's Street to mark the location of the former medieval West Gate;

8. Repair and restoration of the old Medieval Wall located adjacent the R132/George's Street (being a Protected Structure – ID No. DB-188 and a recorded monument - RMP No. LH024-041014);

9. Repair and restoration of the Old Abbey (being a Protected Structure – ID No. DB-187 and a recorded monument - RMP No. LH024-041011) including the west gable of its north aisle located within Old Abbey Lane;

10. Reprioritisation of traffic and movement patterns for the streets/roads/lanes/footpaths within the application site to accommodate the proposed public realm improvement works and integrate with the Council's emerging Active Travel projects to the north and south of George's Street/R132;

11. Road improvement works to include alteration of road alignment, resurfacing, shared surface treatments, revised access arrangements, cycle lanes, pedestrian crossing points, parking bays, loading bays, accessible parking bays, bus stops and new public lighting; and

12. All associated site works including: drainage, undergrounding of services and all associated ancillary development works.

Character Areas

5.9 As outlined previously in Chapter 4, the application site has been divided into key character areas for design/development purposes, as illustrated in **Figure 5.1.**

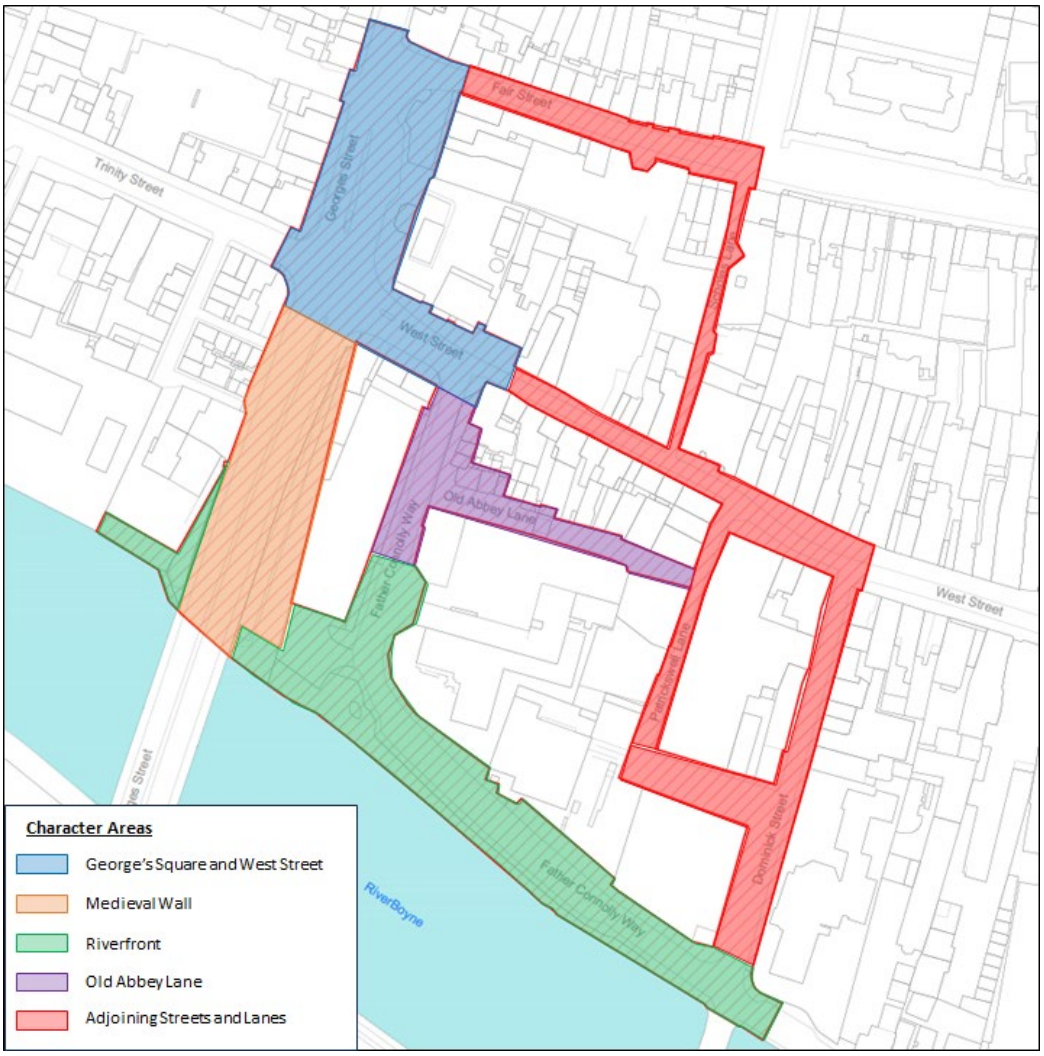

Figure 5.1: Westgate 2040 - Character Areas

5.10 An overview of the proposals within each of the character areas is provided below. Please refer to the suite of drawings accompanying the planning application package for definitive details of the proposed works. Please also refer to the Design Statement accompanying the planning application package for further details including additional computer-generated artistic impressions.

George's Square/West Street Character Area

5.11 George's Square will be enlarged and transformed into an attractive public realm plaza area with enhanced permeability and new high quality soft and hard landscaping features, including a Corten steel ground insert delineating the location of the former town wall and a mix of playful and natural interventions. A computer-generated artistic impression of George's Square is provided at **Figure 5.2** for context.

5.12 George's Street (R132) will be reprioritised to enable the enlargement of George's Square and it will incorporate new dedicated cycle lanes. These measures will integrate with LCC's emerging wider active travel proposals for George's Street/R132 to the north and south of the application site.

Figure 5.2: George's Square – computer-generated artistic impression.

5.13 The West Street area, together with George's Square, will be transformed to act as a new gateway/arrival space. The former West Gate will also be re-established in the urban landscape with the introduction of two bespoke freestanding Corten steel structures to mark its former location.

5.14 A new shared surface treatment is also proposed to the front of Barlow House with a level profile to provide a flexible space that can act as a new 'cultural' square and accommodate evening and/or weekend events.

5.15 The West Street area has also been designed to integrate with, and provide a seamless connection between, the new public plaza at George's Square to the north, the Medieval Wall character area to the south and the Old Abbey Lane character area to the southeast.

5.16 A computer-generated artistic impression of West Street is provided at **Figure 5.3** for context.

Figure 5.3: West Street – computer-generated artistic impression.

The Medieval Wall Character Area

5.17 This area has been designed to provide a renewed focus on the upstanding remains of the former medieval town wall so that is becomes an important and celebrated historical artefact in Drogheda's urban landscape. The area will incorporate a mix of high quality soft and hard landscaping interventions to deliver a medieval garden feel and an enhanced user experience.

5.18 The area has also been designed to integrate with, and provide a seamless connection between, George's Square, West Street and the Riverfront character areas and will incorporate a bespoke universally accessible raised wooden walkway as well as a more direct ground level pedestrian path as a secondary route.

5.19 A new water feature within George's Square will continue into and through this character area as a narrow and shallow rainwater channel terminating within a new rainwater retention pond SuDS feature which will enhance the sustainability credentials of the area. During normal operation, water will soak to ground in situ, but during periods of heavy rainfall it will overflow into a pipe that is connected to a nearby storm drain.

5.20 **Figure 5.4** below presents a computer-generated artistic impression of this area.

Figure 5.4: Medieval Wall – computer-generated artistic impression.

Old Abbey Lane Character Area

5.21 The Old Abbey Lane character area comprises lands located within Old Abbey Lane, the adjoining areas of Father Connolly Way and a small area to the rear of No. 56/57 West Street.

5.22 The proposals for this character area have been designed to sensitively and respectfully celebrate its rich history including the upstanding remains of the Old Abbey [Abbey of St Mary d'Urso (LH024-041011)] including part of the nave, chancel, the west gable of the north aisle and the central bell-tower.

5.23 A new freestanding Corten steel canopy will be constructed within, but offset from, the remains of the Old Abbey to create a flexible and covered outdoor space which can be used for a variety of culture, arts and community events/performances. The freestanding west gable ruin will be reinstated with sensitive maintenance and repair works with spacing around the gable enabling it to act as an important focal point.

5.24 A new enlarged 'Abbey Square' public realm area will also be created with new tree planting, hard landscaped and public seating areas. A section of the wall located between Old Abbey Lane and Father Connolly Way will be demolished to create a new direct physical and visual link to/from West Street/Father Connolly Way/Old Abbey Lane.

5.25 A freestanding Corten steel sign will also be erected at the western entrance to Old Abbey Lane as a piece of bespoke architecture which enhances legibility and provides a unique branding opportunity.

5.26 **Figure 5.5** below presents a computer-generated artistic impression of this area.

Figure 5.5: Computer generated/artistic impression of Old Abbey Lane

The Riverfront Character Area

5.27 The Riverfront character area comprises lands located along the northern bank of the River Boyne including the underpass of the Bridge of Peace and part of Father Connolly Way.

5.28 This area has been designed to revitalise the northern embankment of the River Boyne with a strong focus on delivering improved connectivity and permeability in the area as well as with the wider town centre. The rich natural and built heritage in the area will be celebrated and new public realm improvements will create an attractive riverfront setting with enhanced functionality and amenity.

5.29 A new freestanding Corten steel pavilion will be erected over a new hard landscaped promenade area to provide a bespoke piece of urban architecture in the area and create a new covered and flexible outdoor space which can be used for a variety of social and cultural uses/events.

5.30 A new pedestrian boardwalk will be constructed along the riverfront with new seating areas to enhance accessibility and enjoyment of this area. A segregated two-way cycle path will also be constructed which will integrate with existing cycle infrastructure along St. Dominick's Bridge to enhance active travel credentials in area and which can tie into future phases of a wider cycle network along the River Boyne.

5.31 The natural soft landscaped areas will be enlarged as much as possible with existing trees retained and new trees planted to enhance biodiversity value in the area. New high quality hard landscaping improvements will also be provided including a shared surface treatment along Father Connolly Way and a Corten steel ground insert delineating the location of the former town wall.

5.32 **Figure 5.6** below presents a computer-generated artistic impression of this area.

Figure 5.6: Computer generated/artistic impression of the Riverfront

The Adjoining Streets and Lanes

5.33 The adjoining streets and lanes comprise Fair Street; Scholes Lane; Narrow West Street; Patrickswell Lane; and Dominick Street.

5.34 These area have been included as part of the application site as they form part of the wider Westgate Vision Area and have a direct physical relationship/connection with the abovementioned character areas.

5.35 These areas have been designed to align, and be consistent, with the proposed design language and treatment for the abovementioned character areas to ensure a holistic design approach throughout the Westgate 2040 area and to deliver a consistent, complementary, functional and safe built environment with a harmonious look and feel.

5.36 A unique wayfinding concept is proposed for these areas which incorporates a Corten steel ground insert flush with the street surface to create an inclusive trail which guides people through the area and towards the new public realm, bespoke architecture and landscaping interventions.

5.37 The pedestrian will be prioritised as much as possible within these areas and new public realm improvements will include rationalised parking and footpath areas, new high quality hard landscaping, tree planting and soft landscaping, moveable street planters with benches and new ambient lighting such as festoon lighting.

5.38 These areas will align with the proposed design language and treatment for the abovementioned key character areas to ensure a holistic design approach and to deliver a consistent, complementary, harmonious, functional and safe built environment throughout.

Construction Phase and Construction Works

5.39 Subject to the allocation of funding, land acquisition and the grant of planning approval, it is expected that construction can commence in 2024. However, it should be noted that the programme for construction will be determined as and when funding becomes available. Whilst at this stage it is too early to prepare a detailed Construction Method Statement, the following steps are anticipated in this process to be required:

- Pre-Construction Surveys;
- Site Clearance (including archaeological monitoring, removal of hazardous material, temporary prop works);
- Pavement slab / asphalt removal;
- Drainage and services installation;
- Construction of Pavilion Building;
- Road/street construction;
- Traffic management;
- Hard landscaping;
- Soft Landscaping, street furniture, ECV;
- White lining, signage;
- Finishes.

Construction Management

5.40 Details of the predicted impacts and mitigation measures associated with the construction of the proposed development are included within the relevant chapters of this EIAR. In general, disturbance from construction works will include various activities comprising:

- Site clearance and preparatory works;
- Diversion of services;
- Demolition of buildings and structures;
- Noise and vibration from plant;
- Excavation and fill operations;
- Stockpiling and handling;
- Construction Traffic; and
- Duration and timing of the construction phase.

5.41 During the construction phase, the methods of working will comply with all relevant legislation and best practice in reducing the environmental impacts of the proposed works. By their nature, construction phase impacts will be short-term and localised. These impacts will be reduced as far as practicable through compliance with the mitigation measures identified within this EIAR and the relevant industry standards and guidelines.

5.42 A Preliminary Construction Environmental Management Plan (pCEMP) has been prepared and has informed this assessment. The pCEMP which includes procedures for monitoring the effectiveness of the environmental protection measures is available in Volume 3 of the EIAR. The pCEMP will be updated by the Contractor following their appointment, and in advance of the commencement of construction.

Construction Operating Hours

5.43 The operating hours will be agreed with the Local Authority prior to the commencement of the proposed works and will be specified in the CEMP. Hours will generally be limited to 7am to 7pm Monday to Friday and 8 – 2 pm on a Saturday. Construction works outside these hours will be limited, e.g., health and safety reasons.

Temporary Facilities

5.44 The construction phase will require the provision of a temporary Contractor's Compound and welfare facilities. A temporary connection to water supply and foul sewer will be provided to accommodate these welfare facilities. Temporary car parking for contractors' vehicles will be provided within the temporary compound.

6. Consultation

Introduction

6.1 This Chapter describes the consultation process in respect of the proposed project. The planning application is submitted to An Bord Pleanála by LCC under Sections 175 and 177AE of the Planning and Development Act, 2000 (as amended).

6.2 Statutory consultation prior to submission of the planning application is not required under Sections 175 and 177AE, however the applicant acknowledges the importance of effective public participation in large scale Council regeneration projects. On this basis extensive non-statutory community consultation has been undertaken. The consultation process is described in detail below.

Non-Statutory Consultation

6.3 In May 2021 LCC undertook preliminary engagement and consultation for the preparation of a vision for the regeneration of the 'Westgate 2040' project area.

6.4 As part of the design development process, stakeholders and members of the community were engaged to understand their needs and wants in relation to the area and to gain feedback on design principles, as part of a co-design process.

6.5 Community and stakeholder engagement was carried out during the public health crisis and varying levels of restrictions applied at different stages of engagement, which may have influenced both the volume and type of responses received.

6.6 The survey was live during the 'circuit breaker' lockdown during which time the public was advised to stay at home and limit their contact with people outside of their household 'bubble'. The public information webinars took place shortly after restrictions were eased and the general public could meet with other households outdoors.

6.7 To inform this work a consultation survey was carried out online. A total of 458 completed submissions were received from a diverse range of stakeholders with an interest in the Westgate area or connections within Drogheda in general.

6.8 The survey was hosted online at www.westgatevision.ie and was live for a fortnight between Monday 26 April and Monday 31 May 2021. The survey sought to gather participant feedback on specific potential uses (including economic, enterprise, and residential), existing key features of the site, and to road-test initial design principles.

6.9 Of the completed responses, 23% of respondents primarily use Drogheda for shopping, 22% use restaurants/cafes, 17% use public services, 16% use the town for leisure, 12% live in Drogheda, 8% work in Drogheda and 2% own a business.

6.10 The feedback demonstrated clear demand and support for a safer and more secure town centre, more outdoor dining and gathering areas, more amenity space and a reduction in traffic in the area.

6.11 There was a strong preference for reducing traffic, with 45% of respondents strongly agreeing with the creation of a car-free zone within Westgate. There was also support for pedestrianisation and improved road safety in the area.

6.12 In addition to reducing traffic, respondents were supportive of cleaning and revealing the Drogheda town walls (44%), further developing a heritage trail (37%) and creating an arrival structure for the town (11%).

6.13 Respondents outlined strong support for creating more community and civic spaces in Westgate, with the most popular responses being a market space (26%), an outdoor meeting/seating area (26%), and an outdoor performance and festival venue (23%).

6.14 Having considered the combined results of the qualitative and quantitative data generated from the survey, a number of very clear themes emerged and demonstrate strong community sentiment. This sentiment was further evidenced in the online breakout room discussions and additional stakeholder consultation meetings. The themes are:

- Maximise the potential of and protection for historic assets;
- Improve traffic congestion and flow, centralised parking and car-free zones;
- Improve safety and a sense of arrival;
- Develop a focus on culture;
- Maximise tourism potential;
- Create structured outdoor space and amenities; and
- Address underutilisation of the River Boyne.

Statutory Consultation

6.15 This planning application is submitted directly to An Bord Pleanála for assessment. As part of this planning application process, the following consultation will be undertaken:

- Placing of a public notice in a local newspaper;
- Placing a copy of the application and all accompanying documents on display in the offices of Louth County Council, and on the Council's website; and
- Issuing details of the planning application and a copy of the EIA Report to the Department of Department of Housing, Local Government and Heritage's EIA Portal.

6.16 Pursuant to Sections 175(4)(b) and 177AE(4)(b) of the Planning and Development Act, 2000 (as amended), the following prescribed authorities are also being notified directly in respect of this planning application:

- An Chomhairle Ealaíon

- An Taisce
- Fáilte Ireland
- Heritage Council
- Department of Housing, Local Government and Heritage
- Transport Infrastructure Ireland
- Uisce Éireann
- Minister for Tourism, Culture, Arts, Gaeltacht, Sport and Media
- National Transport Authority
- Inland Fisheries Ireland

6.17 Any submissions arising from the consultation and notification process will be submitted directly to An Bord Pleanála and considered as part of the planning application assessment and decision-making process.

7. Population & Human Health

Introduction

7.1 Article 3 of Directive 2014/52/EU states the following:

> *'The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:*
>
> *(a) population and human health; …'*

7.2 In accordance with the Directive 2014/52/EU, this Chapter evaluates the likely direct and indirect significant effects of the proposed project (as defined in Chapter 5 of this EIAR) on population and human health during both the construction and operational phases.

7.3 Where any associated and inter-related potential likely and significant effects are identified with respect to other environmental factors, these are referred to and the reader is directed to the relevant chapter of this EIAR for a more detailed consideration.

Methodology

7.4 The EPA's 2022 Guidelines advise that '*The recitals to the 1985 and 2011 Directives refer to 'Human Health' and include 'Human Beings' as the corresponding environmental factor. The 2014 Directive calls this factor 'Population and Human Health*".

7.5 Section 1.3.1 of the European Commission's (EC) 'Guidance on the preparation of the Environmental Impact Assessment Report (2017)'[10] states:

> *"Human health is a very broad factor that would be highly Project dependent. The notion of human health should be considered in the context of the other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study. In addition, these would concern the commissioning, operation, and decommissioning of a Project in relation to workers on the Project and surrounding population."*

7.6 The EPA's 2022 Guidelines confirm that there is no specific guidance on the meaning of the term 'Human Health' in the context of the amended Directive, but notes that '*…the same term was used in the SEA Directive (2001/42/EC)*'… and that the '*…Commission's SEA Implementation Guidance states - The notion of human health should be considered*

[10] https://environment.ec.europa.eu/law-and-governance/environmental-assessments/environmental-impact-assessment_en

in the context of the other issues mentioned in paragraph (f)'. *(Paragraph (f)[11] lists the environmental factors including soils, water, air etc)*'.

7.7 The EPA's 2022 Guidelines note that this approach is '…*consistent with the approach set out in the 2002 EPA EIS Guidelines where health was considered through assessment of the environmental pathways through which it could be affected, such as air, water or soil…*'.

7.8 In light of this, the EPA's 2022 Guidelines advise that the following approach should be adopted in an EIAR:

> *'In an EIAR, the assessment of impacts on population & human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in the EIAR e.g. under the environmental factors of air, water, soil etc...*
>
> *Assessment of other health & safety issues are carried out under other EU Directives, as relevant. These may include reports prepared under the Industrial Emissions, Waste Framework, Landfill, Strategic Environmental Assessment, Seveso III, Water Framework Directive, Floods or Nuclear Safety Directives. In keeping with the requirement of the amended Directive, an EIAR should take account of the results of such assessments without duplicating them.'*

7.9 The EPA's Advice Notes on Current Practice (in the preparation of Environmental Impact Statements) dated 2003 states that the population and human health section of an EIAR is '…*a broad ranging section which covers the existence, activities and wellbeing of people, usually considering people as groups or 'populations*".

7.10 The EPA's Advice Notes also advise that:

> '*While most developments by people will affect other people, the Environmental Impact* [Assessment Report] *concentrates on those topics which are manifested in the environment, such as new land uses, more buildings or greater emissions. Issues such as employment, commercial competition, zoning and other social and economic issues are dealt with by more specific instruments (such as the Planning Acts)*.'

7.11 The EPA's 2022 Guidelines reinforce this advice by confirming that:

> '*The transposing legislation does not require assessment of land-use planning, demographic issues or detailed socioeconomic analysis. Coverage of these can be provided in a separate Planning Application Report to accompany an application for planning permission. This should be avoided in an EIAR, unless issues such as economic or settlement patterns give rise directly to specific new developments and associated effects'*.

[11] Section 5.2.6 of 'Implementation of Directive 2001/42 on the assessment of the effects of certain plans and programmes on the Environment'.

7.12 The EPA's 2022 Guidelines identify the following topics for consideration with respect to 'Population and Human Health':

- 'Employment
- Settlement patterns
- Land use patterns
- Baseline population
- Demographic trends
- Human health (considered with reference to other headings, such as water and air)
- Amenity (e.g. effects on amenity uses of a site or of other areas in the vicinity may be addressed under the factor of Landscape)'.

7.13 There are numerous inter-related environmental factors addressed throughout this EIAR which are of relevance to 'Population and Human Health' including potential significant effects on townscape and visual impact, archaeology and cultural heritage, air quality and climate, noise and vibration, water, land and soils, material assets including site services and traffic and transport impacts.

7.14 This Chapter has considered other assessments undertaken as part of the EIAR including those relating to Air Quality and Climate, Noise and Vibration, Traffic, etc and their accompanying/separate reports/surveys as well as the preliminary Construction Environmental Management Plan. Where these topics are dealt with in further detail elsewhere in this EIA Report, the relevant chapters have been cross referenced in this Chapter. For detailed reference to particular environmental topics please refer to the corresponding chapter of the EIAR.

7.15 The consideration of effects in this chapter follows the methodology and terminology contained in the EPA's 2022 Guidelines, as set out in Chapter 2 of this EIAR.

7.16 Census 2022 data is primarily used to inform the baseline/receiving environment with respect to population and human health. Census 2016 data is also utilised where certain information is not available within the Census 2022 data. Please refer to the 'References' section at the end of this Chapter for a list of all of the relevant guidelines and sources of information that have been used and considered in preparing this Chapter.

Assessment of Significance & Sensitivity

7.17 The assessment of significance is a professional appraisal based on the sensitivity of the receptor and the magnitude of the effect. Within any area, the sensitivity of individuals in a population will vary. As such, it would be neither representative of the population, nor a fair representation of the range of sensitivities in a population were an overall sensitivity classification assigned to the population in question. As such, the precautionary principle has been adopted for this assessment, which assumes that the population within the study area is of a uniformly high sensitivity.

Magnitude of Impact

7.18 The magnitude of predicted impacts has been quantified in this assessment using the terms outlined in **Table 7.1** below.

Table 7.1: Magnitude of Predicted Impacts

Magnitude	Description of Magnitude
High	Change in an environmental and/or socio-economic factor(s) as a result of the Proposed Development which would result in a major change to existing baseline conditions (adverse or beneficial)
Medium	Change in an environmental and/or socio-economic factor(s) as a result of the Proposed Development which would result in a moderate change to existing baseline conditions (adverse or beneficial)
Low	Change in an environmental and/or socio-economic factor(s) as a result of the Proposed Development which would result in a minor change to existing baseline conditions (adverse or beneficial)
Negligible	Change in an environmental and/or socio-economic factor(s) as a result of the Proposed Development which would not result in change to existing baseline conditions at a population level, but may still result in an individual impact (adverse or beneficial)
No Change	No change would occur as a result of the Proposed Development which would alter the exiting baseline conditions (adverse or beneficial)

Significance of Effects

7.19 The assessment of significant effects in this assessment is a professional appraisal and has been based on the relationship between the magnitude of impacts and the sensitivity of the receptor. **Table 7.2** below provides a matrix on the measure of the significance of effects as determined by the relationship between the magnitude of impact and the sensitivity of receptors.

Table 7.2: Significance of effects and the sensitivity of the receptor

		Magnitude of Impact			
		Negligible	Low	Medium	High
Sensitivity of Receptor	Negligible	Negligible	Negligible or Minor	Negligible or minor	Minor
	Low	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
	Medium	Negligible or Minor	Minor	Moderate	Moderate or Major
	High	Minor	Minor or Moderate	Moderate or Major	Major

Study Area

7.20 In order to assess the likely significant impacts of the proposed development on population and human health, we undertook an analysis of the available Census data, relating to the economic, demographic, and social characteristics of the Local Authority (LA) area within which the subject site is located.

7.21 The application site is located in County Louth within the southern area of the electoral division of Fair Gate (ED 147014). **Figure 7.1** identifies the general location of the application site with a red oval and the extent of the Fair Gate ED with a blue line.

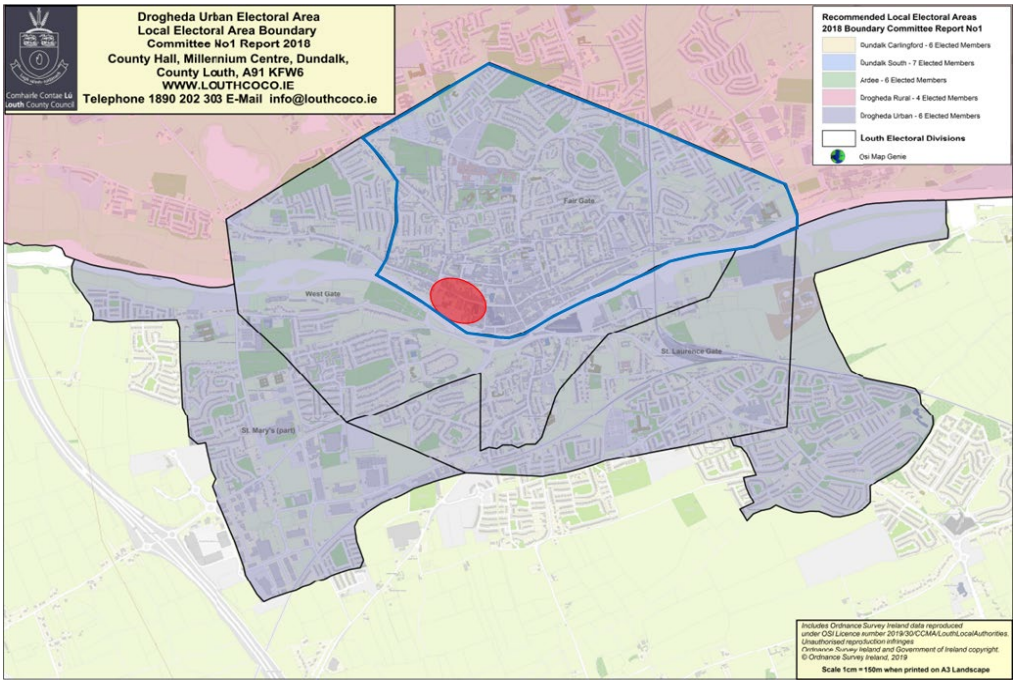

Figure 7.1: Application Site and Study Area [Source: LCC EA Maps[12]]

7.22 Noting the nature of the proposed development, i.e. urban regeneration and public realm improvement works, the area selected for the assessment of the impact on human health is the general extent of Drogheda Town, i.e. the areas shaded in purple in **Figure 7.1** above, which includes the following electoral divisions (EDs):

- Fair Gate - ED 147014
- West Gate - ED 147034
- St. Lawrence Gate - ED 147039
- St Mary's (Part of) – ED 147043

7.23 It is noted that part of Drogheda Town's urban footprint is located within the St. Peters ED (147035), however, this is quite a large ED which mainly comprises rural/agricultural

[12] https://www.louthcoco.ie/en/services/electoral-register/electoral-area-maps-polling-scheme/maps-of-local-electoral-areas/

areas. Noting the predominantly non-urban nature of St. Peter's ED, our assessment does not include an analysis of this ED.

Baseline/Receiving Environment

7.24 A detailed description of the physical characteristics and context of the application site and the surrounding/wider area is provided at Chapter 3 of this EIAR. This section provides information on the baseline/receiving environment with respect to the following:

- Economic and Employment Activity
- Settlement and Land Use Patterns
- Population
- Demographic Trends
- Housing
- Community Infrastructure
- Human Health
- Amenity (including Tourism)

7.25 This Chapter does not seek to duplicate or repeat the baseline/receiving environment information contained in these specialist Chapters. However, in line with the relevant EIAR guidance, the assessment section with respect to effects on population and human health refers to environmental factors for which human health effects might occur, such as: noise, water, air quality, and etc.

7.26 A 'Do Nothing' scenario is also included as part of the assessment on population and human health to demonstrate the potential effects on the baseline scenario if the proposed project is not implemented.

7.27 An assessment of the baseline environment and associated key factors are outlined in detail below.

Economic and Employment Activity

7.28 This section provides information on the economic and employment activity context for Ireland (national context), County Louth (county context) and the following Electoral Divisions (local context):

- Fair Gate - ED 147014
- West Gate - ED 147034
- St. Lawrence Gate - ED 147039
- St Mary's (Part of) – ED 147043

National Context

7.29 The Economic and Social Research Institute's (ESRI) 'Quarterly Economic Commentary - Autumn 2023[13], dated October 2023, predicts Gross Domestic Product (GDP) to shrink by -1.6% and Modified Domestic Demand (MDD) to grow by 1.8% in 2023. The levels of growth predicted for GDP and MDD in 2023 are lower than the growth levels experienced in 2022, i.e., 9.4% for GDP and 9.5% for MDD.

7.30 The CSO's Quarterly Labour Force Survey for Q3 2023[14] (published 23 November 2023), indicates that an estimated 2,655,900 persons were in employment in Q3 2023, up 4.0% (101,600) from 2,554,300 in Q3 2022.

7.31 The survey indicates that the number of persons aged 15-74 years who were unemployed increased by 9,500 (+7.9%) to 128,600 in the year to Q3 2023.

7.32 ESRI's 'Quarterly Economic Commentary - Autumn 2023 reported an unemployment rate of 4.1% as a percentage of the Irish labour workforce. It is expected to average at 4.0% in 2024, which is below the 2019 pre-pandemic rate of 5%.

County / Town Context

7.33 A total of 55% of people in Drogheda (i.e. 19,291 of 35,128) above the age of 15 state that their principle economic status is 'At Work', which is slightly higher than the county proportion of 53%, identified in **Table 7.3**.

7.34 Both Drogheda and Co. Louth have a slightly lower percentage of people stating to be 'At Work' when compared with the national average of 56%. County Louth also has a higher proportion (6.5%) of unemployed population when compared with the national average of 5.1% (see **Table 7.3**).

Table 7.3: Socio-Economic Status of Population Aged 15+ (Source: CSO 2022)

Economic Status	County Louth	% Total	Ireland	% Total
At work	59,140	53%	2,320,297	56%
Unemployed looking for first regular job	1,265	1.1%	34,526	0.8%
Short term Unemployed	2,157	2%	70,217	1.7%
Long Term Unemployed	3,820	3.5%	106,059	2.6%
Student	12,583	11.4%	459,275	11%
Looking after home/family	7,888	7.1%	272,318	6.6%
Retired	17,245	16%	657,790	16%

[13] https://www.esri.ie/publications/quarterly-economic-commentary-autumn-2023
[14] https://www.cso.ie/en/releasesandpublications/ep/p-lfs/labourforcesurveyquarter32023/

Economic Status	County Louth	% Total	Ireland	% Total
Unable to work due to permanent sickness or disability	5,740	5.2%	189,308	4.6%
Others	771	0.7%	27,062	0.7%
Total	**110,609**	**100%**	**4,136,852**	**100%**

7.35 The Louth County Development Plan 2021 – 2027 states that "*With over 35,000 jobs in the County and a Jobs:Workforce ratio of 0.71 recorded in Census 2016, the economic benefits associated with the strategic location of the County, and in particular the strength of the employment base, are apparent*".

7.36 Existing employment in Drogheda is concentrated in Boyne Business Park, on the north-eastern side of the town, along both banks of the River Boyne to the east of the town, and the Donore Road area to the south-west. There are also a number of independent businesses operating in the town, with a strong local services sector located on West Street, and Drogheda Retail Park to the south-west of the town. Drogheda performs a key employment role, where, in 2016 there was a Jobs: Workforce ratio of 0.76, with in excess of 12,000 jobs in the town. This was 0.05 higher than the Jobs: Workforce ratio in the wider county at the time.

7.37 The CSO Live Register is a monthly measurement of the number of people (with some exceptions) registering for Jobseekers Benefit (JB) or Jobseekers Allowance (JA) or for various other statutory entitlements at local offices of the Department of Employment Affairs and Social Protection (DEASP). This data source, whilst not an unemployment register, can provide a general indication of recent employment trends and economic activity in the local area.

7.38 Live Register figures are available at a national, county or local level, with respect to the jurisdiction of DEASP welfare offices. We note that the number of people on the register decreased at all levels in the recent 3-month (August 2023-October 2023) period, with figures for the Drogheda office largely reflecting the nationwide pattern as per **Table 7.4** below:

Table 7.4: Persons on Live Register by Month and Area, 2023 (Source: CSO LRM07 /LRM15)

Area Definition	2023.08	2023.09	2023.10
DEASP Offices – Drogheda	3,500	3,305	3,250
County Louth	7,915	7,498	7,384
Ireland	186,396	174,150	169,933

7.39 The below data in **Table 7.5** is obtained from CSO PxStat (CIA02), this demonstrates the levels of total income per person in County Louth is 13% lower as of 2020 than the

national average. Total Income per person increases 6% in Co. Louth between 2018 and 2020 whereas it increases 8% nationally between 2018 and 2020.

7.40 A similar pattern of income distribution is observed in data on disposable income per person, with a light adjustment for the lower cost of living in the area (with disposable income being 8% lower than that for the state in 2020). The trending difference between the disposal income average for Louth increased gradually between the study years.

Table 7.5: Income per person (Source: CSO RAA02)

Area	Income	2018	2019	2020
Ireland	Total Income per Person (€)	30,514	31,969	32,968
	Disposable Income per Person (€)	21,071	22,103	23,461
Louth	Total Income per Person (€)	27,394	28,186	29,051
	Disposable Income per Person (€)	19,879	20,266	21,671

Settlement and Land Use Patterns

Drogheda Settlement Pattern

7.41 Drogheda is one of the oldest and most distinguished urban centres in Ireland with a history stretching back to its founding in 1194. The Borough as it is known today, came into existence in 1415 when the two separate settlements previously operating independently on the north and south sides of the Boyne River, were united by a single constitution and local authority. Drogheda went on to become one of the largest walled towns in Ireland for a time surpassing the size even of Dublin.

7.42 Drogheda has an historical legacy of employment based on traditional industries such as linen and textiles, brewing, shipping and manufacturing. Drogheda today, is one of the most substantial urban settlements in the State in terms of population and physical extent. Drogheda ranks as an equal partner in the title of Ireland's largest town with its neighbour to the north, Dundalk.

7.43 The settlement pattern of Drogheda has also been shaped and defined by the River Boyne which flows west-east through the town centre as well as its former walled town status. The more densely urbanised historic centre of the town is on the north bank of the river, with the south bank characterised by a lower density, largely residential settlement pattern. In addition, there is an extensive land bank of employment, residential, and community zoned lands in the Northern Environs of the Town which will form part of the emerging Joint Urban Area Plan for Drogheda.

7.44 West Street is an important element of the town's historic urban form and runs through the core of the town. This street forms a strong spine through the core of the historic town and provides a linear form to the townscape north of the River Boyne.

7.45 Drogheda boasts a wide range of services and amenities including an extensive convenience and comparison retail portfolio in town centre and edge of centre locations, a regional hospital at Our Lady of Lourdes, primary and secondary schools, an adult education facility, community centres, play parks, and open spaces, as well as a range of

local and international businesses, production, and manufacturing facilities located in the business and enterprise parks in the town.

7.46 Building heights in Drogheda are predominantly two to four storeys in the town centre, and one to two storeys in residential areas. However, it is noted that a new 11 storey residential scheme is currently under construction to the west of the application site.

Land Use Patterns

7.47 The Louth County Development Plan 2021-2027 (LCDP) sets out the land use zonings for the site. **Figure 7.2** below is an extract of the 'Drogheda Composite Map' which accompanies the LCDP. The general extent of the application site is identified by a dotted red line.

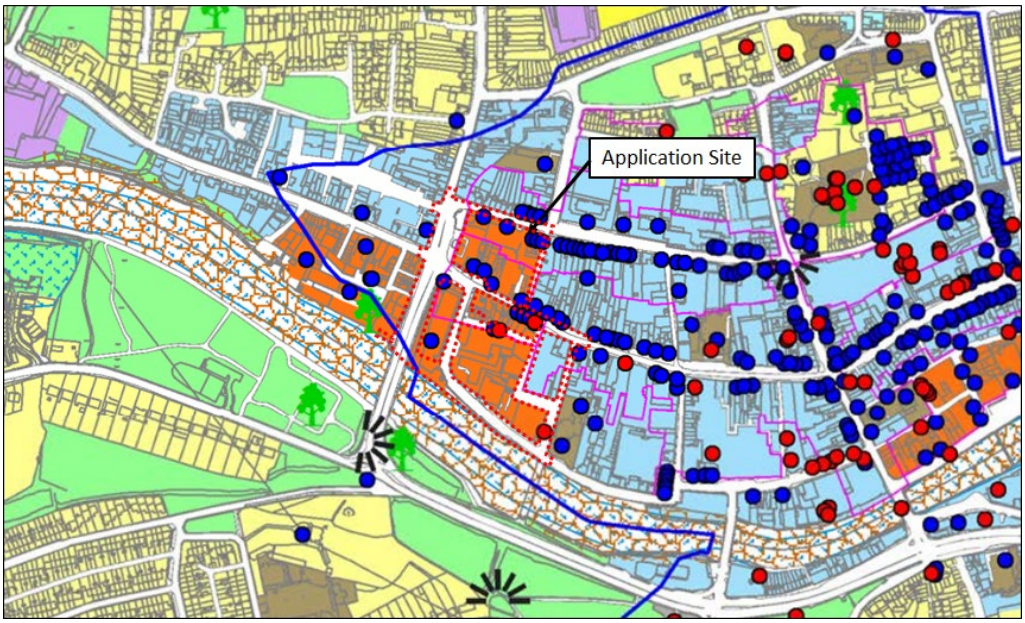

Figure 7.2: Extract from Drogheda Composite Map from the LCDP 2021 – 2027

7.48 The application site principally comprises public realm areas and public road/footpath areas, but it is noted that parts of the site are zoned 'D1 – Regeneration' (see orange hatching). The site also adjoins lands that are zoned 'B1 – Town Centre' and 'G1 - Community Facilities' but no works are proposed as part of this application to lands within the 'B1 – Town Centre' or 'G1 - Community Facilities' zoning.

7.49 The Zoning Objective for 'D1 – Regeneration' is '*To facilitate social, economic and physical regeneration and/or rejuvenation of an area or specific lands*'. The LCDP provides the following additional guidance for this zoning:

- '*The purpose of the 'Regeneration' zoning is* ***to encourage and facilitate opportunities for regeneration and place making***'.

- *The lands or areas are strategically located within settlements and consist of vacant or under-utilised buildings or land* ***with significant potential to stimulate the rejuvenation of an area or neighbourhood****.*

- *The potential uses of the lands in these zones are specific to the location of each area or piece of land and can include residential, commercial, business, retail, employment, or community uses.* ***The primary objective is to support regeneration, make a positive contribution to urban spaces, and improve quality of life for all'.*** [**our emphasis.**]

7.50 **Table 7.6** summarises the land uses which the LCDP considers to be a 'Generally Permitted Use' and an 'Open for Consideration' use with respect to the 'D1 – Regeneration' zoning.

Table 7.6: 'Generally Permitted' and 'Open for Consideration' Land Uses within the 'D1 – Regeneration' land use zoning

Generally Permitted Use	Taking account of the broad potential uses associated with these lands, it was considered more prudent to identify uses as 'Open for Consideration'.
Open for Consideration	Bank/Financial Institution, Business Enterprise Centre, Coffee Shop/Tea Room, Childcare Facility, **Community Facility**, Conference/Event Centre, **Cultural Facility**, Digital Innovation Hub/Co-working Space, Education Facility (Primary or Second Level), Education Facility (Third Level or Training Centre), E-Charging Facility, Health Care Centre, Healthcare Practitioner, High Technology Manufacturing, Home Based Economic Activities, Industry Light, Nursing Home, Offices, **Park/Playgrounds**, **Recreational/Amenity Open Space**, **Recreational/Sports Facility**, Residential, Residential Institution, Retirement Village, Restaurant, Science and Technology Based Enterprise, Service Station, Sheltered Accommodation, Shop, Shop (Convenience) ≥1,500m2 , Shop (Convenience) ≤1,500m2, Takeaway/Fast Food Outlet, Telecommunications Structures, Tourist Facility, Traveller Accommodation, Vehicle Servicing/Maintenance Garage, Veterinary Surgery.

[**our emphasis.**]

7.51 The LCDP identifies 'Community Facility', 'Cultural Facility', 'Park/Playgrounds' and 'Recreational/Amenity Open Space' as 'Open for Consideration' land uses within the 'D1-Regeneration' zoning.

7.52 The proposed development has been carefully designed to align with the 'D1-Regeneration' zoning objective, i.e. 'To facilitate social, economic and physical regeneration and/or rejuvenation of an area or specific lands' and is therefore considered to represent a compatible and compliant land use.

7.53 With respect to land use patterns within the country, the latest Economic and Social Research Institute's (ESRI) Quarterly Economic Commentary (Spring 2023) notes that:

"Given the level of commencements in 2022, we forecast 27,000 new housing completions in 2023. For 2024, due to the moderation in some of the constraining

factors, and the continued State commitment to housing provision, we expect a rebound to 31,000 new housing units for 2024. However, there are numerous risks on the downside to these forecasts (such as the interest rate increases, broad financial stress and further inflationary factors)." [ESRI Economic Commentary (Spring 2023)].

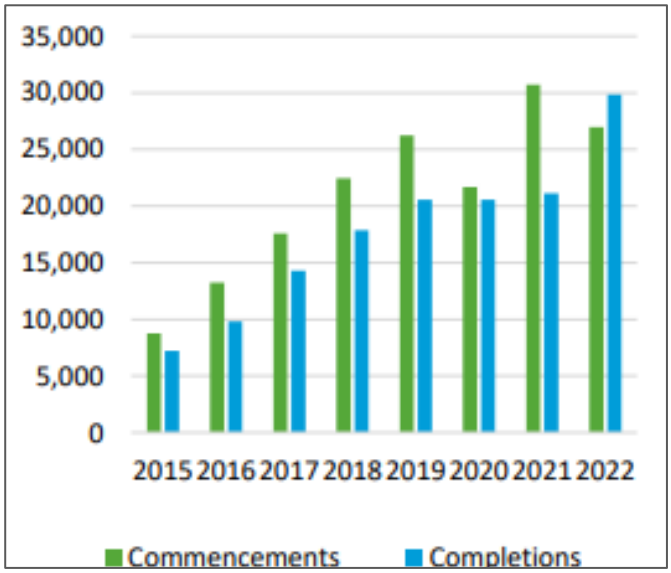

Figure 7.3: Housing Completions and Commencements Trend (Source: ESRI Economic Commentary, Spring 2023)

7.54 The quarterly profile of completions indicates a slow-down in year-on-year growth from 2017 to 2021, with a notable uptick in 2022. The outlook beyond 2023 is more uncertain but a number of factors are pointing towards an uptick. Data on the challenges facing construction enterprises collected by the European Commission indicate that fewer firms are reporting difficulties in sourcing raw materials or experiencing labour to be a constraint on activity.

7.55 The vacancy rate has decreased from 2016 to 2022 at both national and local authority levels. In 2016, the vacancy rate in Louth for all households was 7.7% and the vacancy rate nationally was 9.1%. In the most recent census, Census 2022, the vacancy rate for all households in Louth fell to 6.5% and nationally to 7.7% (Source CSO Census 2022: F2015).

Population

7.56 The most recent census of the population in Ireland was carried out by the CSO on the 3 April 2022, for which data will be released throughout 2023. The most recent demographic data available for the State is based on this.

7.57 The census collates data for analysis at State, region, county, city, town, and electoral division level. The census information from the 2022 Census on population, age profile, employment, and social class, has been reviewed and analysed.

7.58 **Table 7.7** denotes the population change for the State, County Louth and the Study Area EDs for the census years 2016 and 2022 (CSO Census 2022 – Preliminary Results). The latest census data shows that the population of the study area increased by 2.5%

between the years 2016 and 2022 compared with an increase of 8.1% nationally. The average rate of population growth across the County was an increase of 8.4%.

7.59 **Table 7.7** demonstrates that Louth had a higher population increase than the state average which is an indication of its heightened economic role, particularly noting Drogheda's location along the Dublin-Belfast Economic Corridor and the proximity of Drogheda to Dublin airport and Dublin City Centre.

7.60 The Census 2022 results confirm that the population of Ireland has exceeded 5 million for the first time since 1851 and noted that all counties in the State experienced an increase in population between 2016 and 2022.

Table 7.7: Population Trends at State, County Council and ED level (Source: CSO 2016 & 2022).

Study Area	2016	2022	% Change 2016-22
Ireland	**4,761,865**	**5,149,139**	**+8.1**
Louth	**128,884**	**139,703**	**+8.4**
Fair Gate ED	10,424	11,007	+5.6
West Gate ED	6,305	6,549	+3.9
St. Laurence Gate ED	4,068	4,227	+3.9
St Mary's (Part of) ED	6,859	6,752	-1.6
Study Area Total	**27,656**	**28,537**	**+3.1**

Demographic Trends

7.61 This section provides an overview of the following demographic trends to help inform the baseline/receiving environment with respect to population and human health:

- Age Profile
- Deprivation
- Education
- Income
- Commuting Patterns

Age Profile

7.62 With respect to the population breakdown of the study area, the age profile of the study area is similar to that of the wider state average, as shown in **Table 7.8**. It is noted that the study area has a slightly lower percentage of 0-14 year olds compared to the national average but otherwise is consistent with the national demographics.

Table 7.8: Comparison of Age Profile of State and Study Areas (Source: CSO 2022 F5002).

Age Groups	Study Area		Ireland	
Population	Population	% Total	Population	% Total
0-14 years	5,211	18%	1,004,108	20%
15-24 years	3,463	12%	630,901	12%
25-34 years	3,597	13%	616,741	12%
35-44 years	4,427	16%	786,122	15%
45-54 years	4,000	14%	706,443	14%
55-64 years	3,410	12%	572,331	11%
65+ years	4,429	16%	768,233	15%
Total	28,537	100%	5,084,879	100%

7.63 **Table 7.9** also shows that the study area generally has a slightly lower proportion of the population who are dependents when compared with the state as a whole.

Table 7.9: Age Dependency of State and ED Study Areas (Source: CSO 2022)[15]

Enumeration Area	Population	Dependent Population (0-14 & 65+)	% Dependent
Ireland	5,084,879	1,772,341	35%
Study Area	28,583	9,640	34%

Deprivation

7.64 Regarding the socio-economic status of local residents, the Pobal Deprivation Index utilises CSO statistics to analyse areas with high levels of affluence or disadvantage throughout the state. This Index draws on data from censuses and combines three dimensions of relative affluence and deprivation: Demographic Profile; Social Class Composition; and Labour Market Situation.

7.65 **Figure 7.4** below shows a graphical representation of how the concepts of Demographic Growth, Social Class Composition and Labour Market Situation are measured by ten key socio-economic indicators from the Census of Population.

[15] Dependents are calculated as those outside of the 19-64 years age bracket.

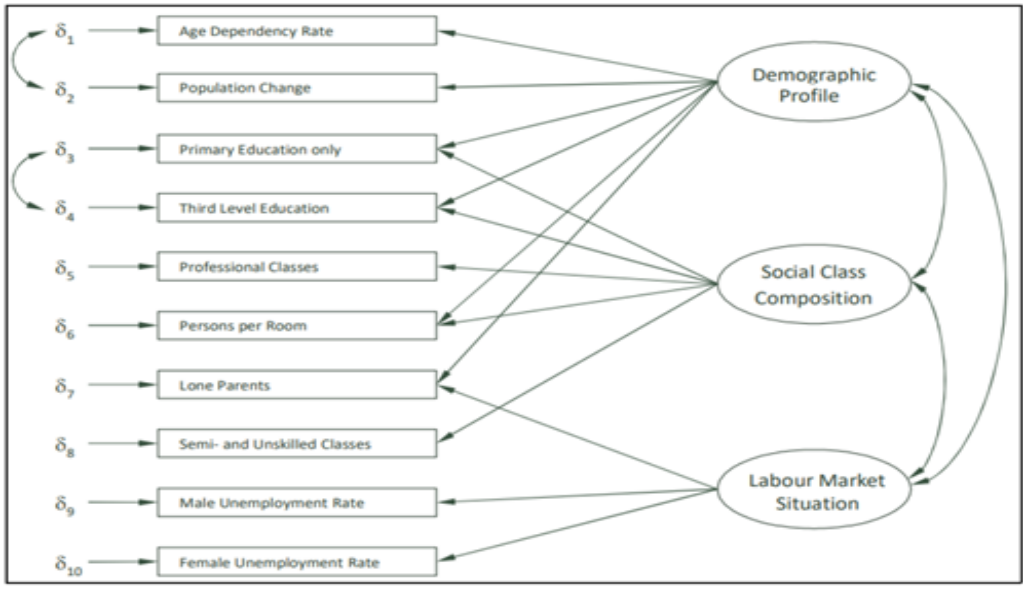

Figure 7.4: Basic Model of the Pobal HP Deprivation Index

7.66 For the purposes of this EIA Report, the Relative Index Score is considered as the measure for deprivation, as these Relative Index Scores are rescaled such that the mean is 0 and the standard deviation is 10 at each census wave. This allows for the provision of descriptive labels with the scores, which are grouped by standard deviation as seen in **Table 7.10** below.

Table 7.10: Labelling of Relative Index Scores (Source: Pobal HP Deprivation Index 2022)

Relative Index Score	Standard Deviation	Label
Over 30	> 3	extremely affluent
20 to 30	2 to 3	very affluent
10 to 20	1 to 2	affluent
0 to 10	0 to 1	marginally above average
0 to -10	0 to -1	marginally below average
-10 to -20	-1 to -2	disadvantaged
-20 to -30	-2 to -3	very disadvantaged
Below -30	< -3	extremely disadvantaged

7.67 All of the ED's within the study area are identified as being marginally below average or disadvantaged in the deprivation index, along with Louth County Council's administrative area as a whole being classified as marginally below average, as shown on **Table 7.11** below.

7.68 The West Gate ED is identified as being the 'disadvantaged', having regressed from being 'marginally below average' in the 2016 census results. Fair Gate ED , St. Laurence Gate

ED, and St. Mary's (Part of) EDs, are all identified as being marginally below average. All of the EDs, bar St Mary's (Part of) ED, have experienced an increase in their deprivation index during the intercensal period between 2016 and 2022.

Table 7.11: Deprivation Indices (Source: Pobal 2022, based on CSO Census 2022 and Census 2016 data)

Area Definition	2016	2022
Louth County Council	-1.6 marginally below average	-3.59 marginally below average
Fair Gate	-7.2 marginally below average	-8.59marginally below average
West Gate	-9.0 marginally below average	-11.80 Disadvantaged
St. Laurence Gate	-1.1 marginally below average	-3.01marginally below average
St. Mary's (Part of)	-2.5 marginally below average	-2.45 marginally below average

Education

7.69 Census data showing the highest level of education attainment for key educational levels by people aged 15 and over living in the study area, County Louth and the state generally is presented in **Table 7.12**.

7.70 County Louth and the Study Area both have lower levels of people with undergraduate and postgraduate degrees compared to the national average. Both Co. Louth and the Study Area have higher levels of people with no formal education compared to the national average.

7.71 The study area has a high percentage of primary education attainment with 11.2% of people finishing education at Primary school level, 2.4% higher than the county level and 3.8% higher than the national level. The Study Area experiences similar levels of secondary and higher education attainment compared to the County levels. However, the Study Area has a lower level of people with undergraduate and postgraduate degrees compared to the national and County averages.

Table 7.12: Highest level of education in 2022 (all ages 15 and over) - Source: CSO

Area	No formal education	Primary Education	Secondary[16]	Higher Education[17]	Undergraduate Degree[18]	Postgraduate Degree[19]
Ireland	1.4%	8.9%	27.3%	16.2%	15.1%	8.3%
Louth	1.6%	10.6%	29.3%	16.6%	13.4%	6.0%
Study Area	1.4%	10.3%	22.5%	12.9%	9.4%	4.1%

[16] Lower secondary and Upper secondary

[17] Higher Certificate, Advanced certificate/completed apprenticeship or Technical/vocational training

[18] Ordinary bachelor's degree, Honours bachelor's degree

[19] Postgraduate degree or Ph.D

Income

7.72 **Table 7.13** demonstrates the levels of total income and disposable income per person in County Louth and the State during 2017, 2018 and 2019.

7.73 It is noted that the disposable income for persons in Louth (3.5% increase) has not increased at a similar rate to that of the state (7.1%).

Table 7.13: Income per Person (Source: CSO PxStat CIA02)

Area	Income	2017	2018	2019
State	Total Income per Person (€)	29,607	30,575	31,812
	Disposable Income per Person (€)	20,567	21,153	22,032
Louth	Total Income per Person (€)	26,937	27,547	28,156
	Disposable Income per Person (€)	19,624	20,010	20,314

Commuting Trends

7.74 Drogheda is located in a strategic location, less than 1 hour from Dublin and less than 1.5 hours from Belfast via the M1 motorway. Further to this, Drogheda benefits from regular train and bus connections to these cities and other key urban areas.

7.75 The study area experiences an overall net inflow of commuters travelling for work or education purposes, but it is noted that the West Gate, St. Laurence Gate and St. Mary's (Part Urban) EDs experience a net outflow of commuters. (Based on the 2016 Census, as Census 2022 figures are not yet available).

Table 7.14: Commuting Patterns of Local Residents, 2016. (Source: CSO 2016).

Local Electoral Divisions	Commuters Out	Commuters In	Net Flow into ED
Fair Gate	2,014	4,805	+2,791
West Gate	1,634	1,069	-565
St. Laurence Gate	1,330	884	-446
St. Mary's (Part Urban)	1,956	1,728	-228
Study Area Average	6,934	8,486	+1,552

7.76 The 2022 Census data indicated the number of people who drove to work increased by 4% to 1.2 million between 2016 and 2022. The Census recorded a big increase in the number of people who work mainly at or from home, up 173% from 2016 to nearly 260,000. **Table 7.15** below provides a breakdown of the means of travel by residents in the Study Area and nationally according to the 2022 Census.

7.77 The Study Area has a significantly lower dependence on the private vehicle commuting when compared with the state average, noting that 43.2% of commuters in the study area use the car compared to 53.8% nationally. While car dependency for commuting is lower in the study area compared to the national average, it is still close to half of all commuters within the area. The study area has a fewer level of commuters who predominantly work from home when compared to the national average.

7.78 The 2022 Census results show, with regard to active transport, that there are higher levels of commutes on foot in the study area (nearly a quarter of all commuters), compared to the national average of 12.6%. This is contrasted by the relatively few commutes in the study area that use the bicycle, with the study area having a lower modal share of cycling, despite the urban and compact character of the study area. The study area's modal share of public transport (bus, train) use for commutes is relatively similar to the national modal share.

Table 7.15: Study Area Usually means of travel to work, school, college or childcare (total) for Population Aged 5+ Years (Source: CSO 2022 SAP2022T11T1ED)

Means of Travel	No. of persons in the Study Area	% Mode Share in the Study Area	% Mode Share Nationally (across Ireland)
On foot	4,577	24.5%	12.6%
Bicycle	335	1.8%	2.7%
Bus, minibus, coach	1,809	9.7%	9.0%
Train, DART, or Luas	387	2.1%	2.4%
Motorcycle or scooter	45	0.2%	0.3%
Car driver	5,415	29%	34.7%
Car passenger	2,651	14.2%	19.1%
Other (inc. lorry or van)	533	2.8%	4.5%
Work mainly from home	934	5%	7.4%
Not stated	1,979	10.6%	7.4%
Total	**18,665**	**100%**	**100%**

Human Health

7.79 The Department of Health's latest policy report *Health in Ireland: Key Trends 2022* provides statistical analysis on health in Ireland over the last 10 years and deals specifically with issues such as life expectancy, mortality and other health indicators within the country.

7.80 The World Health Organisations definition of Health is *"a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."*

7.81 The average life expectancy is continuing to increase in Ireland, with estimates of 84.4 years for women and over 80.8 years for men as of 2020. Both of these figures are higher than the average estimates for our EU counterparts, as shown in **Figure's 7.5 and 7.6**.

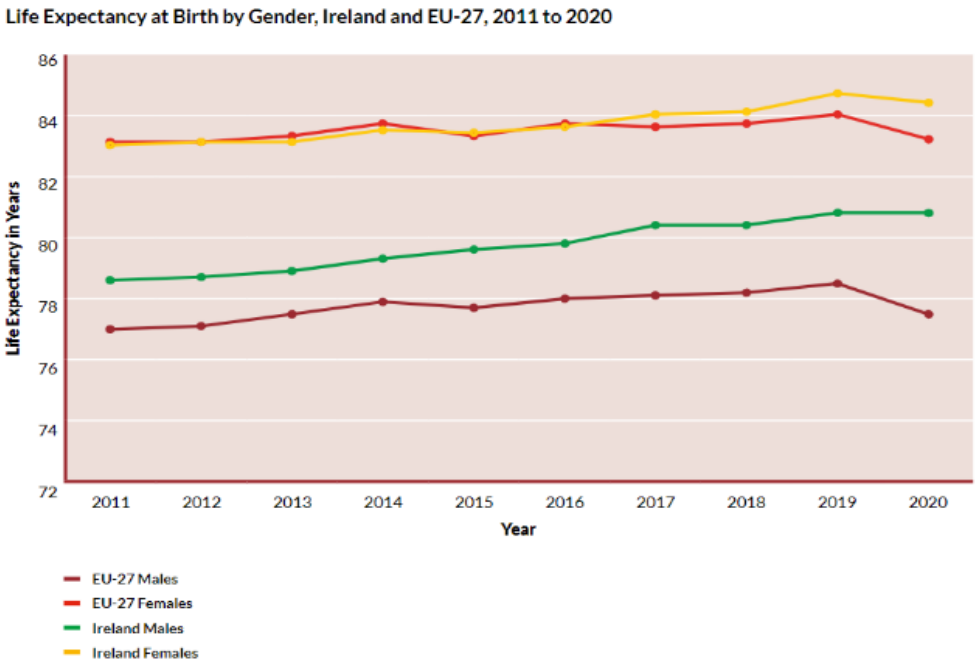

Figure 7.5: Extract of Figure 1.5 from 'Health in Ireland: Key Trends 2022', showing Life Expectancy at Birth by Gender [Source: Dept. of Health, 2022]

7.82 Male life expectancy has increased by over 2 years and female life expectancy by over 1 year since 2010, while the gap between the life expectancy of men and women continues to narrow. The greatest gains in life expectancy have been achieved in the older age groups, due to decreasing mortality rates from major diseases.

7.83 Life expectancy for 2020 has reduced slightly from the previous year. Nevertheless, national health figures indicate that there has been an overall improvement in mortality rates and a rise in life expectancy in the country over the last ten years.

7.84 With respect to the particular causes of death within the population, Table 2.4 of the '*Health in Ireland: Key Trends 2022'* report identifies strong decreases in the mortality rates for suicide (-32.6%), pneumonia (-59.1%) and stroke (-47.8%). Infant mortality rates within the country have also decreased by 14.3% since 2011 and remain lower than the EU average for the same period.

7.85 At the national level, the '*Health in Ireland*' report identified that 45.6% of the male population and 45.2% of the female population in Ireland held a self-perceived health status of 'Very Good' in 2021, compared to only 24.3% for the male population and 21.1% of the female population within the greater EU27 population.

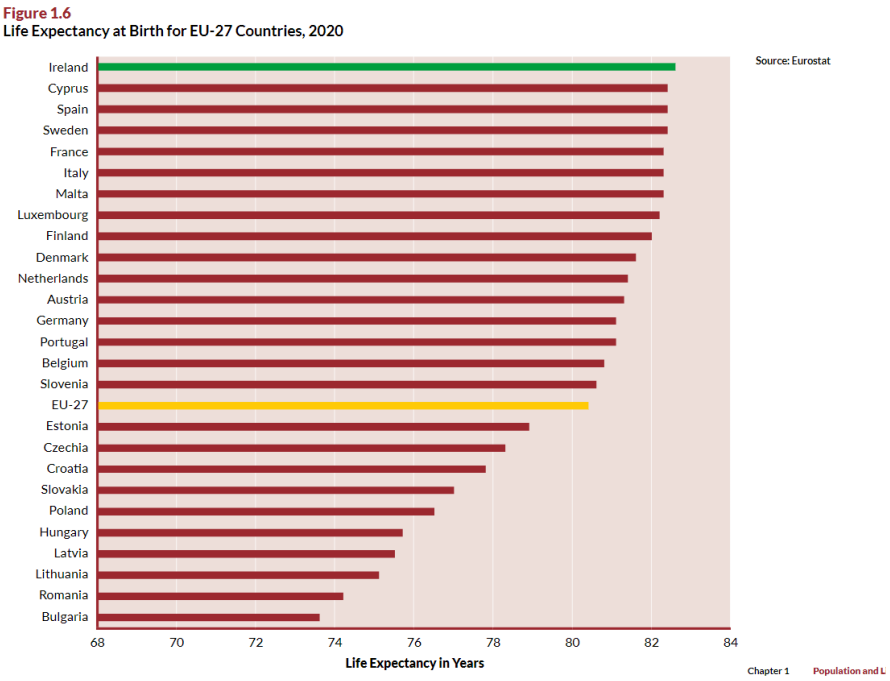

Figure 7.6: Extract from 'Health in Ireland: Key Trends 2022' Report.

7.86 Ireland also topped the list of EU27 countries in this area in 2019 as shown in **Figure 7.7**, with 80% of the population rating their health as good or very good. However, health status varies in respect of income inequality, with fewer low-income earners reporting good health both in Ireland and across the EU.

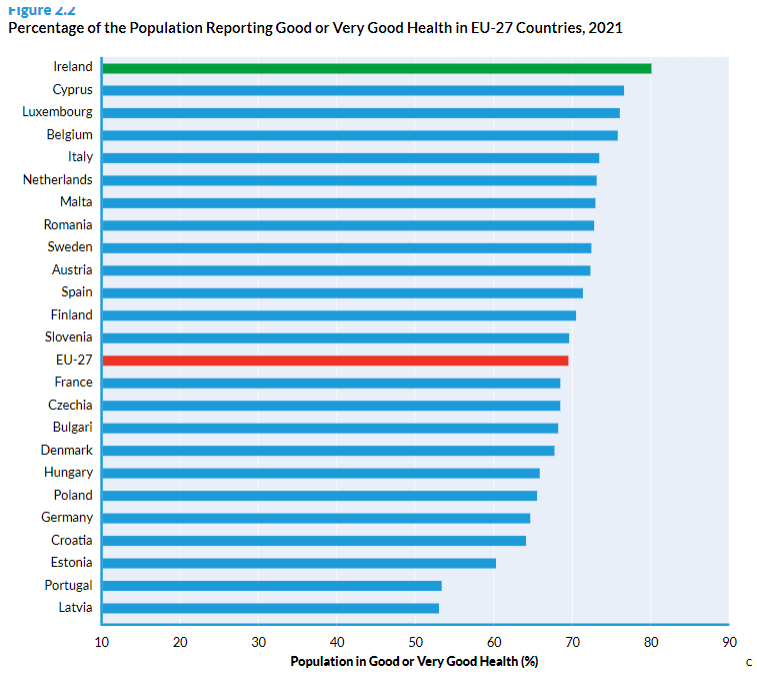

Figure 7.7: Extract from the 'Health in Ireland: Key Trends 2022' Report

7.87 At the local level, c. 77% of people living in the study area reported their health to be "Very Good" or "Good", accounting for 21,907 people within the area. These figures are

slightly lower than the wider County, which reported c. 82% of the population as having 'Good' or 'Very Good' health in the 2022 Census.

Table 7.16: Population by general health status - self-reported (Source: CSO, 2022 SAP2022T12T3CTY).

General Health	Study Area		Louth	
	No. Persons	% Total	No. Persons	% Total
Very good	13,059	**45.8%**	72,443	**51.9%**
Good	8,848	**31%**	41,520	**29.7%**
Fair	3,162	**11.1%**	13,290	**9.5%**
Bad	616	**2.2%**	2,226	**1.6%**
Very bad	124	**0.4%**	508	**0.4%**
Not stated	2,728	**9.6%**	9,716	**7%**
Total	**28,537**	**100%**	**139,703**	**100%**

Health Profile Louth 2015 (HSE)

7.88 The following summarises the findings of the HSE Health Profile 2015 for County Louth:

- **Physical Health**: The HSE 2015 Louth profile provides statistical analysis on physical health compared to national profile. In death rates per 100,000 for the four principal causes of death over the period 2007-2012 it was reported that Louth was slightly lower in heart disease and stroke and cancer deaths compared to the national mean rates. Deaths by respiratory disease and poisoning/injury were slightly lower than the national mean average.

- **Mental Health**: Levels of depression and admissions to psychiatric hospital are higher among less affluent socioeconomic groups. Mental health problems are also related to deprivation, poverty, inequality and other social and economic determinants of health. Mental health is a growing health, social and economic issue and it is believed that depressive mental illnesses will be the leading cause of chronic disease in high income countries by 2030 (Healthy Ireland, 2013). Suicide and deliberate self harm rates were reported to be above the Irish average in the Health Profile Louth 2015.

Other Health Considerations

7.89 Human health has the potential to be affected by exposure to toxic substances or pathogens in environmental media, such as air, water and soil. Human health impacts can also arise due to anthropogenic or naturally occurring accidents or disasters; such as landslides, flooding or structural failures.

7.90 Nuisance and negative psychosocial impacts can also arise as a direct result of environmental factors; e.g. as a result of noise, dust, unsafe environments and / or crime; or indirectly, e.g. as a result of economic hardship. Occupational health and safety

risks to construction site personnel are also inherent where demolition and construction works are proposed.

7.91 The baseline environment in terms of air, surface water and groundwater / soil are detailed in Chapter 11 (Air & Climate), Chapter 10 (Hydrology & Hydrogeology) and Chapter 9 (Land, Soils & Geology), respectively. The risks of accidents and disasters are addressed, where relevant, in the various specialist chapters.

Amenity

Green infrastructure / Landscape

7.92 Drogheda is an urban area, however it benefits from proximity to the River Boyne and associated historic landscape which has influenced how the modern town has developed. To the south bank of the river, in close proximity to the application site, there are a number of green open spaces, including The Black Hill and St. Dominic's Park. These green spaces provide a valuable landscape break in close proximity to the centre of the town. A biodiverse rich woodland area also exists to the south of the river.

Social, Community and Commercial

7.93 Social facilities provide civil and other services that meet the needs and requirements of the community. Commercial facilities, such as shopping centres and hotels, provide leisure and social environments for the community and tourists.

7.94 Drogheda benefits from being an important commercial centre and has numerous retail, commercial and hospitality businesses located in the town centre, particularly along West Street and in the adjoining streets. Drogheda also has a garda station, court house, fire station, hospital, medical facilities/GPs, schools, libraries, financial and administrative institutions.

Characteristics of the Proposed Development

7.95 The proposed development comprises public realm regeneration works on lands within the Westgate Vision Area of Drogheda, Co. Louth. The overall objective of the project (known as the 'Westgate 2040' project) is to act as a catalyst to support positive regeneration, compact growth and sustainable development in the Westgate Vision Area and the broader Drogheda Town Centre. Please refer to Chapter 5 of this EIAR for a detailed description of the proposed project.

Potential Impacts of the Proposed Project

7.96 In keeping with the EPA's 2022 Guidelines, this section, assesses the potential direct and indirect construction and operation impacts associated with the proposed project with respect to the following environmental factors/pathways through which population (human beings) and human health could be affected:

- Potential health impacts due to changing air quality;
- Potential nuisance and disturbance due to noisy activities;

- Potential negative impacts on journey characteristics / parking due to presence of construction traffic;

- Potential negative impacts on landscape and visual amenity due to presence of construction site and effects of construction activities (e.g. dust, dirt, stockpiling of soils, removal of vegetation, etc.); and

- Positive economic impacts due to construction employment.

'Do-Nothing' Scenario

7.97 The 'Do-Nothing' alternative considers the likely scenario that would arise, assuming the proposed development was not progressed, i.e. if nothing were done. Note that this chapter discusses the 'Do-Nothing' scenario in terms of development (or lack thereof) in the absence of the proposals. The likely impacts of a 'Do-Nothing' scenario in relation to the various environmental topics (e.g. cultural heritage, biodiversity, traffic and so on) are discussed in the respective specialist chapters of this EIAR. In this case, the 'Do-Nothing' scenario might entail:

- a continuation of the existing conditions and use of the subject lands (i.e. underutilised public realm and riverfront areas, vacancy/dereliction, car dominated environment, underutilised built and natural heritage).

7.98 However, if the proposed project was not constructed, this could result in a missed opportunity and a significant loss of potential funding for the regeneration of Westgate and to upgrade the public realm areas, provide enhanced community infrastructure, protect and celebrate important rich heritage and to rationalise the roads/ streets/ lanes/ footpaths in this area to encourage more sustainable modes of transport, such as active travel.

7.99 This scenario would not align with the current 'D1 – Regeneration' land use zoning for this area or the wider social, environmental or economic policies contained within the Louth County Development Plan (LCDP) 2021 – 2027.

7.100 Ultimately, the overall objective of the 'Westgate 2040 Project' which is to act as a catalyst to support positive regeneration, compact growth and sustainable development in the 'Westgate Vision Area' and the wider Drogheda Town Centre would not be realised and the existing dereliction and decline of the area would likely perpetuate.

7.101 Under the 'no development' scenario, the current baseline conditions would prevail.

Impacts on Air Quality

Construction Phase

7.102 Dust and particulate matter (PM) generated during the construction phase may have the potential for an adverse effect on local air quality, and therefore this environmental factor has been assessed in detail in accordance with the Institute of Air Quality Management (IAQM) construction dust guidance (IAQM, 2016) as set out in 'Chapter 11 – Air Quality and Climate' of this EIAR.

7.103 Construction dust may be deposited within 350 m of a site, but the majority of deposition tends to occur within a 50 m radius. The extent of dust generation is dependent on the type of dust; the nature of construction activities; and meteorological factors, such as rainfall, wind speed and wind direction. As such, the degree and severity of dust generation is expected to fluctuate across the duration of the proposed works. However, dust generation of some degree may be anticipated throughout.

7.104 The construction stage of the proposed project will include site clearance, site grading, ground excavation, construction of new buildings and infrastructure, landscaping works, and etc. In the absence of standard/good construction practice and mitigation measures, these proposed works have the potential to create air quality and climate impacts for local residents, construction workers and passers-by in the immediate vicinity of the application site, such as dust emissions/nuisance and construction vehicle/machinery derived pollutants.

7.105 Potential air quality and climate impacts associated with the construction stage of the proposed project are outlined in more detail in 'Chapter 11 – Air Quality and Climate' of this EIAR. Chapter 11, along with a number of the specialist chapters in this EIAR, contain mitigation measures to reduce any potential air quality and climate impacts from construction activities on population (human beings) and human health. The relevant mitigation measures are also reproduced in 'Chapter 21 – Mitigation Measures'.

7.106 Best practice construction management detail is also provided in the pCEMP, contained in Volume 3 of this EIAR. Best practice measures to be implemented will include minimising exhaust emissions from construction vehicles and machinery by ensuring engines are not left running unnecessarily or for excessive periods. The mitigation measures described will be used to control potential fugitive emissions from the construction project.

7.107 The proposed mitigation and best practice measures will ensure that all direct and indirect construction impacts will be compliant with ambient air quality standards and that the proposed project will not lead to the creation of any significant local ambient air quality, local micro-climate or wider macro-climate effects with respect to population (human beings) and human health.

7.108 All construction effects were assessed to be not significant provided that appropriate dust control and construction phase mitigation measures are applied as listed in the mitigation measures section. During the construction phase, potential climate change effects are considered to be appropriately mitigated and not significant. Residual effects are therefore also not significant with suitable mitigation measures in place.

Operation Phase

7.109 It can be concluded that the change in concentration and exposure air quality directly attributable to the proposed development are not of a level to quantify any change in baseline health. The predicted development is considered to have a negligible magnitude impact on all receptors for NO_2 and PM_{10} when considering the national AQS. As concentrations at the site are well below the relevant AQSs, a detailed air quality modelling assessment is not considered to be required.

7.110 It is considered unlikely that the development would introduce additional sensitive receptors into an urban area of poor air quality and the development is not anticipated to have a significant impact on local air quality. Therefore, no specific operational phase mitigation measure is considered to be required. Please refer to 'Chapter 11 – Air Quality and Climate' for further details.

7.111 Ultimately, the operation of the proposed development is not anticipated to have a significant impact on local air quality, and the residual impacts will be of an acceptable level. During the operational phase, potential climate change effects are considered to be not significant. The magnitude of impact on population and human health is therefore considered to be negligible.

Noise Exposure and Vibration

Construction Phase

7.112 During the construction phase, the range of activities with potential to generate noise and vibration emissions to off-site sensitive receptors will include site preparation works, construction of the proposed development, landscaping and erection of any temporary buildings/compounds that may be required.

7.113 Five Noise Monitoring Locations (NML's) surrounding the site were selected for the noise survey and each of these locations are described in turn below:

- NML1: Along Patrickswell Lane to the east of the site, immediately adjacent to Drogheda Court House.
- NML2: Along Old Abbey Lane within the central area of the site where a community space is proposed.
- NML3: Along Scholes Lane at a central north position of the site.
- NML4: To the North of the site immediately adjacent the Fair Street road.
- NML5: To the west of the site immediately adjacent the George's Street road.

7.114 The closest works area is likely to be approximately 10-15m from the nearest residential properties with the remainder of works taking place across the site at varying distances. Occasionally some works may occur closer than 10m i.e. paving when occurring outside of noise sensitive locations, however this is expected to be only for short periods

7.115 With consideration of the site location, the likely construction phase activities, the distances from these works to nearby dwellings and the proposed construction noise criteria, it is expected that potentially significant noise impacts will be encountered when works are occurring approximately 15 metres or closer to neighbouring dwellings.

7.116 With consideration of the distance from site boundaries to nearby sensitive receptors, and proposed general methods of construction, it is projected that vibration emissions to nearby receptors will not cause structural or cosmetic damage to any nearby buildings.

7.117 'Chapter 12 – Noise and vibration' sets out proposed mitigation measures for the construction phase of the development. Subject to the implementation of the recommended mitigation measures, the human health impacts associated with noise and vibration is not considered to be significant in EIA terms.

Operation Phase

7.118 During the operational phase, the potential sources of noise are those associated with vehicular traffic on public roads, noise from recreational activity and car parking.

7.119 With respect to additional road traffic noise on public roads, the calculated increase in noise level on the majority of roads is less than 2dB. This calculated change in noise level is negligible and the associated impact is not significant.

7.120 Noting the information contained in 'Chapter 12 – Noise and vibration', as well as the best practice design, construction and mitigation measures referred to in this EIAR, particularly 'Chapter 21 – Mitigation Measures', no adverse significant population (human beings) or human health impacts are predicted with respect to noise and vibration during the operational stage of the proposed project.

Transport

7.121 The World Health Organisation Report, Health Effects and Risks of Transport Systems: The *Hearts Project (World Health Organisation, 2006),* states that road traffic is a major cause of adverse health effects – ranking with smoking and diet as one of the most important determinants of health in Europe. The Report states:

> "*Traffic-related air pollution, noise, crashes and social effects combine to generate a wide range of negative health consequences, including increased mortality, cardiovascular, respiratory and stress-related diseases, cancer and physical injury. These affect not only transport users but also the population at large, with particular impact on vulnerable groups such as children and elderly people, cyclists and pedestrians".*

Construction Phase

7.122 The construction phase of the proposed project will result in additional construction traffic on the road network including construction workers travelling to/from the site and vehicles transporting materials and equipment to/from the site. This additional traffic has the potential to cause or intensify congestion which could effect journey characteristics, such as journey times, etc, for local residents, workers and road users.

7.123 Construction traffic will likely only be generated on weekdays (07:00-17:00, subject to planning conditions). It is expected that on-site employees will arrive before 07:00, thus avoiding the morning peak hour traffic. These employees will generally depart after 17:00. Deliveries will be actively controlled and subsequently arrive at a dispersed rate during the course of the working day

7.124 The scheme shall be constructed in a manner to minimise disruption to road users, local residents and businesses. All construction works are to be undertaken in a clearly delineated site area which will have specific entry and exit points for construction traffic.

7.125 Potential impacts relating to traffic and transport are assessed in detail in 'Chapter 14 – Material Assets (Traffic and Transportation)'. The assessment on potential impacts relating to traffic concluded that, considering the site's proximity to the strategic road network and following the mitigation measures outlined in this report, construction traffic will not give rise to any significant impacts or traffic concerns or impede the operational performance of the local road network and its surrounding junctions.

Operation Phase

7.126 'Chapter 14 – Material Assets (Traffic and Transportation)'of this EIAR assesses the potential for traffic and transportation impacts associated with the operational stage of the proposed project.

7.127 These impacts could include additional traffic on the road network resulting in congestion and impacts on journey amenity, duration and length for other road users.

7.128 Relevant traffic and transportation modelling was carried out on the proposed project and Chapter 14 confirms that the proposed project is not expected to result in any significant effects on the local road network nor will it have any discernible effects on the journey times on the local network.

7.129 Noting the information contained in Chapter 14, the Traffic and Transport Assessment and the Mobility Management Plan, as well as the best practice design, construction and mitigation measures referred to in this EIAR, particularly 'Chapter 21 – Mitigation Measures', no significant adverse population (human beings) and human health impacts are predicted with respect to traffic and transport during the operational stage of the proposed project.

Townscape and Visual Amenity

7.130 The 2006 report 'Health Impacts on the Built Environment: A Review' (by the Institute of Public Health in Ireland) states that deteriorating physical features of the urban environment can harm health. Architecture Ireland has also shown the link between the Built Environment and Mental Health (Architecture Ireland, 2015). The World Health Organisation (WHO) has undertaken research that shows urban environments that are aesthetically pleasing and landscaped encourage people to explore and access their local community by foot or bicycle when compared to the same urban space prior to renovations (WHO, 2016).

Construction Phase

7.131 During construction, the site and immediate environs would be disturbed by construction related activities. Construction is an inherently unsightly process and there is limited potential for mitigation of the negative townscape and visual effects – apart from erection of site hoarding as means to screen ongoing works and the implementation of best practice site management.

7.132 When considering the impacts at the construction stage is reasonable to factor in the following:-

- That the construction process is temporary to short term; and

- Construction activity, streetscape or urban environmental schemes are commonplace in towns like Drogheda and have been part of the character of town centre and riverside areas as part of the wider process of urban evolution and improvements.

7.133 The magnitude of change to the townscape and views would be *medium* at construction stage on the site itself including the more sensitive heritage sites at the Abbey, Barlow House and aside the historic walls. However, while of an interruptive nature to the area itself due to construction activity and associated impacts, the significance of any of these temporary effects would reduce to **low or negligible** due to extent of intervening townscape and the nature of the development.

7.134 Such effects should be measured against the current run down and derelict condition and quality of parts of the Westgate area and the fact they will be temporary, localised and short-term; these are not therefore not considered significant or adverse in context of the baseline setting and wider Drogheda townscape.

Operation Phase

7.135 Improving the appearance of the Westgate area is not solely related to making people feel better when they visit, shop, work or live in this part of the town (although that is an important factor). If an area has been upgraded and is attractive it will be healthier, safer, and cleaner with an improved sense of place and therefore more people will want visit or reside there. It also means that businesses will be more likely to invest money, to build or to trade there, which improves the economy and creates jobs. Thereby, the broader scope and intent of the project in the operation phase will give rise to a substantial positive effects in townscape / landscape and visual terms on this part of Drogheda.

7.136 In terms of the Application Site, there are no distinctive or notable built features, facades or architecture that will be lost; any demolition would have ***neutral* effects** (i.e., no better or worse) on the character of the site.

7.137 The proposed development consists of the construction and delivery of well-designed public realm and shared spaces that will correlating with the aims, principles and objectives as set out within the LCDP and Westgate Vision.

7.138 Given the nature of the project, it will provide enhanced connectivity and movement patterns across the Westgate area, delivery of high quality and enhanced public realm to promote general use and enjoyment of the public space. This will allow for permeability across the site to be improved with the linkages between the River Boyne corridor and town centre being improved in both aesthetic and practical terms.

7.139 In terms of Green Infrastructure, the proposals allow for retention of existing trees and introduction of extensive soft and hard landscaping that will result in significant new and notable planting across this part of the town. The removal of ornamental shrubs aligning Father Connolly Way and the River Boyne to allow for improved connectivity (i.e. pedestrian and cycle access) will be compensated through the planting of more indigenous / native species appropriate for this area along this corridor. The improvements to the Green Infrastructure will maintain and enhance the biodiversity of the area.

7.140 While the broader project will not alter the inherent scale, built form or set townscape pattern of this part of the town to any significant degree in terms of the actual magnitude of change (rated primarily *medium*), the enhancement and improvement works will have ***substantial positive* effect** on its baseline townscape character, visual quality, condition and general sense of place.

7.141 With respect to the wider Drogheda town setting, the effects will be a positive statement in terms of the townscape development, legibility and future while tying effectively in with many of the ambitions and objectives of the LCDP and Westgate Vision. In townscape character terms, the development will improve the quality and character of this area symbolising progress, revitalisation and have wider townscape benefit.

7.142 For passing traffic and pedestrians on George's Street and the R132 Road, it will be seen in context with the existing and emerging townscape and contribute positively to this area's identity through the new public realm and landscape character improvements. In longer or distant views, it will invariably merge into the wider townscape and the finer details will not be so discernible. Effects from these areas, while generally more limited due to intervening built environment, will be **positive** based on the enhanced general sense of place and townscape quality and condition.

7.143 A detailed assessment of the proposed development and potential impacts with respect to landscape and townscape provided in Chapter 18 Landscape Visual Impact Assessment of this EIAR and includes representational viewpoints for which verifiable photomontages have been prepared.

Economic and Employment Activity

Construction Phase

7.144 The construction phase of the proposed project will provide job opportunities which will result in a positive, local to regional, moderate, short-term socioeconomic impact. The presence of construction personnel in the area during the construction stage will also create demand for services, particularly for food from cafés, local shops and restaurants. There will also be economic benefits for providers of construction materials and other supporting services. The construction stage is therefore predicted to result in a positive, local to regional, indirect, slight to significant, short-term socioeconomic impact.

7.145 It is anticipated that local businesses will continue to operate normally, however it is accepted that the proposed works will involve construction within the existing roads/streets/lanes which may cause some disruption to local businesses. This disruption will be carefully managed throughout the construction. Temporary traffic management measures for the project will be included within the contractors Traffic Management Plan/Construction Management Plan. Access to/from existing businesses will be maintained as much as possible, and standard best practice measures will be implemented to ensure no significant negative economic impacts arise.

7.146 Any negative impacts on local businesses and economic activity will be temporary, short term and moderate and will be careful considered and managed for the duration of the construction works.

Operation Phase

7.147 The overall objective of the 'Westgate 2040' project is to act as a catalyst to support positive regeneration, compact growth and sustainable development in the 'Westgate Vision Area' and the wider Drogheda Town Centre.

7.148 The proposals include public realm improvements and interventions which will make the area more attractive for existing residents, business and tourists/visitors in the area. Noting this, the project will have a positive effect in terms of attracting residents/employees/visitors/tourists to the area which will result in a positive economic effect in terms of increased footfall and spending which will help to further support local businesses, services, transport infrastructure, employment opportunities and further regeneration proposals.

7.149 Employment opportunities will be generated from the management, maintenance and operation of the public realm areas, including events within the new flexible spaces proposed at Old Abbey Lane and the riverfront.

7.150 The human health effects with respect to economic and employment activity during the operation phase of the proposed project are considered to be positive with a long-term duration.

Potential Cumulative Impacts

7.151 Cumulative effects are those arising from impacts of the proposed development in combination with impacts of other proposed or consented development projects that are not yet built/ or operational.

7.152 The projects identified in 'Chapter 3 – Application site and Context' and 'Chapter 20 - Cumulative Impacts' have been reviewed and, in all cases, no significant cumulative impacts are anticipated with respect to population (human beings) and human health.

Interactions

7.153 Taking account of the proposed design, nature and location/siting of the project, the following interactions with other environmental factors are predicted:

- **Hydrology & Hydrogeology**: interactions between 'Population & Human Health' and 'Hydrology & Hydrogeology' have been considered in this EIAR as the proposed project has the potential to create impacts on surface water runoff during the construction stage as a result of increased levels of silt or other pollutants, in addition to potential pollution from spillages, wheel washing and water from trucks on site.

- **Air & Climate**: interactions between 'Population & Human Health' and 'Air & Climate' have been considered in this EIAR as the proposed project has the potential to create nuisance/health impacts related to exposure to dust during the construction stage and construction traffic related emissions during the construction stage.

- **Noise & Vibration**: interactions between 'Population & Human Health' and 'Noise & Vibration' have been considered in this EIAR as the proposed project has the potential to create potential impacts during the construction stage related to elevated noise levels.

- **Material Assets - Traffic & Transportation**: interactions between 'Population & Human Health' and 'Material Assets – Traffic & Transportation' have been considered in this EIAR as the proposed project has the potential to create traffic/parking impacts during the construction stage due to presence of construction traffic and traffic management measures and traffic impacts due to the traffic generated by the operational stage.

- **Material Assets – Waste**: interactions between 'Population & Human Health' and 'Material Assets – Waste' have been considered in this EIAR as the proposed project has the potential to create health impacts if improper waste management measures are implemented during both the construction and operational stages.

- **Material Assets – Site Services**: interactions between 'Population & Human Health' and 'Material Assets – Site Services' have been considered in this EIAR as the proposed project has the potential to create health impacts related to improper safety protocols, e.g. related to diversions of power lines, and potential nuisance/impacts on residential amenity due to potential water/power/service outages during the construction phase.

- **Landscape and Visual Impact**: interactions between 'Population & Human Health' and 'Landscape and Visual Impact' have been considered in this EIAR as the proposed project has the potential to create visual impacts related to the presence of a construction site during the construction stage, and the presence of a sizeable new residential development during the operational phase.

Mitigation Measures

7.154 In relation to the impact of the development on population (human beings) and human health, it is considered that the monitoring and mitigation measures outlined in other environmental topics/chapters such as water, air quality, climate and noise etc. are sufficient to address any potential impacts.

Construction Phase

7.155 A pCEMP has been prepared to accompany the planning application and to help protect the amenities of the area. The contractor will further develop the pCEMP and submit it for further approval, if necessary, and implement the requirements during the construction phase. The content of the pCEMP is also based on the mitigation measures set out in this EIAR.

7.156 No further specific mitigation measures are recommended for the construction phase with respect to population (human beings) and human health having regard to the mitigation measures contained within each of the other specialist chapters of this EIAR for each environmental factor assessed. Readers are also directed to 'Chapter 21 – Mitigation Measures' of this EIAR which summarises all of the proposed mitigation measures.

Operational Phase

7.157 A range of operation related mitigation measures are proposed throughout this EIAR in relation to each environmental factor assessed in order to avoid, where possible, and in other cases minimise/reduce, potential and predicted impacts associated with the proposed project.

7.158 The recommended mitigation measures will reduce the potential for any likely significant effects on the environment with respect to population and human health during the operation phase. Readers are directed to 'Chapter 21 – Mitigation Measures' of this EIAR which summarises all of the remedial and mitigation measures proposed as a result of this EIAR.

7.159 It is noted that the operational phase of the proposed project is considered to have likely positive effects on population (human beings) and human health in relation to the provision of high quality hard and soft landscaping and public realm, access to heritage assets and improved connectivity, permeability and pedestrian/cycle infrastructure encouraging the use of active travel and subsequent health benefits.

Monitoring & Reinstatement Measures

7.160 The mitigation measures as outlined above for this project are standard and will ensure best-practice measures are implemented that will not require any monitoring.

Difficulties in Compiling Information

7.161 There were no difficulties in compiling the Chapter.

Summary of Effects

7.162 No significant human health effects are predicted as a result of the construction or operation phases of the proposed development. This has been concluded on the basis that any change in health determinant would not be sufficient to quantify any change in baseline health outcomes within the surrounding community.

7.163 Positive impacts on population and human health will include health and social/wellbeing benefits associated with the provision of a new public/open space in the town centre and the provision of a highly permeable layout which encourages walking and cycling.

7.164 Implementation of the range of mitigation measures recommended in this EIAR will limit any adverse significant and likely environmental impacts associated with the construction and operational phases of the proposed development on population (human beings) and human health.

References

This Chapter has been informed by a review of the relevant legislation, policy and guidance documents and data sources including:

- Environmental Protection Agency (EPA) - Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022).
- Department of Housing, Planning and Local Government (DHPLG) - Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018).
- European Commission (EC) - Environmental Impact Assessment of Projects. Guidance on the preparation of Environmental Impact Assessment Report (2017).
- Environmental Protection Agency (EPA) - Draft Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (2015).
- European Commission (EC) - Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (1999).
- National Planning Framework 2018
- Eastern and Midlands Regional Assembly - Regional Spatial and Economic Strategy, 2019.
- Louth County Development Plan 2021 - 2027

This Chapter has also been informed by desktop studies of relevant data sources including:

- Dept. of Housing, Planning & Local Government (2023). My Plan Map Viewer.
- Google Maps and Places (2023)
- Central Statistics Office – Census 2022 data.
- Central Statistics Office – Census 2016 data.
- Central Statistics Office – Census 2011 data.
- Central Statistics Office (2022) – *CSO PxStat*
- Economic and Social Research Institute (2023) - Quarterly Economic Commentary, Spring 2023
- Department of Housing, Planning & Local Government (2021) - Rebuilding Ireland – Action Plan for Housing and Homelessness
- Government of Ireland (2022). Health in Ireland – Key Trends 2022

8. Biodiversity

Introduction

8.1 Biodiversity is addressed as part of the EIA process because of S.I. No. 296/2018 – *European Union (Planning and Development) (Environmental Impact Assessment) Regulations* 2018. This requires consideration of the aspects of the environment that are likely to be significantly affected by the Proposed Development, including flora and fauna. Ecological features are also covered by a variety of legislation and policy documents (both national and local) and these have been reviewed. The assessment has been prepared using the *Guidelines for Ecological Impact Assessment in the UK and Ireland* (2018), which is the primary resource for members of the Chartered Institute of Ecology and Environmental Management (CIEEM).

8.2 Although the above guidelines provide a scientifically rigorous framework for the assessment, some processes also rely on the professional judgment of an ecologist, including survey design, the valuation of ecological features, and the characterisation of impacts. An outline of the author's experience, training and accreditation is provided in the following section, which support his competency to make such judgements.

Statement of authority

8.3 This chapter was written by Nick Marchant, the principal ecologist of NM Ecology Ltd. He has an MSc in Ecosystem Conservation and Landscape Management from NUI Galway and a BSc in Environmental Science from Queens University Belfast. He is a member of the Chartered Institute of Ecology and Environmental Management, and operates in accordance with their code of professional conduct.

8.4 Nick Merchant has fifteen years of professional experience, including twelve years as an ecological consultant, one year as a local authority biodiversity officer, and two years managing an NGO overseas. He provides ecological assessments for developments throughout Ireland and Northern Ireland, including wind farms, infrastructural projects (roads, water pipelines, greenways, etc.), and a range of residential and commercial developments.

Regulatory Framework

Designated sites

8.5 Many important natural areas in Ireland receive legal protection, with a range of potential designations that reflect the ecological importance of the site (e.g., European importance, national, regional and local importance) and the whether the land is privately or publicly owned. A summary of these designations is provided below.

8.6 Many areas of private land (often agricultural) that contain habitats, flora or fauna of European importance are included in the European Network of Natura 2000 sites, which includes Special Protection Areas (SPAs) to protect habitat for internationally important populations of birds, and Special Areas of Conservation (SACs) to protect internationally important habitats, plants and non-avian fauna. Legislative protection for these sites is provided by the *European Communities (Birds and Natural Habitats) Regulations* 2011

(as amended). Sites of national importance on private land may be designated as Natural Heritage Areas (NHAs), for which legislation is outlined in the *Wildlife (Amendment) Act* 2000 (as amended). Some sites of national importance have been purchased or leased by the state or non-governmental bodies and designated as National Parks or Nature Reserves, for which legal protection is provided under the *Wildlife Act* 1976 (as amended) or in dedicated statutory instruments. These sites are managed primarily for nature conservation and public amenity.

Protected flora and fauna

8.7 A number of plant and animal species receive legal protection wherever they occur in Ireland, including areas outside of designated sites. Species of European importance receive strict protection under the *European Communities (Birds and Natural Habitats) Regulations* 2011 (SI 477/2011, as amended), and additional species of national importance receive protection under the *Wildlife Act 1976* (as amended).

Other regional policy

8.8 A number of other regional policies for the protection of natural heritage are outlined in the *Meath County Development Plan* (2021-2027), including measures relating to the protection of woodland and trees, and the control of invasive species.

Methodology

Data Collection and Walkover Survey

8.9 A desk-based scoping study was carried out using data from the following sources:

- Plans and specifications for the proposed development;
- Bedrock, soil, subsoil, ground water and surface water maps from the Geological Survey of Ireland web mapping service (www.gsi.ie/mapping.htm), and the Environmental Protection Agency web viewer (http://gis.epa.ie/EPAmaps/);
- Maps and details of designated sites from www.npws.ie;
- Biological records from the National Biodiversity Data Centre online mapping service, and from the National Parks and Wildlife Service internal database.

8.10 The following resources were used for the walkover surveys:

- Habitat surveys were carried out in accordance with the *Best Practice Guidance for Habitat Survey and Mapping* (Smith et al 2011), and using the classification system of *A Guide to the Habitats of Ireland* (Fossitt 2000);
- Flora was identified using *An Irish Flora* (Parnell & Curtis, 2012) and *The Vegetation Key to the British Flora* (Poland & Clement 2009). Nomenclature follows the plant crib of the Botanical Society of the British Isles (BSBI 2007). The abundance and extent of species is described using the DAFOR scale (Dominant, Abundant, Frequent, Occasional, Rare);
- Fauna surveys and habitat suitability assessments followed the methods outlined in the *Ecological Surveying Techniques for Protected Flora and Fauna during the*

Planning of National Road Schemes (NRA 2006), with reference to other guidelines where required.

8.11 The study area for this assessment consisted of all land within the red-line planning boundary, with a buffer zone of up to 20m beyond the relevant areas. Field data was collected between April 2021 and July 2022.

Bat surveying techniques

8.12 Survey methods were developed with reference to *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Bat Conservation Trust, 3rd edition, 2016).

8.13 Preliminary ground-level roost assessments were carried out for all built structures (buildings and bridges) to assess their suitability for roosting bats, using the methods in Section 6.2 of the BCT Guidelines.

8.14 Two structures were considered to have high suitability for roosting bats: the Abbey and the Medieval Wall (and associated structures). In Table 7.3 of the BCT survey guidelines it is recommended that three bat surveys (a mixture of emergence and re-entry surveys) are carried out for structures of high suitability for bats. Therefore, a total of six surveys were carried out for the two structures of high suitability for bats, on the following dates:

- The Abbey: 24 May (emergence), 21 June (re-entry), 5 July (emergence)
- Medieval Wall: 25 May (re-entry), 20 June (emergence), 6 July (re-entry)

8.15 There are no mature trees suitable for bats within the study area, so emergence / re-entry surveys of trees were not considered necessary.

8.16 All surveys were carried out using handheld bat detectors (Echo Meter Touch 2 Pro, Wildlife Acoustics Inc). Two surveyors were present on all occasions, to ensure that both sides of each structure were surveyed concurrently.

8.17 All surveys were carried out during suitable weather conditions, with mild temperatures (between 11 and 15 ^{o}C), light winds and little or no rain. All surveys were carried out during the peak season of bat activity, coinciding with the maternity period, i.e. the birth and raising of offspring.

Valuation of Ecological Features

8.18 Based on the information collected during the desktop and walkover surveys, the ecologist assigns an ecological importance to each feature based on its conservation status at different geographical scales (Table 6.1). For example, a site may be of national ecological importance for a given species if it supports a significant proportion (e.g. 5%) of the total national population of that species.

Table 8.1: The six-level ecological valuation scheme - CIEEM guidelines (2018)

Ecological importance	Geographical scale of importance
International	International or European scale
National	The Republic of Ireland or the island of Ireland

Ecological importance	Geographical scale of importance
Regional	Leinster, and/or the east coast of Ireland
County	County Meath
Local	Urban areas in Drogheda
Negligible	None, the feature is common and widespread

8.19 It is accepted that any development will have an impact on the receiving environment, but the significance of the impact will depend on the value of the ecological features that would be affected. The following is outlined in the CIEEM guidelines: "*one of the key challenges in an EcIA is to decide which ecological features (habitats, species, ecosystems and their functions/processes) are important and should be subject to detailed assessment. Such ecological features will be those that are considered to be important and potentially affected by the project. It is not necessary to carry out detailed assessment of features that are sufficiently widespread, unthreatened and resilient to impacts from the development, and that will remain viable and sustainable."*

8.20 For the purposes of this chapter we have only assessed impacts on ecological features that are of local value or higher (refer to Table 6.1) or those that receive legal protection. These features are termed 'important ecological features' and are listed in at the end of the 'Existing Environment' section. Impacts on features of negligible ecological value (e.g., amenity grasslands) are not considered to be significant, so they are not included in the impact assessment.

Baseline/Receiving Environment

Environmental Setting

Site location and surroundings

8.21 The application site is located within the 'Westgate Vision Area' of Drogheda in County Louth. Please refer to 'Chapter 3 - Site Location and Context' of this EIAR which provides a detailed overview of the application site and surrounding area.

Geology and soils

8.22 The underlying bedrock is limestone, classified as 'pale-grey, thickly-bedded, highly micritised grainstones, packstones and wackestones' on the GSI database), which is a regionally-important karstified aquifer (Geological Survey of Ireland). Sub-soils and soils are man-made ground, mainly sealed by buildings and impermeable artificial surfaces.

Hydrology

8.23 The closest major waterbody is the River Boyne, which adjoins the southern boundary of the Site. The river is estuarine at this point, mixed with the tidal waters of the Irish Sea. The estuary meets the coast approx. 9 km downstream.

8.24 Under the Water Framework Directive status assessments 2016 – 2021, the transitional waters of the River Boyne are of Moderate status, as are the coastal waters at the mouth

of the river (referred to as the 'Boyne Estuary Plume Zone'). Coastal Waters to the north of the plume are of High status, and those to the south of the plume are of Good status.

Designated sites

Natura 2000 sites

8.25 The southern boundary of the Site adjoins the *River Boyne and River Blackwater* SAC, and a small section of the Site is within the SAC . The SAC boundary is irregular and does not appear to follow either the river bank or the edge of the road. It should be noted that the Natura Impact Assessment (NIS) that accompanies this EIAR confirms that none of the qualifying interests of this SAC are located within the overlapping section of the application site and the SAC. Potential indirect impacts on other Natura 2000 sites were considered using the source-pathway-receptor model, as described below. The primary consideration was Natura 2000 sites downstream on the River Boyne.

8.26 Descriptions of relevant sites are presented in **Table 8.2**, and their locations are shown in **Figure 8.1**.

Table 8.2: Natura 2000 sites of relevance to the Application Site

Site name	Distance	Qualifying interests
River Boyne and River Blackwater SAC (site code 2299)	Adjoining	**Annex I habitats:** alkaline fens, alluvial forests **Annex II species:** river lamprey, salmon, otter
Boyne Estuary SPA (site code 4080)	2.2 km east	**Key habitats:** coastal wetlands **Special Conservation Interests:** shelduck, oystercatcher, golden plover, grey plover, lapwing, knot, sanderling, black-tailed godwit, redshank, turnstone, little tern
River Boyne and River Blackwater SPA (site code 4232)	2.6 km west	**Special Conservation Interests:** kingfisher
Boyne Coast and Estuary SAC (site code 1957)	3.4 km east	**Annex I habitats:** estuaries, mudflats / sandflats, Salicornia and other annuals colonising mud and sand, Atlantic salt meadows, embryonic shifting dunes, shifting dunes, fixed coastal dunes with herbaceous vegetation **Annex II species:** none

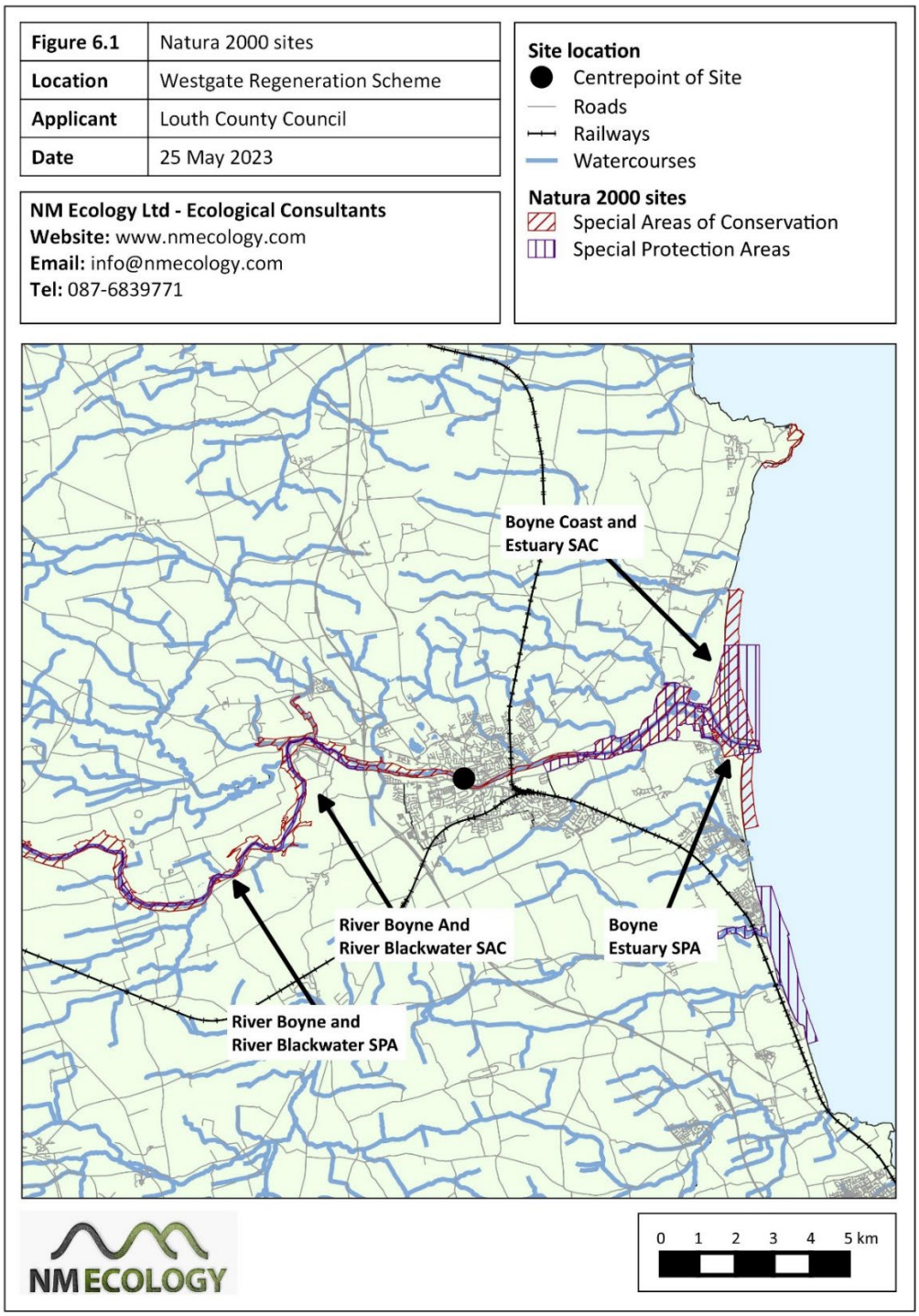

Figure 8.1: Natura 2000 sites in relation to the subject site.

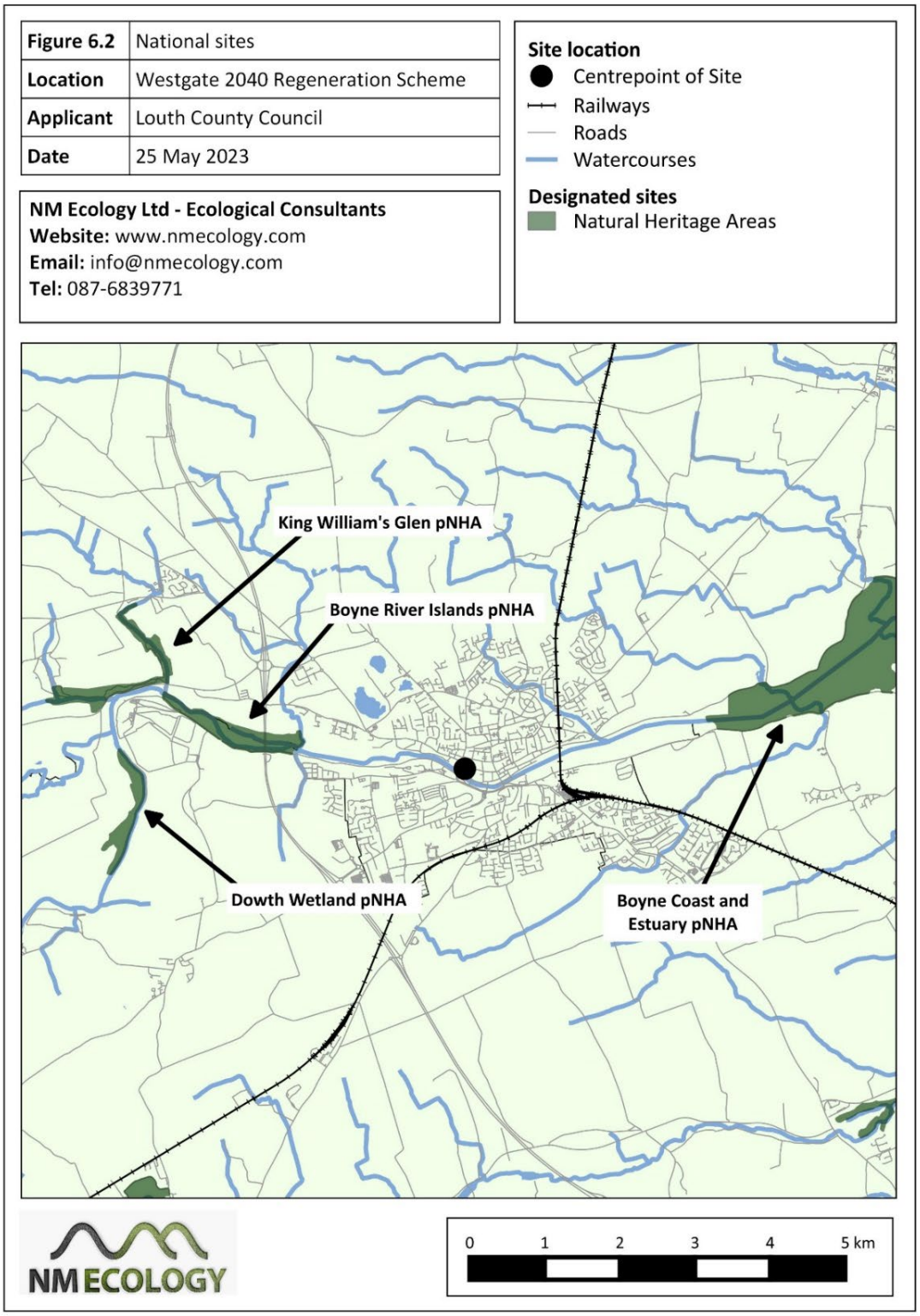

Figure 8.2: National Sites in relation to the subject site.

National Sites

8.27 The Site is not within or adjacent to any Natural Heritage Areas. Potential indirect impacts were considered on downstream sections of the River Boyne and / or within 5km of the centrepoint of the Site. Potential pathways to these sites are considered below.

8.28 Descriptions of relevant sites are presented in Table 6.3, and their locations are shown in **Figure 8.2**. It should be noted that pNHAs 1804, 1861 and 1862 are not included in the National Parks and Wildlife's database of pNHA site synopses, so the qualifying interests have been guessed based on a review of aerial photography.

Table 8.3: Natural Heritage Areas of relevance to the Site

Site name	Distance	Qualifying interests
Boyne River Islands pNHA (site code 1862)	2.1 km west	Alluvial woodland along the River Boyne
Boyne Coast and Estuary pNHA (1957)	3.3 km east	Refer to the *Boyne Coast and Estuary* SAC and *Boyne Estuary* SPA (see Table X.2 above)
King William's Glen pNHA (1804)	4.0 km west	Broadleaved woodland alongside the River Boyne and some tributaries
Dowth Wetland pNHA (1861)	4.3 km west	Seasonally-flooded land alongside the River Boyne

Identification of potential pathways for indirect impacts on designated sites

8.29 Indirect impacts can occur if there is a viable pathway between the source (the Site) and the receptor (habitats and species within a designated site). The most common pathway for impacts is surface water, e.g., if a pollutant reaches a river and is carried downstream into a designated site. Other potential pathways are groundwater, air (e.g., airborne dust or sound waves), or land (e.g., flow of liquids, vibration). The zone of effect for hydrological impacts can be several kilometres, but for air and land it is rarely more than one hundred metres. An appraisal of potential pathways for indirect impacts on designated sites is provided below.

8.30 The *River Boyne and River Blackwater* SAC adjoins the southern boundary of the Site and a small section of the SAC is located in the application site, although, the NIS confirms that none of the qualifying interests of this SAC are located within the overlapping section of the application site and the SAC. The SAC has been designated to protect a range of habitats and species associated with the freshwater section of the River Boyne, including alluvial forests, salmon, lamprey and otter. Considering the proximity of the Site to the river, and that it is at a higher elevation, there are a number of potential pathways for indirect impacts: surface water (either overland or via roadside storm drains), groundwater, land, and air.

8.31 The *Boyne Estuary* SPA is located approx. 2.2 km east of the Site. It has been designated for the protection of a range of over-wintering coastal / estuarine bird species, and one

breeding bird species (little tern). The River Boyne could potentially provide a surface water pathway to the SPA, but all other pathways (via groundwater, land, or air) can be ruled out due to distance.

8.32 The *River Boyne and River Blackwater* SPA is located approx. 2.6 km west of the Site. It has been designated to protect kingfishers, a riparian bird species. The SPA covers the freshwater section of the River Boyne upstream of the Site, so surface water pathways can be ruled out. All other pathways (via groundwater, land, or air) can be ruled out due to distance.

8.33 The *Boyne Coast and Estuary* SAC (also a pNHA) is located approx. 3.4 km east of the proposed development site. It has been designated for the protection of a range of intertidal and coastal habitats, notably mudflats, saltmarsh and dunes. The River Boyne could potentially provide a potential surface water pathway to the SAC, but all other pathways (via groundwater, land or air) can be ruled out due to distance.

8.34 The *Boyne River Islands* pNHA, *King William's Glen* pNHA and *Dowth Wetland* pNHA are all located 2.0 – 4.3 km west of the Site. All appear to be designated for riparian habitats in the freshwater section of the River Boyne, so surface water pathways can be ruled out. All other pathways (via groundwater, land or air) can be ruled out due to distance.

8.35 In summary, there are a number of potential pathways linking the Site and the *River Boyne and River Blackwater* SAC. Surface water pathways were also identified to two other Natura 2000 sites: the *Boyne Estuary* SPA and *Boyne Coast and Estuary* SAC. No pathways were identified to any other sites.

Desktop records of flora and fauna

8.36 Records of flora and fauna in the vicinity of the proposed development site were obtained from the National Biodiversity Data Centre (NBDC). These are publicly-available records from a range of verified sources (e.g. BSBI tetrad data for Ireland). Data were obtained from the 1km grid square O0875. The records were filtered for protected and red-listed species. Six protected mammals – otter, hedgehog, Leisler's bat, Daubenton's bat, common pipistrelle and soprano pipistrelle – have been recorded in the area, but no other rare or protected flora or fauna were recorded.

Baseline Ecological Features

Overview

8.37 Habitats within the proposed development site were classified using *A Guide to Habitats in Ireland* (Fossitt 2000). Four habitat types were found within the Site, as listed below. A habitat map is not provided, because the distribution of habitats can clearly be discerned from aerial photography, and from the descriptions provided below.

- Buildings and artificial surfaces (BL3)
- Dry meadows and grassy verges (GS2)
- Scrub / Treeline (WS1 / WL2)
- Ornamental / non-native shrubs (WS3)

- Estuaries (MW4)

Buildings and artificial surfaces (BL3)

8.38 The majority of the Site consists of buildings, roads, car parks, and other paved surfaces. Some buildings / surfaces support butterfly bush *Buddleja davidii* or common ruderal plants, but none have substantial cover of native vegetation, so they are of Negligible botanical importance.

Dry meadows and grassy verges (GS2)

8.39 A patch of unmanaged grassland was found on the embankment on the eastern side of the 'Bridge of Peace' (George's Street). It is dominated by false oat-grass *Arrhenatherum elatius* and cock's-foot *Dactylis glomerata*, with frequent common bent *Agrostis capillaris*, white clover *Trifolium repens* and ribwort plantain *Plantago lanceolata*.

8.40 Dry meadows are relatively uncommon in urban areas, and are typically only found on abandoned land. They generally consist of common and widespread plant species, but the diversity of species, and their value for biodiversity (notably pollinators), is higher than amenity grasslands. Therefore, the dry meadow habitat is considered to be of Local importance.

Scrub (WS1) / Treeline (WL2)

8.41 This habitat occurs around the margins of Murdock's Yard in the west of the Site. It consists of a discontinuous line of trees connected by linear scrub habitat. Beech *Fagus sylvatica* is the dominant tree, with some ash *Fraxinus excelsior* and sycamore *Acer pseudoplatanus*. Shrubs include butterfly bush, roses *Rosa* spp, exotic shrubs and dense brambles *Rubus fruticosus*.

8.42 This habitat consists mainly of non-native species, and is not connected to any larger areas of woodland / scrub habitat, so it is of Negligible botanical importance. However, it may provide nesting habitat for birds, as discussed in the following section.

Ornamental / non-native shrubs (WS3)

8.43 There is a line of non-native shrubs (of unknown species) between Father Connolly Way and the River Boyne. They are cropped to a height of approx. 1 m. As they consist only of non-native plant species, they are of Negligible botanical importance. However, they may provide nesting habitat for birds, as discussed in the following section.

River Boyne Estuary (MW4)

8.44 The River Boyne, part of the River Boyne and River Blackwater SAC, adjoins the southern boundary of the Site. It is tidal at this location, and some brown algae (e.g. *Fucus* spp) is visible along the edges of the river at low tide. It is approx. 50 m wide, and several metres deep at high tide. The edges of the river are formed rock gabions of approx. 4 m height.

8.45 The River Boyne is one of the largest river systems in eastern Ireland and supports a range of wildlife. It is designated an SAC at the closest point, and there are additional SPA and SAC designated upstream and downstream of the site. On this basis, the river is considered to be of International Importance.

Invasive non-native plant species

8.46 No Japanese Knotweed *Fallopia japonica* or any other species listed on Schedule 3 of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) were recorded in the vicinity of the site.

8.47 Butterfly-bush *Buddleja davidii* was recorded at a number of locations throughout the site. It is a problematic species that colonises buildings and other built surfaces, occasionally causing structural damage. However, it is very widespread in urban environments, it is not legally-restricted, and it does not have a negative ecological impact, so it is not considered to be an Important Ecological Feature for the purposes of this assessment.

Surveys for protected fauna

Birds

8.48 A number of common urban birds were recorded during the surveys, including feral pigeon, jackdaw, rook, hooded crow, starling and pied wagtail. No species of conservation concern were recorded (as per Gilbert et al. 2021). Species such as pigeon and jackdaw were observed in the derelict buildings and abbey walls and are likely to nest there.

8.49 Urban areas rarely support significant populations of endangered birds, so the site is of Negligible importance. However, all birds (including nests, eggs and chicks) receive protection under the Wildlife Act 1976 (as amended).

Bats

Habitat suitability for foraging bats

8.50 Four bat species have been recorded in the surrounding 1km square (Section 4.3): common pipistrelle, soprano pipistrelle, Daubenton's and Leisler's bats. All of these species are common and widespread in Ireland, and thus are listed as 'least concern' on the Irish red list of terrestrial mammals (Marnell et al 2019).

8.51 Soprano pipistrelles, common pipistrelles and Leisler's bats typically favour areas with woodland, freshwater habitats and linear vegetation (e.g. treelines, hedgerows). Daubenton's bats are primarily associated with freshwater habitats, in this case the Boyne Estuary.

8.52 However, it is important to note that there is artificial lighting throughout the site, particularly along roads and in car parks. Bats typically avoid brightly-lit areas, and Daubenton's bats are particularly sensitive to light. On this basis, the level of background lighting in the Site substantially reduces its suitability for foraging bats.

8.53 Therefore, the majority of the Site and its immediate surroundings are considered to be of Negligible importance as a feeding area / commuting route for bats. The only feature of importance for bats would be the Boyne Estuary, particularly areas with little or no artificial light.

Potential roost features

8.54 Notwithstanding the above discussion regarding foraging / commuting habitats, some of the derelict buildings within or adjacent to the Site have features that could potentially be suitable for roosting bats. In particular, the following were noted:

- Abbey: The former gable wall of the abbey on Old Abbey Lane is constructed of stone and is approx. 30 – 40 m in height. It has many small crevices in the wall and tower, and thus has high suitability for roosting bats

- Medieval Wall: A 4 – 5 storey derelict building on the north-western side of Murdock's Yard is constructed of stone and masonry and has a slate roof. There are many small holes and crevices on the building that would be suitable for roosting bats, and there may also be roosting opportunities in the Medieval Wall to the south of the building. On this basis, it is considered to have high suitability for roosting bats.

8.55 The descriptions above refer to the presence of crevices or cavities that could potentially be used by bats. However, it should be noted that all of these buildings are surrounded by artificial lights, which reduce the likelihood that any bats may roost in them. Therefore, these buildings could only be used by bat species that have partial tolerance of light, notably common or soprano pipistrelles.

8.56 No other features within the Site were considered to be suitable for roosting bats. The Bridge of Peace (George's Street) is constructed of solid concrete, and has no crevices or cavities. None of the trees within the Site have any crevices or cavities that would be suitable for roosting bats.

8.57 A series of three bat surveys was carried out at each of the structures of high suitability for bats, comprising a total of six surveys. The surveys dates were as follows:

- The Abbey: 24 May (emergence), 21 June (re-entry), 5 July (emergence)

- Medieval Wall: 25 May (re-entry), 20 June (emergence), 6 July (re-entry)

8.58 All surveys were carried out by two surveyors, and in suitable weather conditions. A summary of the survey results at each structure is presented below.

Survey results: The Abbey

8.59 No bats were recorded emerging from or entering the structure during any of the surveys. On this basis, we conclude that it is not being used by roosting bats.

8.60 Frequent passes by common pipistrelles were recorded during the emergence surveys on 24 May and 5 July, and a single Leisler's bat pass was recorded during the first survey. No bat activity was recorded during the re-entry survey. All bats were foraging, there was no sign of any roosting behaviour in the vicinity of the Site.

Survey results: The Medieval Wall / Murdock's Yard

8.61 No bats were recorded emerging from or entering the structure during any of the surveys. On this basis, we conclude that it is not being used by roosting bats.

8.62 Occasional passes by Leisler's bats and common pipistrelles were recorded during the emergence survey on 20 June and the re-entry survey on 6 July. No bat activity was recorded during the re-entry survey on 25 May. All bats were foraging, there was no sign of any roosting behaviour in the vicinity of the Site.

Evaluation

8.63 Some buildings have features that could potentially be suitable for roosting bats. However, following a series of bat surveys it was confirmed that none of these buildings supported a bat roost. The bridges and trees within the Site are unsuitable for roosting bats. Therefore, we conclude that the site is of Negligible importance for roosting bats.

8.64 Occasional bat foraging and commuting activity was recorded, notably by common pipistrelles and Leisler's bats. However, these species are very common throughout Ireland, including in urban areas, so the Site is of Negligible importance as a foraging habitat for them.

8.65 The key habitat of importance for foraging bats in the surrounding area is the Boyne Estuary. This area is assumed to be used as foraging habitat by a range of species, notably soprano pipistrelle, common pipistrelle, Leisler's bats and Daubenton's bats. The area is considered to be of Local importance in this regard.

Other terrestrial mammals

8.66 No mammals were observed during field surveys, nor any characteristic field signs of protected species (e.g. badger setts). The urban habitats within the Site would be unsuitable for most terrestrial mammals due to the lack of vegetation, the high levels of human activity, and the prevalence of artificial lighting.

8.67 Otters are known to use the River Boyne and are a qualifying interest of the *River Boyne and River Blackwater* SAC. Otters have large territories, and it is expected that the section of river bank adjoining the Site forms only a small part of an otter territory. The existing vertical rock gabions along the adjacent bank of the estuary would prevent otters from leaving the river at this location and it would be unsuitable as an otter holt due to tidal activity. In summary, the River Boyne is of International importance for otters, but the section adjacent to the Site is only of Local importance.

Fish

8.68 Atlantic salmon and river lamprey are qualifying interests of the *River Boyne and River Blackwater* SAC. Both species migrate between freshwater and marine habitats, so they are expected to pass through the River Boyne in the vicinity of the Site. However, they spawn in freshwater habitats, so the estuary would be unsuitable for this purpose. Therefore, whilst the River Boyne is of International importance for both species, but the section of the river adjacent to the Site is only of Local importance.

Identification of important ecological features

8.69 Table 6.4 provides a summary of all ecological features identified on the Site, including their ecological importance and legal / conservation status. For the purposes of this impact assessment, any features that are of Local importance, or that receive legal protection, are considered to be 'important ecological features'.

Table 8.4: Important ecological features within the Site

Ecological feature	Importance	Legal status*	Important feature?
River Boyne and River Blackwater SAC, Boyne Estuary SPA and Boyne Coast and Estuary SAC	International	HR	Yes
Other designated sites	International / National	HR / WA	No
Buildings and artificial surfaces (BL3)	Negligible	-	No
Dry meadows and grassy verges (GS2)	Local	-	Yes
Scrub (WS1) / Treelines (WL2)	Negligible	-	Yes, secondary importance for fauna
Ornamental / non-native shrubs (WS3)	Negligible	-	
River Boyne Estuary (MW4)	International		Yes
Invasive species	Negligible	-	No
Bats (foraging on Boyne estuary)	Local	HR, WA	Yes
Bats (roosting)	Negligible	HR, WA	No
Birds	Negligible	WA	Yes
Otter	Local	HR	Yes
Other terrestrial mammals	Negligible	-	No
Atlantic salmon and river lamprey	Local	HR	Yes

** HR – EC (Birds and Natural Habitats) Regulations 2011; WA – Wildlife Act 1976*

8.70 In summary, the important ecological features that should be considered constraints to the Site are: three Natura 2000 sites, the River Boyne estuary, dry meadows and grassy verges, bats (specifically foraging habitat along the Boyne Estuary), birds, otters and fish.

Characteristics of the Proposed Development

8.71 The proposed development comprises public realm regeneration works on lands within the Westgate Vision Area of Drogheda, Co. Louth. The overall objective of the project (known as the 'Westgate 2040 Project') is to act as a catalyst to support positive regeneration, compact growth and sustainable development in the Westgate Vision Area and the broader Drogheda Town Centre. Please refer to Chapter 5 of this EIAR for a detailed description of the proposed project.

Potential Impacts

Construction Phase

Natura 2000 Sites

8.72 The construction of the proposed development will involve a range of activities, including the demolition / removal of existing built surfaces, groundworks, and the construction of new surfaces. These activities have potential to generate pollutants, including:

- Concrete and cement, which are composed of highly alkaline, corrosive fine sediments that are very harmful for aquatic fauna
- Suspended silt or other sediments, which can reduce water quality, harm aquatic fauna, and/or alter the flow of watercourses
- Hydrocarbons (oil, petrol, diesel, etc), solvents and other chemicals, which can be toxic to aquatic fauna

As noted in the 'Designated Sites' section, the *River Boyne and River Blackwater* SAC adjoins the southern boundary of the Site (refer to **Figures 8.1** and **8.3**). The SAC boundary is irregular, and does not appear to follow either the river bank or the edge of the road. Some of the vegetation and paved areas within the Site are within the boundary of the SAC. However, it is important to note that none of the qualifying interests of the SAC (alkaline fens, alluvial forests, river lamprey, salmon or otter) occur within the Site, so there is nil to minimal risk of direct impacts on any such features.

Figure 8.3: Location of the SAC boundary relative to the Site. Source: National Biodiversity Data Centre.

8.73 Nonetheless, considering that the Site adjoins the SAC, there is a risk of indirect impacts during construction works. This also applies to The *Boyne Estuary* SPA and *Boyne Coast and Estuary* SAC, which are located 2.2 km and 3.4 km downstream of the Site (refer to **Figure 8.2**), and for which the River Boyne provides a surface water pathway. All of the qualifying interests of these Natura 2000 sites could potentially be vulnerable to waterborne pollutants.

8.74 A hypothetical impact assessment of potential pollution incidents is difficult, because any potential impacts would vary depending on the type of pollutant, its quantity, the rate at which it would be released, and the time of year. Minor pollution incidents would be diluted by the river waters, reducing their concentration to negligible levels before they could affect the qualifying interests of the Natura 2000 sites. Only a very large pollution event (e.g. a significant fuel spill, or a prolonged release of suspended sediments) could potentially cause adverse effects on the qualifying interests of the Natura 2000 sites identified.

8.75 However, in accordance with the precautionary principle we will consider a worst-case scenario, and acknowledge that there is a risk of significant effects on one or more of the Natura 2000 sites. Mitigation measures will be necessary in order to avoid or reduce the potential impacts of pollution incidents. Further details are provided in the NIS that accompanies this application, and which is reproduced in 'Volume 3 – Appendices' of this EIAR.

River Boyne

8.76 The Natura 2000 designations protect a number of habitats and species that are of European importance. However, it is important to note that the River Boyne supports a range of other ecological features that are not covered by the designations, e.g. estuarine / aquatic habitats, plants, birds, mammals, fish and invertebrates. Future development in the Site may cause pollutants to enter the River Boyne, which may have a localised impact on these ecological features.

Other habitats

8.77 The dry meadow habitat on the bridge embankment (the eastern side of George's St) will be cleared and replaced with a raised walkway and landscaped areas. When considered in isolation, this will have a negative impact on this habitat of Local importance.

8.78 However, the proposed development will involve substantial landscape planting along the riverfront and near the Medieval Wall, including trees, shrubs and groundcover. The majority of species will be native to Ireland, supplemented by a small proportion of amenity planting using non-native species. Overall, this will result in a significant increase in the biodiversity value of the site, more than compensating for the dry meadow habitat that will be lost. When all new landscaping is established, it will result in a moderate positive effect.

Birds and small mammals

8.79 The scrub / treeline and ornamental non-native shrubs may provide habitat for nesting birds. If the trees / shrubs are cleared during the bird nesting season (between March and August, inclusive), it is possible that active bird nests could be destroyed. The killing of any birds , or the disturbance of their breeding or/ resting places would constitute an

offence under the *Wildlife Act* 1976 (as amended) and could have a significant negative impact.

Operational Phase

Foraging / commuting bats

8.80 Artificial lighting will be required to provide safe access for cars and pedestrians, and along the riverside walkway. If any such lighting is directed towards the Boyne Estuary, it is possible that it could displace bats from the area. This would have a slight negative impact on local bat populations.

Cumulative Ecological Impacts

8.81 Planning applications in the vicinity of the site were reviewed using the online planning records of Louth County Council. The majority of applications were for changes-of-use in existing buildings, or small-scale works such as extensions to commercial premises. However, one development of moderate scale was noted, as follows:

- Planning reference 181056. Permission granted in 2020 for the demolition of existing derelict structures and the construction of 41 no. apartments. The application was accompanied by a Natura Impact Statement and a Bird and Bat survey. A variation was granted in 2021 (planning reference 20763) to increase the height of the buildings and the number of residential units.

8.82 The development will be located in close proximity to the River Boyne, and could potentially act in-combination to increase the magnitude of ecological impacts. It is noted that the Natura Impact Statement for the residential development includes construction-phase pollution-prevention measures, intended to avoid indirect impacts on water quality in the river.

'Do Nothing Scenario'

8.83 If the proposed development does not take place, the habitats, flora and fauna of the site would remain in a similar condition to the baseline environment.

Mitigation Measures

Engagement of an Ecological Clerk of Works

8.84 A number of sensitive habitats and species were recorded in the vicinity of the proposed development site, and some of these mitigation measures require specialist skills during construction works. Therefore, the construction contractor will employ an Ecological Clerk of Works (ECoW) to oversee the implementation of the mitigation measures outlined below. The ECoW will be required to provide reports and written correspondence to the Employers' Representative as requested, in order to demonstrate compliance with the measures outlined in this report.

Pollution Prevention Measures (Construction phase)

8.85 The following mitigation measures have been designed with reference to the following guidelines:

- *Guidelines on protection of fisheries during construction works in and adjacent to waters* (Inland Fisheries Ireland, 2016)

- *Pollution prevention guidelines: PPG5 - works and maintenance in or near water* (UK Environment Alliance, 2007)

8.86 The implementation and monitoring of all mitigation measures will be the responsibility of the site foreman. Some tasks may be assigned to a qualified member of the construction team (e.g. an environmental manager), although it will be the responsibility of the foreman to ensure that the relevant personnel are sufficiently trained, competent and informed to carry out the tasks outlined here. Liability for any pollution incidents will be assigned to the foreman and their construction company.

Concrete and cement

8.87 These products are highly toxic to fauna, particularly fish and other aquatic / marine species. On-site pouring and/or mixing of concrete or cement will be required during construction works, so the following measures will be implemented in order to retain all cement-based materials within the boundaries of the Site:

- Concrete pouring / mixing will only take place in dry weather conditions. It will be suspended if high-intensity local rainfall events are forecast (e.g. >10 mm/hr, >25 mm in a 24 hour period or high winds)

- If any on-site mixing of concrete is required, it will be carried out at least 25m from the River Boyne. If any cement-based products will be stored on-site, they will be kept in a sheltered area at least 25m from the River Boyne, and will be covered (e.g. with a thick plastic membrane) to prevent spread by wind

- Ready-mix lorries and larger plant will not be cleaned on-site; they will be taken to an appropriate off-site facility with capacity to capture and treat contaminated wash waters

- If any on-site cleaning of tools or concrete-batching plant is required, it will take place at least 25m from the River Boyne. Wash waters will be discharged to a soakaway.

Suspended sediments

8.88 The term 'suspended sediments' refers to any silt, mud or other fine sediment that becomes dissolved in water. Water can be contaminated by suspended sediments (SS) from open earthworks and excavations (either from rainfall or groundwater seepage), from rainfall on soil/sediment stockpiles, or from the tyres / tracks of construction vehicles. In order to retain all contaminated waters within the boundary of the Site, the following measures will be implemented:

- Excavation works will be suspended if high intensity local rainfall events are forecast (e.g. >10 mm/hr, >25 mm in a 24 hour period, or high winds).

- If any excavations need to be dewatered, the SS-contaminated water will be retained and treated within the boundary of the Site. It will be collected and pumped into a settlement tank / pond (or similar feature), left undisturbed until sediments have settled, and then discharged via a buffered outflow to a soakaway that is at least 25m from the River Boyne

- Stockpiles of mud, sand or other fine sediments will be stored at least 25m from the River Boyne. Stockpiles will be levelled and compacted, and will be covered with thick plastic membranes in order to limit wind/rainwater erosion

- Dust suppression and road cleaning measures will be implemented, as outlined in Section 8 of the IFI guidelines.

Hydrocarbons and chemicals

8.89 Hydrocarbons (oil, petrol, diesel, etc) and solvents are toxic to fauna. These chemicals can enter surface water or groundwater if they are accidentally spilled (e.g. during re-fuelling of machinery), or from leaking containers. In order to retain such materials within the boundaries of the Site, the following measures will be applied throughout the construction works:

- Any fuel, oil or chemical containers will be kept at least 50m 25m from the River Boyne. These pollutants are hazardous and must be stored in a designated bunded area that has sufficient capacity to retain any spills

- All machinery should be protected from vandalism and unauthorised interference, and will be turned off and securely locked overnight

- If any on-site re-fuelling is required, it will take place at least 50m 25m from the River Boyne. Immobile plant will be refuelled over drip-trays.

- While in operation, diesel pumps, generators or other similar equipment will be placed on drip trays to catch any leaks

- A spill kit will be kept on-site. If any spills occur, appropriate measures will be taken to intercept hydrocarbons or chemicals on-site before they can leave the Site.

Bat-sensitive lighting (construction and operation phases)

8.90 Bats are sensitive to artificial lighting, and they may be displaced from the site if lights are of high intensity, or if they are directed towards trees or the river. To avoid or minimise displacement of bats from high-quality feeding areas along the River Boyne, 'bat-sensitive' lighting techniques are implemented for landscaped areas near the river. The design principles have been agreed with the lighting consultant, and are as follows (BCT & ILP 2018):

- Low-UV LEDs are the preferred bulb type, as they have least effect on bats. Lights will have a 'warm' tone, with minimal blue / UV content

- Lights in pedestrian areas will be installed at a low level, e.g. bollards or hand rails of up to one metre in height, with light directed onto ground level, with no light spill above the horizontal. Lux levels will be the minimum required for pedestrian safety

- No lights will be directed towards freshwater habitats (i.e. the River Boyne), woodland or trees

8.91 These measures will apply both during both the construction and operational phases.

Protection of nesting birds and terrestrial mammals (Construction phase)

8.92 Under Sections 22 and 23 of the Wildlife Act 1976 (as amended), it is an offence to kill or injure a protected bird, or to disturb their breeding / resting places. Most birds nest between March and August (inclusive), so it is strongly recommended that any tree or shrub removal is carried out between September and February (inclusive). If this is not possible, an ecologist will survey relevant vegetation in advance in order to determine whether any nests are present. If any are encountered, the vegetation clearance will be delayed until the nesting attempt has been completed, e.g. when chicks have fledged and the nest has been abandoned.

8.93 Tree protection zones will be marked out for all retained trees and hedgerows in the vicinity of working areas.

Monitoring & Reinstatement Measures

8.94 The mitigation measures as outlined above for this project are standard and will ensure best-practice measures are implemented that will not require any monitoring.

Residual Impacts

8.95 The proposed pollution prevention measures will prevent fine sediments, concrete/cement, hydrocarbons and other pollutants from reaching the River Boyne and associated Natura 2000 sites. Subject to the successful implementation of these measures, the proposed development, either alone or in combination with other developments, will not adversely affect the integrity of any European sites, either directly or indirectly. The same conclusion is reached in the Natura Impact Statement that accompanies this application.

8.96 All tree felling, demolition and site clearance works will take place outside the season of peak breeding activity in birds and mammals, or the area will be surveyed by an ecologist to confirm that no protected fauna are present. As a result, there will be no impact on local bird or mammal populations, and no legal offence under the Wildlife Act 1976 (as amended).

8.97 Bat-sensitive lighting techniques will be incorporated into the lighting plan in order to avoid light-spill into areas that are likely to be used by bats. As a result, there should be no significant reduction in bat activity within the site.

8.98 Subject to the successful implementation of these measures, it is concluded that the proposed development will not cause any significant negative residual impacts on designated sites, habitats, protected species, or any other features of ecological/biodiversity importance.

Worst Case Scenario

8.99 In a worst-case scenario there may be significant effects on some or all of the important ecological features identified in this chapter, notably from pollution of the river during

construction work, direct impacts on nesting birds in vegetation, or foraging bats along the river. The mitigation strategy will ensure that this is not the case.

Interactions

8.100 **Hydrology & Hydrogeology**: interactions between 'Biodiversity' and 'Land, Soils and Geology' have been considered in this EIAR as the proposed project has the potential to create impacts on nearby watercourses during the construction stage as a result of silt laden runoff and potential spills/leakages of fuels/contaminants.

Difficulties in Compiling Information

8.101 No difficulties were encountered. All surveys were undertaken at appropriate times of year.

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- Rose, F., 1989. Grasses, Sedges Rushes and Ferns of the British Isles and northwestern Europe. Penguin Books Ltd, London.

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9. Land, Soils & Geology

9.1 Article 3(1) of amended Directive states:

> *'The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:*
>
> *c) **land, soil,** water, air and climate…'* [**our emphasis**.]

9.2 In accordance with the amended Directive, this chapter considers the likely significant effects on the receiving geological, land and soil environments associated with the construction and operation of the proposed development.

9.3 The proposed development refers to all elements of the application including site preparation and construction works within the boundary of the application site. Where negative effects are predicted, this chapter identifies appropriate mitigation strategies therein. It is assumed these mitigation measures will be implemented in full to ensure that no negative or adverse effects will be created on the environment with respect to land, soils and geology.

9.4 This chapter is also supported by Figures provided in the following Appendix documents in Volume 3 of this EIAR:

- Appendix 9.1 – Photographs of Site Surveying
- Appendix 9.2- Mapped Geology
- Appendix 9.3 – Mapped Soils
- Appendix 9.4– Mapped Subsoils
- Appendix 9.5 - Historic 25" Map
- Appendix 9.6 – Mapped Land Use
- Appendix 9.7 – Mapped Special Areas of Conservation
- Appendix 9.8 – Mapped National Heritage Areas

9.5 A Preliminary Outline Construction and Environmental Management Plan (pCEMP) is also appended to this EIAR. The pCEMP will be a key construction contract document, which will ensure that all mitigation measures, which are considered necessary to protect the environment, are implemented. It will also include all of the mitigation described within the EIAR.

Statement of Authority

9.6 RSK (Ireland) Ltd. (RSK), part of RSK Group, is a consultancy providing environmental services in the hydrological, hydrogeological, and other environmental disciplines. The company and group provide consultancy to clients in both the public and private sectors.

More information can be found at www.rskgroup.com. The principal members of the RSK EIA team involved in this assessment include the following persons:

- Project Manager & Lead Author: Sven Klinkenbergh – B.Sc. (Environmental Science), P.G. Dip. (Environmental Protection). Current Role: Principal Environmental Consultant. Experience c. 10 years industry experience in the preparation of hydrological and hydrogeological reports

- Project Scientist: Lisa Colleen McClung - B.Sc. (Environmental Studies), M.Sc. (Environmental Science). Current Role: Graduate Project Scientist

- Project Scientist: Mairéad Duffy - B.Sc. (Environmental Science), M.Sc. (Climate Change). Current Role: Graduate Project Scientist

- Project Scientist : Jayne Stephens - B.Sc. (Environmental Science), PhD (Environmental Microbiology). Current Role: Environmental Consultant. Experience c.5.5 years' experience in the Surface water systems.

Assessment Structure

9.7 In line with the EIA Directive and current EPA guidelines the structure of this Land, Soils and Geology and Hydrogeology chapter is as follows:

- Assessment Methodology and Significance Criteria.

- Description of baseline conditions at the Site.

- Identification and assessment of impacts to land, soils and geology associated with the proposed development, during both the construction and operational phases .

- Identification of mitigation measures to avoid, remediate or reduce the impacts identified, including mitigation by avoidance at design stage.

- Identification and assessment of residual impact of the proposed development considering recommended mitigation measures.

- Identification and assessment of cumulative impacts if and where applicable.

Assessment Methodology and Significance Criteria

9.8 The following calculations and assessments were undertaken in order to evaluate the potential impacts of the Development on the soils, land, geology, and ground stability aspects of the environment at the urban regeneration scheme at Westgate, Drogheda:

- Characterise the topographical, geological, and geomorphological regime of the Site from the data acquired through desk study and onsite surveys.

- Consider ground stability issues as a result of the proposed development, its design and methodology of construction.

- Assess the combined data acquired and evaluate any likely impacts on the soils, geology and ground stability aspects of the environment.

- If impacts are identified, consider measures that would mitigate or reduce the identified impact.

9.9 Where impacts are identified, measures are described that will mitigate or reduce the identified impact. Findings are presented and reported in a clear and logical format that complies with EIAR reporting requirements.

Legislation Requirements and Relevant Guidance

9.10 This assessment complies with the EIA Directive, as amended, and considers the environmental planning policy and industry best-practice guidance relevant to an assessment of land, soil and geological environments are summarised below in **Table 9.1.**

Table 9.1: Relevant European and National Planning Policy

Legislation	
EU	Assessment of the effects of certain public and private projects on the environment (2014/52/EU)
	Dangerous Substances Directive (2006/11/EC)
	Environmental Liability Directive (2004/35/EC)
National	Environmental Protection Agency (EPA) (2003) Advice Notes for Preparing Environmental Impact Statements
	Environmental Protection Agency (EPA) (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports –(May 2022) (supersede 1997 and 2002 versions)
	Heritage Act 1995, as amended
	Institute of Geologists of Ireland (IGI) (2002) Geology in Environmental Impact Statements – A guide
	IGI (2013) Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements
	National Roads Authority (NRA) (2008) Environmental Impact Assessment of National Road Schemes – A Practical Guide – Rev 1
	NRA (2008) Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes
	Planning and Development Act 2000, as amended
	Planning and Development Regulations 2001, as amended

Desk Study

9.11 A desk top study assessment of the land, soils and geology aspects of the application site were undertaken before and after field investigations. This involved the following components:

- Acquisition and compilation of all available and relevant maps of the proposed Development.
- Detailed study and assessment of the proposed Development relative to available data on site topography and slope gradients.
- Thorough study and assessment of the proposed Development relative to available data on site soils, subsoil and bedrock geology, which included:
  - Overlay Ordnance Survey of Ireland (OSI) 1:250,000, 1:50,000 and 1:10,560 (6") maps with AutoCAD plan drawings.
  - Overlay Geological Survey of Ireland (GSI) Geology maps (1:100,000) to determine site bedrock geology and the presence of any major faults or other anomalies.
  - Overlay Geological Survey of Ireland (GSI) Groundwater Resources (Aquifers), Groundwater Vulnerability, and Groundwater Recharge maps to determine site sensitivity in terms of groundwater.
  - Overlay Environmental Protection Agency (EPA) and Teagasc (Agricultural Agriculture & Food Authority) Soils and Subsoil maps (1:50,000) to determine categories of soils and subsoil and indirectly the geochemical origin for the study area.
  - Search of the GSI karst database for records of karst features at and near the study area.
  - Search of the GSI wells and springs database for records of wells or springs at and near the study area.
  - Search of National Parks and Wildlife Service designated sites in the region.

Field Work

9.12 Field inspections were carried out at the site of the proposed development during March and April 2022. These works consisted of the following:

- Site walk over including recording and digital photography of significant features.
- Drainage mapping.
- Recording of GPS co-ordinates for all investigation and monitoring points in the study.

9.13 Initial site walk overs were carried out to assess general ground conditions including topographical characteristics, and to observe the existing site including visual

assessment of the receiving environment in terms of impacts arising from the existing infrastructure and practices at/within the site (**EIAR Volume 3:** Appendix 9.1 and 10.1: Photographs of Site Surveying). These photos show surface water sampling events and give an indication of topography and the level of soil sealing that is present on site.

Evaluation of Potential Effects

Sensitivity

9.14 Sensitivity is defined as the potential of a receptor to be significantly affected by a proposed Development (EPA, 2023). Potential affects arising by a proposed development in terms of land, soils and geology will be limited to a localised scale, and therefore in describing the sensitivity of land, soils, and geology it is appropriate to rate these while considering the value of the receiving environment or site attributes.

9.15 Table 9.2 presents categories and criteria for rating site attributes (NRA, 2008):

Table 9.2: Criteria for Rating Site Attributes – Land, Soils and Geology Specific

Importance	Criteria
Extremely High	Attribute has a high quality or value on an international scale.
Very High	Attribute has a high quality, significance or value on a regional or national scale.
High	Attribute has a high quality, significance or value on a local scale.
Medium	Attribute has a medium quality, significance or value on a local scale.
Low	Attribute has a low quality, significance or value on a local scale.

9.16 Considering the above categories of rating importance and associated criteria, Table 9.3 presents rated sensitivity categories (SNH, 2013):

Table 9.3: Criteria for Rating Site Sensitivity – Landscape Character Specific

Importance	Criteria
High Sensitivity	Key characteristics and features which contribute significantly to the distinctiveness and character of the landscape character type. Designated landscapes e.g. National Parks, Natural Heritage Areas (NHAs) and Special Areas of Conservation (SACs) and landscapes identified as having low capacity to accommodate proposed form of change, that is; sites with attributes of **Very High Importance**.
Medium Sensitivity	Other characteristics or features of the landscape that contribute to the character of the landscape locally. Locally

	valued landscapes which are not designated. Landscapes identified as having some tolerance of the proposed change subject to design and mitigation, that is; sites with attributes of **Medium to High Importance**.
Low Sensitivity	Landscape characteristics and features that do not make a significant contribution to landscape character or distinctiveness locally, or which are untypical or uncharacteristic of the landscape type. Landscapes identified as being generally tolerant of the proposed change subject to design and mitigation, that is; sites with attributes of **Low Importance**.

Magnitude

9.17 The magnitude of potential impacts arising as a product of the proposed development are defined in accordance with the criteria provided by the EPA, as presented in Table 9.4 (EPA, 2022).

Table 9.4: Describing the Magnitude of Effects

Magnitude of Effect	Description
Imperceptible	An effect capable of measurement but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with the existing or emerging baseline trends.
Significant	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.
Profound	An impact which obliterates all previous sensitive characteristics.

9.18 In terms of land, soils and geology, magnitude is qualified in line with relevant guidance, as presented in **Table 9.5** (NRA, 2008).

Table 9.5: Qualifying the Magnitude of Impact on Soil and Geological Attributes

Magnitude of Impact	Description	Examples
Large Adverse	Results in loss of attribute.	Removal of the majority (>50%) of geological heritage feature.

Magnitude of Impact	Description	Examples
Moderate Adverse	Results in impact on integrity of attribute or loss of part of attribute.	Removal of part (15-50%) of geological heritage feature.
Small Adverse	Results in minor impact on integrity of attribute or loss of small part of attribute.	Removal of small part (<15%) of geological heritage feature.
Negligible	Results in an impact on attribute but of insufficient magnitude to affect either use or integrity.	No measurable changes in attributes.
Minor Beneficial	Results in minor improvement of attribute quality.	Minor enhancement of geological heritage feature.
Moderate Beneficial	Results in moderate improvement of attribute quality.	Moderate enhancement of geological heritage feature.
Major Beneficial	Results in major improvement of attribute quality.	Major enhancement of geological heritage feature.

Significance Criteria

9.19 Considering the above definitions and rating structures associated with sensitivity, attribute importance, and magnitude of potential impacts, rating of significant environmental impacts is done in accordance with relevant guidance as presented in Table 9.6 below (NRA, 2008). This matrix qualifies the magnitude of potential effects based on weighting same depending on the importance and/or sensitivity of the receiving environment.

9.20 In terms of land, soils and geology, the general terms for describing potential effects **(Table 9.4: Describing the Magnitude of Impacts)** are linked directly with specific terms the proposed development for qualifying potential effects (as set out above in **Table 9.5: Qualifying the Magnitude of Impact on Soil and Geological Attributes)**. Therefore, qualifying terms (**Table 9.6**) are used in describing potential impacts of the proposed development.

Table 9.6: Weighted Rating of Significant Environmental Impacts

Rating	Magnitude of Impact			
	Negligible (Imperceptible)	**Small Adverse (Slight)**	**Moderate Adverse (Moderate)**	**Large Adverse (Significant to Profound)**

Rating	Magnitude of Impact			
Extremely High	Imperceptible	Significant	Profound	Profound
Very High	Imperceptible	Significant/ Moderate	Profound/ Significant	Profound
High	Imperceptible	Moderate/ Slight	Significant/ Moderate	Profound/ Significant
Medium	Imperceptible	Slight	Moderate	Significant
Low	Imperceptible	Imperceptible	Slight	Slight/Moderate

Baseline/Receiving Environment

9.21 This section provides a detailed description of the baseline environment with respect to Land, Soils and Geology.

Site Walkover and Observations

9.22 Site walk over surveys were tailored in line with the Wastegate Proposal Map, illustrating the site layout presented in **Chapter 3**. The Site is approximately 1.89 hectares. Photographs obtained during site surveys are presented in **EIAR Volume 3: Appendix 9.2.**

Field Work Restrictions

9.23 Access to the application site was unrestricted as the project entails the regeneration of mainly public lands.

Topography

9.24 The NOD Flood Risk Assessment (FRA) (2023) notes a significant change in topography across the proposed development site. The riverfront area along Father Connolly Way is determined to be generally quite flat with the road level varying between 3.5 – 4.5m AOD. A significant rise up to West Street was identified, located north of 'The Abbey', and has a road level varying between 8.0 – 11.0m AOD. There is an additional rise in the Site's topography to the northern end of the red line boundary of the proposed Site where Fair Street is located. The road level in this area varies around 17 – 18m AOD.

Bedrock Geology

9.25 Mapped geology is presented in **EIAR Volume 3: Appendix 9.2.** The geological formation underlying the Site is of Visean limestone and calcareous shale. GSI (2022) Bedrock 100k maps have described the underlying geology as 'pale-grey, thickly-bedded, highly micritised grainstones, packstones and wackestones' of the Tullyallen Formation. There are a number of GSI Technical boreholes located close to the site presented in **Table 9.7.**

Table 9.7: Boreholes located near the Site

GSI Geotechnical Boreholes Depth	Distance	GSI Report Reference

10-20 m; Bedrock Not Met	.26 km (southeast)	2618
5-10 m, 10-20 m; Bedrock Not Met	.45 km (northeast)	2960
0-5 m, 5-10 m; Bedrock Not Met	.44 km (northwest)	2611

Soils and Subsoils

9.26 Consultation with available soil maps (SIS, EPA, Teagasc) indicate that soil types across the Site include 'Artificial Surfaces' of 'Discontinuous Urban Fabric', bordered by 'Water' to the south of the Site boundary **EIAR Volume 3: Appendix 9.3.**

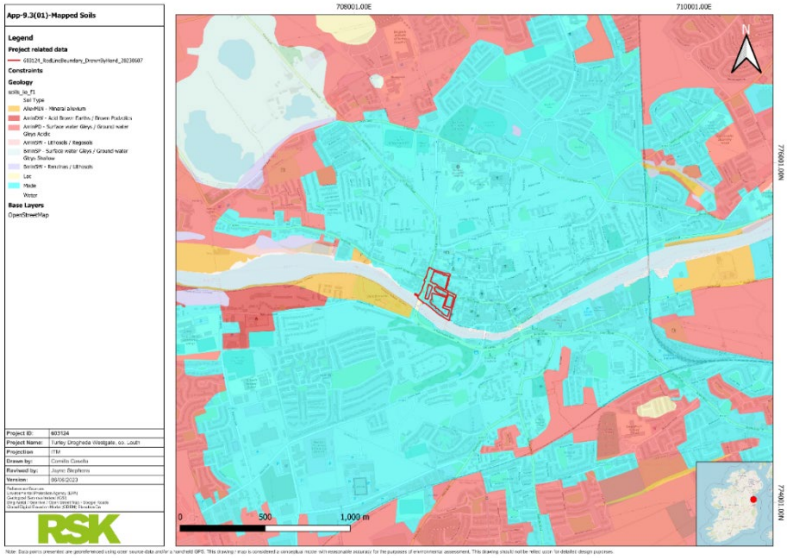

Figure 9.1: Map showing soil types across Drogheda (Source: RSK)

9.27 Consultation with available subsoil maps (GSI, 2022) indicate that subsoil types across the Site are of 'Man Made Ground', again, bordered by 'Water' to the south of the Site boundary **EIAR Volume 3: Appendix 9.4.**

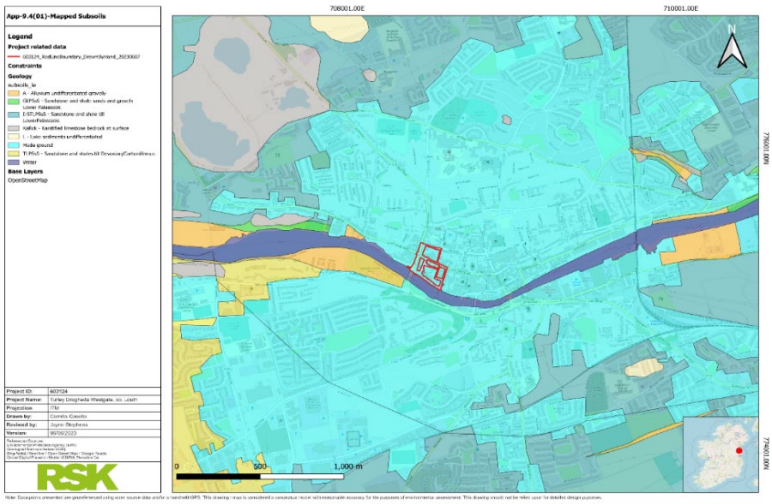

Figure 9.2: Map showing subsoil types across Drogheda (Source: RSK)

Land Use & Site Contamination

9.28 Consultation with GeoHive Historical 6" maps (2022) indicates that part of the site was used as a timber yard and saw mill during the mid-1800s. Historic land use of the Site continued and in available 25" GeoHive maps, it was noted the Abbey was identified as being in ruins, **EIAR Volume 3: Appendix 9.5**

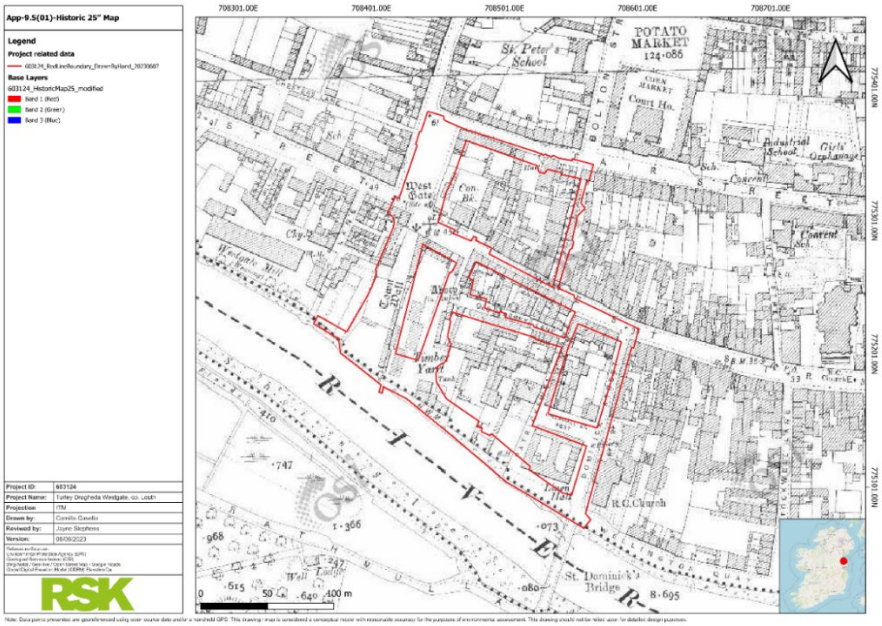

Figure 9.3: Historical 6" maps (2022) showing part of the site was used as a timber yard and saw mill during the mid-1800s (Source: GeoHive)

9.29 No intrusive ground works data was available in the form of Site Investigation Reports to inform this Chapter. Since the Site is situated in an Urban Area **EIAR Volume 3: Appendix 9.6**, there is likely to be some level of contamination in the soil from previous impacts such as construction waste and vehicular impacts of leaking hydrocarbons which may have been buried from previous developments.

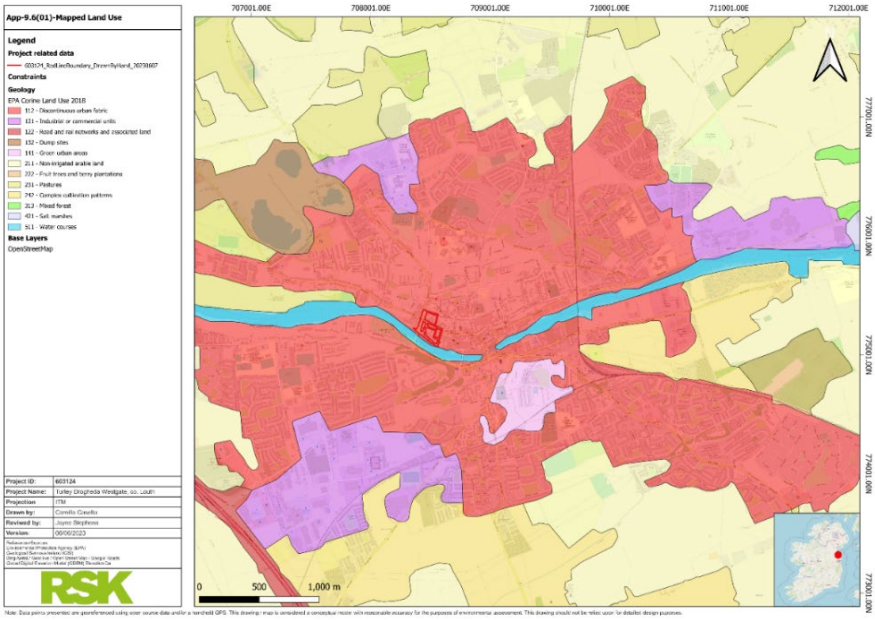

Figure 9.4: Mapped land use of the site and area (Source: RSK)

Designated and Protected Areas

9.30 Any potential effects to Soils or Geology are not considered to have direct effects to downgradient designated sites, however entrainment of soils in runoff is a significant potential impact of the Development covered under **EIAR Chapter 10: Hydrology and Hydrogeology.** Therefore, effects to soil have the potential to have secondary or indirect and effects via hydrology in particular to down gradient receptors.

9.31 Buildings, such as the old Abbey and Medieval walls, along George's Street and the carpark to the west of the Drogheda Garda Station within the masterplan area are determined to be of significant heritage value and must be kept/preserved.

9.32 The application site is located within/adjacent to the built heritage/archaeological designations. Approximately 2.3 kilometres upstream of the application site is a Geological Heritage Site. The Boyne River Valley has been recommended as a Geological NHA for "*a glacial U-shaped valley with characteristic depositional and erosional features associated with ice flow and glacial meltwater*" (GSI, 2022). Further information on Cultural Heritage and Archaeology can be found in **Chapters 16 and 17** of this EIAR.

European Sites

9.33 *The River Boyne and River Blackwater SAC is located immediately to the south adjoining the southern boundary of the Site as shown **EIAR Volume 3: Appendix 9.7.** Potential effects on Natura 2000 sites were considered within a zone of influence of 5 kilometres. While sites located downgradient of the Development would generally only be considered, given the tidal nature of the River Boyne, and pollution potential of sites to the west, sites upgradient of the Development were also considered. All SACs and SPAs are listed and discussed in the **Section Designated Sites** – Natura 2000 in **Chapter 8:** The River Boyne and River Blackwater SAC is located **Biodiversity.***

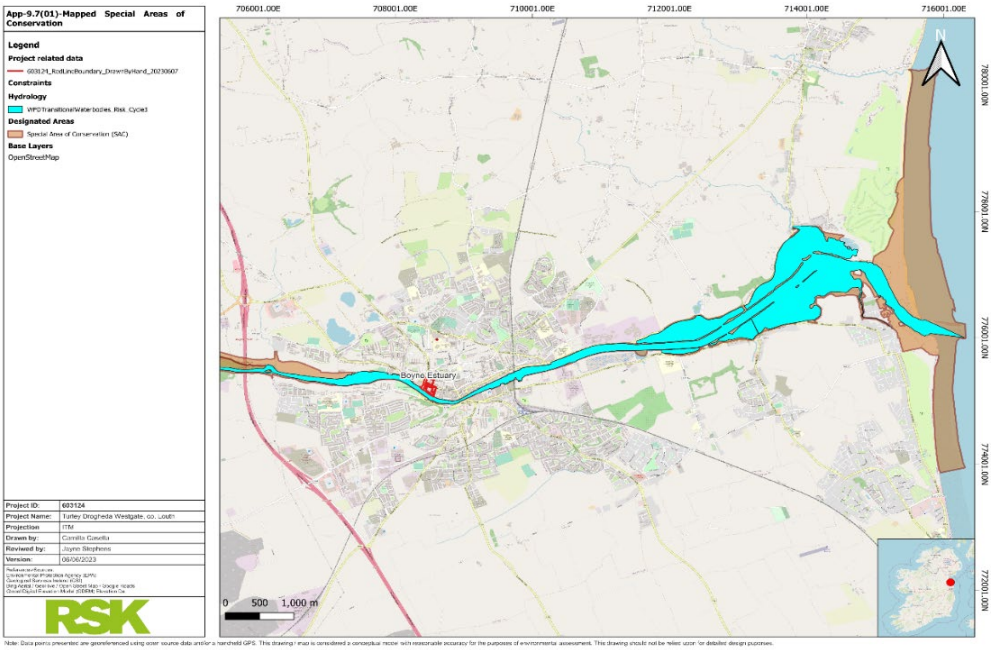

Figure 9.5: Map showing the River Boyne and River Blackwater SAC (RSK).

9.34 Ground water bodies underlying the application site are also protected under EU Water Framework Directive Legislation as Designated Groundwater in SPA and SAC Habitats.

National Sites

9.35 The Site is not within any Natural Heritage Areas. However, again considering the fluvial tidal nature of the Site as above, potential indirect impacts were considered within a zone of influence of 5 kilometres. Relevant sites are listed and discussed in **Section Designated Sites – National Sites** in **Chapter 8: Biodiversity** and presented in **EIAR Volume 3: Appendix 9.8.**

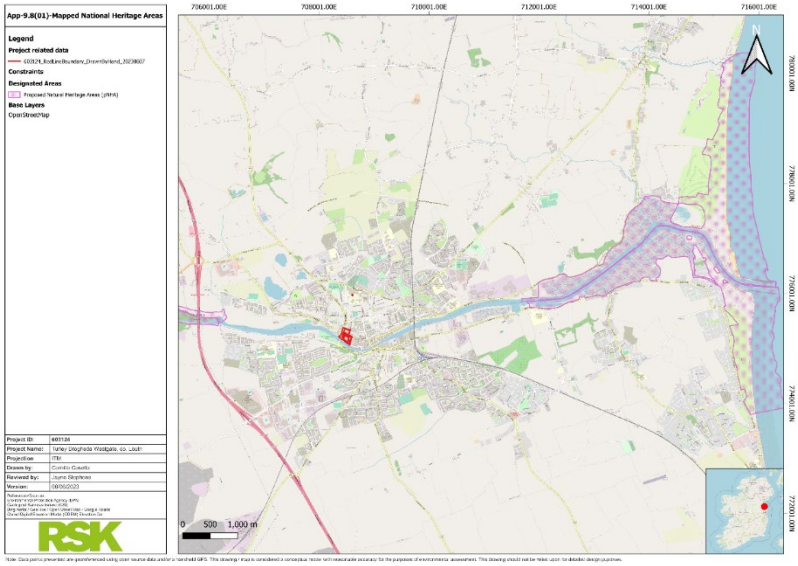

Figure 9.6: Mapped National Heritage Areas (Source: RSK)

Characteristics of the Proposed Development

9.36 The proposed development comprises public realm regeneration works on lands within the Westgate Vision Area of Drogheda, Co. Louth. The overall objective of the project (known as the 'Westgate 2040 Project') is to act as a catalyst to support positive regeneration, compact growth and sustainable development in the Westgate Vision Area and the broader Drogheda Town Centre. Please refer to **Chapter 5** of this EIAR for a detailed description of the proposed project.

Assessment of Potential Effects

9.37 The *Soil Thematic Strategy* and the *Roadmap to a Resource Efficient Europe* highlights the importance of sustainable use of soil and the need to tackle land take. In line with this proposal, it states "*Public and private projects should therefore consider and limit their impact on land, particularly land take, and soil, including on organic matter, erosion, compaction, and sealing. This should be facilitated through appropriate land use plans and policies at national, regional, and local levels*" (EC, 2012).

9.38 The predicted impacts of the proposed development with regard to the land, soil and geology environment will be assessed for the construction and operational phases of the proposed development. The predicted impacts of a "do nothing" scenario is also considered.

9.39 Assessments of the baseline geological and geotechnical conditions of the site indicate the following:

- The site has already experienced impacts to baseline conditions through urban development.
- There is no indication that current land use practices have had adverse impacts in terms of ground stability.

'Do Nothing' Scenario

9.40 Should the proposed development not proceed, the site would remain as an unattractive urbanised area, along the waterfront of the River Boyne. The existing land-use practice, including local community recreation will continue as would the associated pressures on surface water quality from upstream agricultural pressures in the river catchment.

9.41 Urban development activities have had a profound impact to the site relative to absolute baseline or natural conditions with regard to the land and soil environment of the site in terms of drainage infrastructure in particular.

9.42 The Development has the potential to be beneficial in comparison to the 'Do Nothing' Scenario as there will be increased area of landscaped/permeable surfaces, which is in contrast to baseline conditions, thus adding the hydraulic absorption / buffer control from this part of the Site and reducing runoff discussed in detail in **Chapter 10**.

Construction Phase Potential Effects

9.43 The red line boundary layout plan has been reviewed along with a detailed proposed development design plan, for Westgate, Drogheda. General mitigation measures have

been prescribed for protecting the existing hydrological regime of the Site, and where possible, project-specific environmental constraints have been identified and detailed in this EIAR.

9.44 The proposed development has the potential to result in the release of contaminants, particularly suspended solids during the construction phase of the project.

Soil Sealing

9.45 Soil sealing is the covering of a soil with an impermeable material which in turn changes the geotechnical and hydrogeological attributes, for example; increased runoff. The use of impermeable material is an inevitable direct effect to some extent of most types of construction particularly in greenfield sites.

9.46 Soil sealing effects of the proposed development are considered to be direct, unavoidable, slight to beneficial, Long term/ permanent and adverse. Mitigation measures and further details will be provided in the mitigation section below.

Land Take

9.47 As stated in NOD (2023), there is no risk of the overall increase in hardstanding area that cannot be complemented by existing and proposed SuDs methodologies. The detailed description of works in Chapter 3 outlines character areas that will involve land take. Given the Mitigation measures outlined in the section below, land take is determined to be minimal, as any land take by the proposed development is offset by the softscaped areas. As well as works to improve junction layouts, which will reduced road/junction width. Amendments to the R900/West Street junction with the R132/George Street. Reduced road/carriage width to allow for the new cycle lane on each side of the road (R123) in accordance with the wider Drogheda Active Travel Strategy.

Subsoil and Bedrock Removal

9.48 The proposed works require a minimum re-profiling of roadways, footpaths and cycle paths along with seating areas. Therefore, the risk associated with subsoil and bedrock removal is considered to be insignificant. The storage of subsoil stockpiles is not anticipated given the size and current use of the site. There are a number of areas that will be softscape to increase the area for permeability, this movement and re-scaping of soils and subsoils has the potential to release existing contamination from previous projects stored in these soils.

9.49 Demolition of existing public toilets to help accommodate the proposed public realm improvement works. Demolition of a 21.8m section of wall located between Old Abbey Lane and Father Connolly Way to create a direct physical and visual link between West Street/Father Connolly Way and Old Abbey Lane.

Soil and Subsoil Compaction

9.50 Unintended soil and subsoil compaction is due to inadvertent construction traffic on the development site. Soil compaction leads to bulk density of the soil increasing and the total porosity decreasing which can pose a risk to site drainage due to the lower level of ground permeability on the site.

Mechanism/s:	• Excavation of soils. • Handling of soils.

	• Storage of soils.
Impact:	• Compaction of topsoil and subsoils underlying the Site.
Receptor/s:	• Land. • Soils . • Subsoils.
Pre-Mitigation Potential Effect:	Negative, direct, imperceptible, likely impact on topsoil and subsoils.

Soil Contamination

9.51 Construction activities associated with the proposed development have the potential to introduce a number of contaminants to the receiving environment. Given that the proposed works include earthworks or excavating ground, it is recommended to carry out a further assessment of the underlying soils to determine their nature and if contamination of any kind is present.

9.52 Accidental spillage during refuelling of construction plant with petroleum hydrocarbons is a significant pollution risk. The accumulation of spills of fuels and lubricants during routine plant use can also be a pollution risk. Large spills or leaks have the potential to result in significant effects on the geological and water environment. Potential pollution-causing activities and associated contaminants of the Development include:

- Operation of plant vehicles and other petrol / diesel driven equipment – Hydrocarbons e.g., diesel, oil, grease.
- Construction materials – e.g., concrete or cement.
- General waste – e.g., plastic.

9.53 Hydrocarbon is a pollutant risk due to its toxicity to all flora and fauna organisms. Hydrocarbons chemically repel water and sparingly dissolve in water. The majority of hydrocarbons are light non-aqueous phase liquids (L-NAPL's) which means that they are less dense than water and therefore float on the water's surface (whether surface water or groundwater). Hydrocarbons adsorb (stick) onto the majority of natural solid objects it encounters, such as vegetation, animals, and earth materials. It burns most living organic tissue, such as vegetation, due its volatile chemistry. It is also a nutrient supply for adapted micro-organisms, which can deplete dissolved oxygen at a rapid rate and thus kill off water based vertebrate and invertebrate life.

9.54 The hazard posed by hydrocarbon contamination to soil is significant in terms of adversely impacting on the health of the soils associated with the proposed site and the flora and fauna it supports, however the risk is considered limited considering the movement of same is limited. The more significant risk of hydrocarbons contamination of soils is the eventual and likely migration to surface water systems, given the Sites close proximity to the River Boyne.

9.55 To control and contain any potential hydrocarbon and other harmful substances spillage by vehicles during construction, it is recommended where possible to refuel plant equipment off the development site, thus mitigating this potential impact by avoidance.

Mechanism/s:	• Lubricants and other construction consumables – minor in scale. • Fuel leak from personnel vehicle – minor in scale. • Fuel leak from plant machinery – minor in scale. • Fuel spill during refuelling – significant in scale. • Fuel leak from storage – significant in scale.
Impact:	• Release of hydrocarbons into soils. • Release of hydrocarbons to ground, intercepted by groundwater.
Receptor/s:	• Soils . • Subsoils. • Bedrock. • Groundwater.
Pre-Mitigation Potential Effect:	Negative, direct, slight, short term, unlikely, permanent impact on soil, subsoil and bedrock.

Geological Effect on Designated and Protected Areas

Mechanism/s:	• Excavation of soils/subsoils. • Handling of soils/subsoils. • Storage of soils/subsoils.
Effect:	• Effects on a proposed or listed NHAs as outlined in Chapter 16 - Cultural Heritage & Archaeology.
Receptor/s:	• Land. • Topsoil . • Subsoils. • Associated Designated Sites
Pre-Mitigation Potential Effect:	Negative, direct, imperceptible, likely effect on site. No direct excavation or development of any local designated sites are proposed. No indirect impacts on Protected Designated Sites (such as SPAs, SACs listed in Chapter 8: Biodiversity) are anticipated.
Mitigation Measures:	None are foreseen nor proposed.
Residual Effects Assessment:	None predicted.

Operational Phase Potential Effects

9.56 Noting the nature of the proposed development, no significant effects on land, soils and geology are anticipated during the operational phase.

Potential Cumulative Effects for Construction and operational phases

9.57 Considering the discipline under investigation, soils and geology, and the fact that potential effects of the development on same are generally localised, the cumulative effects of the development are not considered to vary dramatically or behave synergistically when considering the site as a unit, or indeed when considering in conjunction with other developments in the vicinity or downgradient of the site. However, on a national scale the importance of soils in terms of ecological value and carbon value must be considered.

9.58 Considering cumulative effects of pressures on the surface water network of the River Boyne, if an accidental release of contaminants were to occur, there is a potential to temporarily effect the water quality and ecosystem of this sensitive receptor. Taking into account this projects works but also additional projects such as the construction of 275 no. residential units on Land adjacent to Scotch Hall Shopping Centre, Drogheda (Planning Ref: 309668) and 215 no. units on Lands at Newtownstalaban (Planning Ref: 305819), the Refurbishment of St. Dominick's Bridge (Planning Ref: 308224), the construction of the Boyne Greenway (Planning Ref: 315460 & 307652), there is potential for large cumulative effects. However, the objectives of the outlined mitigation measures in this **Chapter 10: Hydrology and Hydrogeology** and in the **Flood Risk Assessment** (FRA) completed by Nicholas O'Dwyer Ltd, are to reduce any potential effect to acceptable levels. Therefore, the Development is not considered likely to significantly contribute to cumulative effects in terms of water quality nor flood risk.

9.59 No cumulative effects on the land, soils, and geological environment are envisaged during the operational stage. This is due to the existing infrastructure and the addition of more permeable soils being exposed on site.

Mitigation Measures in Construction and Operational Phases

9.60 Any and all direct impacts on soils/peat and bedrock arising from the development are considered localised, therefore the above assessment and classification of the weighted significance of land take encompasses all impacts to soils and bedrock considering the development as a whole. Therefore, impacts assessed and classified in the following section/s are considered at the localised scale, with the exception of potential indirect impacts on downgradient receptors, for example; associated with Surface Water.

Soil Sealing

9.61 *George Square character area* will include the introduction of soft landscaping to include new tree planting, shrubs, and grass/lawn areas to help green the plaza, soften the built form in the area, enhance natural drainage and provide a natural buffer between the R132/George's Street and the new public plaza area. In the *Westgate character area,* the creation of a 'shared surface' area to the east of the proposed freestanding Corten steel structures within West Street with high quality hard and soft landscaping. As well as the introduction of soft landscaping along West Street to include new tree planting to help green the area, soften the built form in the area and help to reduce the speed of vehicles.

Land Take Mitigation measures by Reuse and Reduction

9.62 Excavation of materials is unavoidable however the impacts of such can be minimised if managed appropriately. Similarly, given that excavations are unavoidable, so too are temporary stockpiles. However, if managed appropriately, the impact of such can be minimised.

9.63 No permanent stockpiles will remain on the site. All excavated materials from the site or introduced materials for construction will be either used during construction or removed from the site. All temporary stockpiles will be positioned on established and exor in designated areas which are appropriate for short term storage. Temporary storage locations will also be managed in terms of potential for solids entrainment by runoff (Chapter 10: Hydrology).

9.64 Stockpiling of material will invariably lead to the entrainment of solids in surface water runoff, discussed in Chapter 10: Hydrology. Mitigation measures to address same are detailed in Chapter 10. The immediate reuse of material in so far as practical, thus reducing the potential for temporary stockpiles in general. For example the material arising from the first excavation is deposited in areas identified as having potential for restoration or requiring fill, the material arising from the second excavation is used as fill and reinstatement material in the first excavation location, etc.

9.65 *Medieval Wall area*: Introduction of soft landscaping improvements to include wildflowers, plants, shrubs and trees to: create a medieval garden feel; enhanced sensory experience; soften the built form in the area; and enhance natural drainage opportunities. *Old Abbey Area:* Introduction of trees to: soften the built form in the area; enhance the sensory experience; provide opportunities for birds to nest and rest in the area and enhance natural drainage opportunities. Retention of existing trees along Father Connolly Way and provision of soft landscaping improvements including new grass/lawn areas to help green the area and soften the overall built form.

Soil and Subsoil Compaction

9.66 The in-situ soils and subsoils underlying the development area will be subject to a certain amount of compaction, but this will be unavoidable.

9.67 Any infill material/landscaping that is required will be placed and levelled in appropriate lift thicknesses to ensure the material is not over compacted thereby retaining it drainage properties.

Subsoil and Bedrock Removal

9.68 Subsoil and bedrock which are excavated as part of the initial decommissioning and construction phase will be reused onsite where possible. Similarly, all soil and subsoil types or horizons identified during site investigations and during actual construction, will be treated as separate materials and arisings separated accordingly. This includes, for example Acrotelm peat, catotelm pet, clays, subsoils (GRAVEL / TILL), weathered rock.

9.69 The management, movement, and temporary stockpiling of material on site, including a materials balance assessment and plan is detailed in the pCEMP, this will include identification of suitable temporary set down areas which will be located within the Development footprint and will consider and avoid geo-constraints. Temporary set down / stockpile areas will be considered similarly to active excavation areas in terms of applying precautionary measures and good practices, and mitigation measures, including those relating to control of runoff and entrapment of suspended solids (**Chapter 10: Hydrology and Hydrogeology**).

Soil Contamination

9.70 All plant and machinery will be serviced before being mobilised to site. No plant maintenance will be completed on site, any broken down plant will be removed from site to be fixed. Refuelling of vehicles and the addition of hydraulic oils or lubricants to vehicles will be undertaken offsite where possible. Where this is not possible, filling and maintenance will take place in a designated material storage compound, which is located at least 15 meters from any temporary or permanent drainage features.

9.71 Refuelling if necessary on site, will be completed in a controlled manner using drip trays at all times or a designated refuelling area will be created on an impervious surface such as a concrete slab with drainage to a hydrocarbon interceptor or other tank type which will hold run-off from the concrete slab.

9.72 Mobile bowsers, tanks and drums will be stored in secure, impermeable storage areas away from open water. No bulk chemicals will be stored within the active construction areas. Fuel containers will be stored within a secondary containment system, e.g. bunds for static tanks or a drip tray for mobile stores. Containers and bunding for storage of hydrocarbons and other chemicals will have a holding capacity of 110% of the volume to be stored. Ancillary equipment such as hoses and pipes will be contained within the bund. Taps, nozzles or valves will be fitted with a lock system.

9.73 Fuel and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage. Drip-trays will be used for fixed or mobile plant such as pumps and generators in order to retain oil leaks and spills. Only designated trained operators will be authorized to refuel plant on site.

9.74 Procedures and contingency plans will be set up to deal with emergency accidents or spills. An emergency spill kit with oil boom, absorbers etc. will be kept on-site for use in the event of an accidental spill. A specific team of staff will be trained in the use of spill containment. Highest standards of site management will be maintained, and utmost care and vigilance followed to prevent accidental contamination or unnecessary disturbance to the site and surrounding environment during construction. A named person will be given the task of overseeing the pollution prevention measures agreed for the site to ensure that they are operating safely and effectively as well as having responsibility for the implementation of Emergency Procedures for spill control measures.

Further Assessment

9.75 To determine if there is any historic ground pollution from previous land use practices, intrusive ground investigations are recommended to determine if there is any historic ground pollution from previous land use practices.

Monitoring

9.76 Chapter 10 Hydrology, outlines the surface water monitoring that is proposed during construction of the development. This will give indications on whether the mitigations on land and soil management is being adhered to. In areas of intensive groundworks, continuous monitoring stations will be established.

Residual Impacts

9.77 **Soil Sealing**: Adverse, direct, small in scale, slight to beneficial

9.78 **Land Take**: The volume of material to be managed including temporary stockpiling is directly proportional to the volumes of material required to be excavated, in total the volume of material is large, however when managed appropriately (ongoing reinstatement) the volume of material to be managed at any particular time will be minimised.

9.79 **Subsoil and Bedrock Removal**: Adverse, direct, small in scale, slight to imperceptible as there is no bedrock removal and subsoils are reused.

9.80 **Soil and Subsoil Compaction**: Negative, slight, direct, likely impact on topsoil and subsoils.

9.81 **Soil Contamination:** The use and storage of hydrocarbons and small volumes of chemicals is a standard risk associated with all construction sites. The measures identified above to mitigate the risk of spills and leaks, will be applied during the construction phase. The residual effect is assessed as - Negative, imperceptible, direct, short-term, low probability effect on subsoils, bedrock and groundwater.

Worst Case Scenario

9.82 'Worst-case' effects are the effects arising from a project in the case where mitigation measures fail. Given the approved developments outlined in **Section 9.64** should the mitigation measures fail the accumulation of effects that could arise from these other projects, would have an adverse, large effect on the surface water quality of this ''Moderate'' WFD status transitional waterbody.

9.83 The proposed development due to the proximity of the development to this surface water is of 'high risk' where mitigation measures fail. Surface water runoff, soil erosion and the release of suspended solids, Cementous material, Hydrocarbons, wastewater will all have a direct negative effect to soils underlain on site. These effects are classified as ''likely significant effects'' (EPA, 2022). These effects may be temporary but can have lasting effects on the flora and fauna in this ecosystem **(EIAR Chapter 8).** It is important that surface water sampling therefore take place upstream and downstream of the proposed development to ensure that any contamination of surface water indicating soil erosion etc detected upstream is not connected to the proposed development.

Assessment of interactions with other EIAR Chapters

9.84 This Land, Soils and Geology Chapter is closely linked to Chapter 8 Biodiversity and Chapter 10 Hydrology and Hydrogeology, cross references are included in this report where relevant. Geology often shapes the topography and geology of a site. Ecology is also closely linked due to water quality having an impact on the ecosystems and their flora and fauna. This chapter supplements Chapter 5 of this EIAR for a detailed description, Chapter 16 Cultural Heritage and Chapter 17 Archaeology.

9.85 Of particular significance is the interaction between Land, Soils and Geology and Hydrology and Hydrogeology. Potential effects associated with Geology, including excavations and management of excavation arisings produce potential sources of contamination and a hazard in terms of runoff and surface water quality, e.g. entrainment of solids in runoff and intercepted by receiving surface water network.

9.86 Therefore, mitigation measures for effects which fall under Land, Soils and Geology e.g. excavations and management of arisings, are mitigated through measures detailed under Hydrology and Hydrogeology e.g. management of runoff and construction water.

9.87 Similarly, hazards such as the potential releases of contaminants such as hydrocarbons infiltrating to ground, as well as geological receptors such as soil the underlying groundwater aquifer is a very important hydrogeological receptor to consider.

9.88 In turn, the quality of surface water, groundwater, and soils is important to consider in terms of the dependence of ecological attributes.

Difficulties in Compiling Information

9.89 There were no difficulties encountered while preparing and completing this Chapter.

References

- British Standards Institution (BSI) (1999) Code of Practice for Site Investigations - BS 593
- Department of the Environment, Heritage and Local Government (DEHLG) (2006) *Wind Energy Development Guidelines* (2006)
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- Geological Survey of Ireland (GSI) (ND) *The role of geoheritage: Themes* [Online] - Available at:https://www.gsi.ie/en-ie/programmes-and-projects/geoheritage/activities/background-information/Pages/Themes.aspx# [Accessed 22/03/21]
- Institute of Geologists of Ireland (IGI) (2013) Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements

- National Parks & Wildlife Services (NPWS) (ND) *NPWS Map Viewer* [Online] - Available at: http://webgis.npws.ie/npwsviewer/
- National Roads Authority (NRA) (2008) Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes
- Transport Infrastructure Ireland (TII) (2013) Notes for Guidance on the Specification for Road Works Series NG 600 - Earthworksvon Post L., Granlund L.E., and Granlund L. (1926) *Södra Sveriges Torvtillgånger, I*. Sver.Geo.Unders. C35, 19 (2)
- EU Soil Strategy.

10. Hydrology and Hydrogeology

Introduction

10.1 Article 3(1) of amended Directive states:

> *'The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:…*
>
> *c) land, soil**, water**, air and climate;…'* [**our emphasis**.]

10.2 In accordance with the amended Directive, this chapter assesses the potential impacts of the proposed development on Hydrology and Hydrogeology. The proposed development refers to all elements of the application including site preparation and construction works within the boundary of the application site.

10.3 The assessment considers the potential effects during the construction and operation phases of the proposed development. Where negative effects are predicted, this chapter identifies appropriate mitigation strategies therein. It is assumed these mitigation measures will be implemented in full to ensure that no negative or adverse effects will be created on the environment with respect to hydrology and hydrogeology.

10.4 This chapter of the EIAR is supported by Figures provided by the following Appendix documents in Volume 3 of this EIAR:

- Appendix 10.1 – Photographs of Site Surveying
- Appendix 10.2 – Local & Regional Hydrology
- Appendix 10.3 – Surface Water Sampling Locations
- Appendix 10.4 – Bedrock Aquifer
- Appendix 10.5 – Bedrock Aquifer Vulnerability
- Appendix 10.6 – WFD Status 2016-2021
- Appendix 10.7 – Groundwater Wells & Springs
- Appendix 10.8– Mapped Designated Protected Areas
- Appendix 10.8 – (B) Surface Water Buffer Zone
- Appendix 10.9 – Surface Water Baseline Database & Laboratory Certificates

10.5 A Preliminary Construction and Environmental Management Plan (pCEMP) is appended to this EIAR. The pCEMP will be a key construction contract document, which will ensure that all mitigation measures, which are considered necessary to protect the

environment, are implemented. It will also include all of the mitigation described within the EIAR.

Statement of Authority

~~10.6~~ RSK (Ireland) Ltd. (RSK), part of RSK Group, is a consultancy providing environmental services in the hydrological, hydrogeological and other environmental disciplines. The company and group provide consultancy to clients in both the public & private sectors. More information can be found at www.rskgroup.com. The principal members of the RSK EIA team as noted were involved in this assessment. ~~include the following persons;~~

Assessment Structure

10.7 In line with the EIA Directive and current EPA guidelines the structure of this Hydrology and Hydrogeology chapter is as follows:

- Assessment Methodology and Significance Criteria.
- Description of baseline conditions at the Site.
- Identification and assessment of effects to hydrology and hydrology associated with the proposed development, during both the construction and operational phases.
- Identification of mitigation measures to avoid, remediate or reduce the impacts identified, including mitigation by avoidance at design stage.
- Identification and assessment of residual effects of the proposed development considering recommended mitigation measures.
- Identification and assessment of cumulative effects if and where applicable.

Assessment Methodology and Significance Criteria

10.8 The following calculations and assessments were undertaken in order to evaluate the potential effects of the Development on the hydrology and hydrogeology aspects of the environment at the urban regeneration scheme at Westgate, Drogheda:

- Characterise the topographical, hydrological, and hydrogeological regime of the Site from the data acquired through desk study and onsite surveys.
- Preliminary flood risk evaluations.
- Consider hydrological or hydrogeological constraints together with development design.
- Consider drainage issues, or issues with surface water runoff quality as a result of the Development, its design and methodology of construction.
- Assessment of the combined data acquired and evaluation of any likely effects on the hydrology and hydrogeology aspects of the environment.

10.9 Where effects are identified, measures are described that will mitigate or reduce the identified effect. Findings are presented and reported in a clear and logical format that complies with EIAR reporting requirements.

Legislation Requirements and Relevant Guidance

10.10 The environmental planning policy and industry best-practice guidance relevant to an assessment of hydrology, hydrogeology and the water environment are summarised below in **Table 10.1.**

10.11 The Water Framework Directive (WFD), was passed by the European Union (EU) in 2000, and came into legal effect in December 2015. It is a wide-reaching piece of legislation which replaces a number of the other water quality directives (for example, those on Water Abstraction) while implementation of others (for example, The Integrated Pollution Prevention and Control and Habitats Directives) will form part of the 'basic measures' for the Water Framework Directive. The fundamental objective of the Water Framework Directive aims to maintain a “high status” of waters where it exists, preventing any deterioration in the existing status of waters and achieving at least “good status” in relation to all waters by 2021* (WFD). (*Current River Basin Management Plan (RBMP) cycle).

Table 10.1: Relevant European and National Planning Policy

	Legislation
EU	Assessment of the effects of certain public and private projects on the environment (2014/52/EU)
	Assessment and Management of Flood Risks (2007/60/EC)
	Dangerous Substances Directive (2006/11/EC)
	Drinking Water Directive on the quality of water intended for human consumption (98/83/EC)
	Environmental Liability Directive (2004/35/EC)
	EU Water Framework Directive (2000/60/EC)
	Freshwater Fish Directive (2006/44/EC)
	Groundwater Daughter Directive to the Water Framework Directive (2006/118/EC)
	Priority Substance Daughter Directive to the Water Framework Directive (2008/105/EC)
	Quality Required of Surface Water Intended for Abstraction of Drinking Water (75/440/EEC)
National	SI No. 12 of 2001: Water Quality (Dangerous Substances) Regulations
	SI No. 293 of 1988: Quality of Salmonid Waters Regulations
	SI No. 296 of 2018: European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018

	Legislation
	SI No. 258 of 1998: Water Quality (Phosphorous Regulations)
	Environmental Objectives (Surface Waters) Regulations 2009 SI No. 272 of 2009
	SI No. 294 of 1989: Quality of Surface Water Intended for Abstraction (Drinking Water)
	SI No. 122 of 2014 (Drinking Water) Regulations and SI No. 464 of 2017 (Amendment) Regulations
	SI No. 122 of 2014 (Drinking Water) Regulations and SI No. 464 of 2017 (Amendment) Regulations

10.12 This study has been prepared having regard to, inter alia, the following guidance documents;

- CIRIA (2001) Control of water pollution from construction sites. Guidance for consultants and contractors (C532)
- CIRIA (2006) Control of Water Pollution from Linear Construction Projects – Technical Guidance (C648)
- CIRIA (2006) Control of Water Pollution from Linear Construction Projects – Site Guide (C649)
- CIRIA (2015) Environmental Good Practice on Site (fourth edition) (C741)
- CIRIA (2016) Environmental Good Practice on Site pocket book (fourth edition) (C762)
- CIRIA (2015) The SuDS Manual - C753 Report V6
- Department of Housing, Planning and Local Government (2019) Draft Revised Wind Energy Guidelines
- Enterprise Ireland (n.d.) “Best Practice Guide (BPGCS005) Oil Storage Guidelines”
- Inland Fisheries Ireland (IFI) (2016) “Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters”
- Environmental Protection Agency (EPA) (2003) Advice Notes for Preparing Environmental Impact Statements
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- Institute of Geologists of Ireland (IGI) (2002) Geology in Environmental Impact Statements – A Guide

- IGI (2013) Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements

- Irish Wind Energy Association (IWEA) (2012) Best Practice Guidelines for the Irish Wind Energy Industry

- NRA (2008) Environmental Impact Assessment of National Road Schemes – A Practical Guide – Rev 1

- National Roads Authority (NRA) (2008) Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (*as amended) Road Drainage and the Water Environment (including Amendment No. 1 dated June 2015) DN-DNG-03065.

- Office of Public Works (OPW) (2009) "The Planning System and Flood Risk Management, Guidelines for Planning Authorities"

- OPW (2019) "Construction, Replacement or Alteration of Bridges and Culverts"

- OPW (2019), Series of Ecological Assessment on Arterial Drainage Maintenance No. 13: Environmental Guidance: Drainage Maintenance and Construction

- Scottish Environment Protection Agency (SEPA) (2010) "Engineering in the Water Environment: Good Practice Guide – River Crossings"

- Scottish National Heritage (SNH) (2018) Environmental Impact Assessment Handbook – Version 5

- Transport Infrastructure Ireland (TII) (2014) "Drainage Design for National Road Schemes - Sustainable Drainage Options".

10.13 This Assessment is to be read in conjunction with:

- NOD (2023) 'Westgate 2040 Regeneration Scheme Site-Specific Flood Risk Assessment', Nicholas O'Dwyer Consulting Engineers, Project No. 30421.

Desk Study

10.14 Desk top study assessments were undertaken of the hydrology and hydrogeology aspects of the application site before and after field investigations. This involved the following components:

- Acquisition and compilation of all available and relevant maps of the proposed Development.

- Detailed study and assessment of the proposed Development relative to available data on site topography.

- Thorough study and assessment of the proposed Development relative to available data on hydrology and hydrogeology.

- Overlay Geological Survey of Ireland (GSI) Groundwater Resources (Aquifers), Groundwater Vulnerability, and Groundwater Recharge maps to determine site sensitivity in terms of groundwater.

- Search of the GSI wells and springs database for records of wells or springs at and near the study area.

- Study of geospatial data obtained from various sources including; Environmental Protection Agency (EPA), Geological Survey Ireland (GSI), Teagasc, Ordinance Survey Ireland (OSI), Office of Public Works (OPW), National Parks and Wildlife (NPWS) overlain with the Development plan drawings using a Graphic Information System (GIS). Data was assessed at a regional, local and site-specific scale.

- Assessment of relevant additional data was obtained where relevant, for example; rain data obtained from Met Eireann, and river discharge rates and synoptic data sets obtained from the EPA.

Field Work

10.15 Field inspections were carried out at the site of the proposed regeneration scheme in March and April 2022. These works consisted of the following:

- Site walk over including recording and digital photography of significant features.

- Drainage distribution and catchment mapping.

- Field hydrochemistry of the drainage network (electrical conductivity, pH and temperature).

- Recording of GPS co-ordinates for all investigation and monitoring points in the study.

- Two baseline sampling events of surface water were carried out for analytical laboratory testing.

Evaluation of Potential Effects

Sensitivity

10.16 Sensitivity is defined as the potential of a receptor to be significantly affected by a proposed Development (EPA, 2022). The EPA provides guidance on the assessment methodology, including defining general descriptive terms in relation to magnitude of effects however, in terms of qualifying significance of the receiving environment the EPA guidance also states that:

10.17 *"As surface water and groundwater are part of a constantly moving hydrological cycle, any assessment of significance will require evaluation beyond the development site boundary."* (EPA, 2015)

10.18 To facilitate the qualification of hydrological and hydrogeological attributes, guidance specific to hydrology and hydrogeology as set out by National Roads Authority (NRA) (2008), and guidance specific to landscape as set out by Scottish National Heritage (SNH) (2018), has been used in conjunction with EPA guidance.

10.19 **Table 10.2** presents categories and criteria for rating site attributes (NRA, 2008):

Table 10.2: Criteria for Rating Site Attributes – Hydrology and Hydrogeology Specific

Importance	Criteria
Extremely High	Attribute has a high quality or value on an international scale.
Very High	Attribute has a high quality, significance or value on a regional or national scale.
High	Attribute has a high quality, significance or value on a local scale.
Medium	Attribute has a medium quality, significance or value on a local scale.
Low	Attribute has a low quality, significance or value on a local scale.

10.20 Considering the above categories of rating importance and associated criteria, **Table 10.3** presents rated sensitivity categories (SNH, 2013):

Table 10.3: Criteria for Rating Site Sensitivity – Landscape Character Specific

Importance	Criteria
High Sensitivity	Key characteristics and features which contribute significantly to the distinctiveness and character of the landscape character type. Designated landscapes e.g. National Parks, Natural Heritage Areas (NHAs) and Special Areas of Conservation (SACs) and landscapes identified as having low capacity to accommodate proposed form of change, that is; sites with attributes of **Very High Importance**.
Medium Sensitivity	Other characteristics or features of the landscape that contribute to the character of the landscape locally. Locally valued landscapes which are not designated. Landscapes identified as having some tolerance of the proposed change subject to design and mitigation, that is; sites with attributes of **Medium to High Importance**.
Low Sensitivity	Landscape characteristics and features that do not make a significant contribution to landscape character or distinctiveness locally, or which are untypical or uncharacteristic of the landscape type. Landscapes identified as being generally tolerant of the proposed change subject to design and mitigation, that is; sites with attributes of **Low Importance**.

Magnitude

10.21 The magnitude of potential effects arising as a product of the proposed development are defined in accordance with the criteria provided by the EPA, as presented in **Table 10.4** (EPA, 2022).

10.22 These descriptive phrases are considered general terms for describing potential effects of the proposed development, and provide a consideration for baseline trends. For example, a 'Moderate' effect is one which is 'consistent with the existing or emerging trends'.

Table 10.4: Describing the Magnitude of Effects.

Magnitude of Effect	Description
Imperceptible	An effect capable of measurement but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with the existing or emerging baseline trends.
Significant	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.

10.23 In terms of hydrology and hydrogeology, magnitude is qualified in line with relevant guidance, as presented in **Tables 10.5 and 10.6** (NRA, 2008). These descriptive phrases are considered development specific terms for describing potential effects of the proposed development, and do not consider baseline trends and therefore are utilised to qualify effects in terms of weighting effects relative to site attribute importance, and scale where applicable.

Table 10.5: Qualifying the Magnitude of Effect on Hydrological Attributes.

Magnitude of Effect	Description	Examples
Large Adverse	Results in loss of attribute and/or quality and integrity of attribute	Loss or extensive change to a waterbody or water dependent habitat, or Calculated risk of serious pollution incident >2% annually, or Extensive loss of fishery

Moderate Adverse	Results in effect on integrity of attribute or loss of part of attribute.	Partial reduction in amenity value, or Calculated risk of serious pollution incident >1% annually, or Partial loss of fishery
Small Adverse	Results in minor effect on integrity of attribute or loss of small part of attribute.	Slight reduction in amenity value, or Calculated risk of serious pollution incident >0.5% annually, or Minor loss of fishery
Negligible	Results in an effect on attribute but of insufficient magnitude to affect either use or integrity.	Calculated risk of serious pollution incident <0.5% annually
Minor Beneficial	Results in minor improvement of attribute quality.	Calculated reduction in pollution risk of 50% or more where existing risk is <1% annually
Moderate Beneficial	Results in moderate improvement of attribute quality.	Calculated reduction in pollution risk of 50% or more where existing risk is >1% annually
Major Beneficial	Results in major improvement of attribute quality.	Reduction in predicted peak flood level >100mm

Table 10.6: Qualifying the Magnitude of Effects on Hydrological Attributes

Magnitude of Effect	Description	Examples
Large Adverse	Results in loss of attribute.	Removal of large proportion of aquifer, or Changes to aquifer or unsaturated zone resulting in extensive change to existing water supply springs and wells, river baseflow or Ecosystems, or Potential high risk of pollution to groundwater from routine run-off
Moderate Adverse	Results in effect on integrity of attribute or loss of part of attribute.	Removal of moderate proportion of aquifer, or Changes to aquifer or unsaturated zone resulting in moderate change to existing water supply springs and wells, river baseflow or Ecosystems, or

		Potential medium risk of pollution to groundwater from routine run-off.
Small Adverse	Results in minor effect on integrity of attribute or loss of small part of attribute.	Removal of small proportion of aquifer, or Changes to aquifer or unsaturated zone resulting in minor change to water supply springs and wells, river baseflow or ecosystems, or Potential low risk of pollution to groundwater from routine run-off.
Negligible	Results in an effect on attribute but of insufficient magnitude to affect either use or integrity.	Calculated risk of serious pollution incident <0.5% annually

Significance Criteria

10.24 Considering the above definitions and rating structures associated with sensitivity, attribute importance, and magnitude of potential effects, rating of significant environmental effects is done in accordance with relevant guidance as presented in **Table 10.7** (NRA, 2008). This matrix qualifies the magnitude of potential effects based on weighting same depending on the importance and/or sensitivity of the receiving environment.

10.25 In terms of Hydrology and Hydrogeology, the general terms for describing potential effects **(Table 10.2: Describing the Magnitude of Effects)** are linked directly with the proposed development specific terms for qualifying potential effects (as set out above in **Table 10.5: Qualifying the Magnitude of Effect on Hydrological Attributes** and **Table 10.6: Qualifying the Magnitude of Effect on Hydrogeological Attributes**). Therefore, qualifying terms (see **Table 10.7**) are used in describing potential effects of the proposed development. This is largely driven by the likely transboundary characteristic of potential effects arising as a product of the proposed development in terms of Hydrology and Hydrogeology.

Table 10.7: Weighted Rating of Significant Environmental Effects

Rating	Magnitude of Effect			
	Negligible (Imperceptible)	**Small Adverse (Slight)**	**Moderate Adverse (Moderate)**	**Large Adverse (Significant to Profound)**
Extremely High	Imperceptible	Significant	Profound	Profound
Very High	Imperceptible	Significant/ Moderate	Profound/ Significant	Profound
High	Imperceptible	Moderate/ Slight	Significant/ Moderate	Profound/ Significant

Medium	Imperceptible	Slight	Moderate	Significant
Low	Imperceptible	Imperceptible	Slight	Slight/Moderate

Baseline/Receiving Environment

Introduction

10.26 This section provides a detailed description of the baseline environment with respect to Hydrology and Hydrogeology.

Site Walkover and Observations

10.27 Site walk over surveys were tailored in line with the Westgate Proposal Map, illustrating the site layout is outlined in **Chapter 3**. The Site is approximately 1.89 hectares. Photographs obtained during site surveys are presented in **EIAR Volume 3: Appendix 10.1.**

Field Work Restrictions

10.28 Access to the application site was unrestricted as the project entails the regeneration of mainly public lands.

Topography

10.29 The NOD Site-Specific Flood Risk Assessment (SSFRA) (2023) notes a significant change in topography across the proposed development site. The riverfront area along Father Connolly Way is determined to be generally quite flat with the road level varying between 3.5 – 4.5 metres AOD. A significant rise up to West Street was identified, located north of 'The Abbey', and has a road level varying between 8.0 – 11.0 metres AOD. There is an additional rise in the Site's topography to the northern end of the red line boundary of the proposed Site where Fair Street is located. The road level in this area varies around 17 – 18 metres AOD.

Rainfall and Evapotranspiration

10.30 Data from the meteorological stations listed in **Table 10.8: Meteorological Stations** are used in this assessment.

10.31 Using data presented in Table 10.8: Met Eireann Return Period Rainfall Depths (Irish Grid; 308531, 275167), intense rainfall in a 1 in 100-year event is calculated to have 29.9mm of rainfall in an hour. A storm event of 25 days duration 1 in 100-year return period is inferred to be 240.2mm and is shown in Figure 10.1 and Figure 10.2.

Table 10.8: Meteorological Stations

Data Category	Meteorological Stations	Approximate Distance from Site (km)
Rainfall (Mean Monthly Total 1981-2010)	Casement	52.4
Rainfall (Daily 2020)	Dublin Airport	44.3

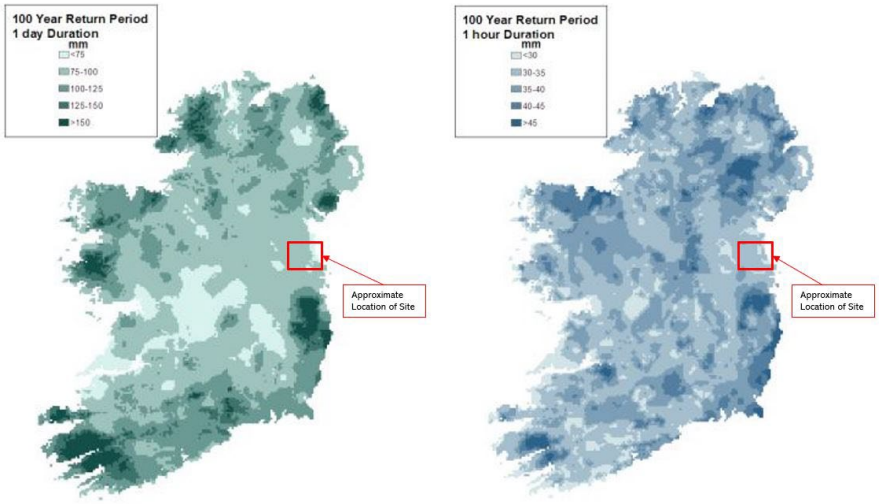

Figure 10.1: Rainfall Depths, 100-Year Return Period 1-day Return Map; (Fitzgerald)

Met Eireann
Return Period Rainfall Depths for sliding Durations
Irish Grid: Easting: 308531, Northing: 275167,

DURATION	Interval 6months,	1year,	Years 2,	3,	4,	5,	10,	20,	30,	50,	75,	100,	150,	200,	250,	500,
5 mins	2.5,	3.5,	4.0,	4.7,	5.2,	5.5,	6.7,	8.1,	8.9,	10.1,	11.2,	12.0,	13.3,	14.2,	15.0,	N/A ,
10 mins	3.5,	4.8,	5.5,	6.5,	7.2,	7.7,	9.4,	11.2,	12.5,	14.1,	15.6,	16.8,	18.5,	19.8,	20.9,	N/A ,
15 mins	4.2,	5.7,	6.5,	7.7,	8.5,	9.1,	11.0,	13.2,	14.7,	16.6,	18.4,	19.7,	21.8,	23.3,	24.6,	N/A ,
30 mins	5.5,	7.4,	8.4,	9.9,	10.9,	11.6,	14.0,	16.6,	18.3,	20.6,	22.7,	24.3,	26.7,	28.5,	30.0,	N/A ,
1 hours	7.3,	9.7,	10.9,	12.7,	13.9,	14.8,	17.7,	20.8,	22.8,	25.6,	28.0,	29.9,	32.7,	34.8,	36.6,	N/A ,
2 hours	9.7,	12.7,	14.2,	16.4,	17.8,	18.9,	22.4,	26.1,	28.5,	31.8,	34.7,	36.8,	40.1,	42.6,	44.6,	N/A ,
3 hours	11.4,	14.8,	16.5,	19.0,	20.6,	21.8,	25.7,	29.8,	32.5,	36.1,	39.2,	41.6,	45.1,	47.9,	50.1,	N/A ,
4 hours	12.8,	16.5,	18.4,	21.1,	22.8,	24.1,	28.3,	32.8,	35.6,	39.5,	42.8,	45.3,	49.1,	52.0,	54.3,	N/A ,
6 hours	15.1,	19.3,	21.4,	24.4,	26.4,	27.8,	32.5,	37.4,	40.6,	44.8,	48.5,	51.2,	55.3,	58.5,	61.0,	N/A ,
9 hours	17.8,	22.5,	24.9,	28.3,	30.5,	32.1,	37.3,	42.7,	46.2,	50.8,	54.8,	57.8,	62.3,	65.7,	68.5,	N/A ,
12 hours	20.0,	25.2,	27.7,	31.4,	33.8,	35.5,	41.1,	47.0,	50.6,	55.6,	59.9,	63.1,	67.8,	71.4,	74.4,	N/A ,
18 hours	23.6,	29.4,	32.3,	36.4,	39.0,	41.0,	47.2,	53.6,	57.7,	63.1,	67.8,	71.2,	76.4,	80.3,	83.5,	N/A ,
24 hours	26.5,	32.9,	36.0,	40.4,	43.3,	45.4,	52.0,	58.9,	63.2,	69.0,	74.0,	77.7,	83.2,	87.3,	90.6,	101.8,
2 days	32.5,	39.9,	43.6,	48.7,	51.9,	54.4,	61.9,	69.7,	74.6,	81.2,	86.7,	90.8,	97.0,	101.5,	105.3,	117.6,
3 days	37.4,	45.7,	49.8,	55.4,	59.1,	61.8,	70.1,	78.7,	84.1,	91.2,	97.2,	101.7,	108.4,	113.4,	117.4,	130.9,
4 days	41.8,	50.9,	55.3,	61.4,	65.4,	68.3,	77.3,	86.6,	92.4,	100.1,	106.5,	111.4,	118.5,	123.9,	128.2,	142.5,
6 days	49.5,	59.9,	65.0,	72.0,	76.4,	79.8,	89.9,	100.5,	107.0,	115.6,	122.9,	128.3,	136.3,	142.3,	147.1,	163.0,
8 days	56.4,	68.0,	73.6,	81.3,	86.3,	89.9,	101.2,	112.7,	119.9,	129.3,	137.3,	143.2,	152.0,	158.5,	163.7,	181.1,
10 days	62.7,	75.4,	81.5,	89.9,	95.3,	99.3,	111.5,	124.0,	131.7,	141.9,	150.5,	156.9,	166.3,	173.3,	178.9,	197.6,
12 days	68.7,	82.3,	88.9,	98.0,	103.7,	108.0,	121.1,	134.5,	142.7,	153.7,	162.8,	169.6,	179.7,	187.1,	193.1,	213.0,
16 days	79.8,	95.3,	102.7,	112.9,	119.4,	124.2,	138.9,	153.9,	163.2,	175.4,	185.6,	193.2,	204.3,	212.6,	219.3,	241.3,
20 days	90.1,	107.3,	115.5,	126.8,	133.9,	139.3,	155.4,	171.9,	182.0,	195.4,	206.6,	214.9,	227.1,	236.1,	243.4,	267.3,
25 days	102.3,	121.4,	130.5,	143.1,	151.0,	156.9,	174.7,	192.9,	204.0,	218.8,	231.1,	240.2,	253.5,	263.5,	271.4,	297.7,

NOTES:
N/A Data not available
These values are derived from a Depth Duration Frequency (DDF) Model
For details refer to:
'Fitzgerald D. L. (2007), Estimates of Point Rainfall Frequencies, Technical Note No. 61, Met Eireann, Dublin',
Available for download at www.met.ie/climate/dataproducts/Estimation-of-Point-Rainfall-Frequencies_TN61.pdf

Figure 10.2: Met Eireann Return Period Rainfall Depths (Irish Grid; 308531, 275167)

Regional and Local Hydrology

10.32 Surface water networks surrounding the site are mapped and presented in **EIAR Volume 3: Appendix 10.2**. The Development is situated within the Boyne Catchment (ID: 07; Area: 2,690 km2). The Site is situated in the sub catchment Boyne_SC_130, within the WFD River Sub Basin TULLYESKAR_010; Area: 41.05 km2.

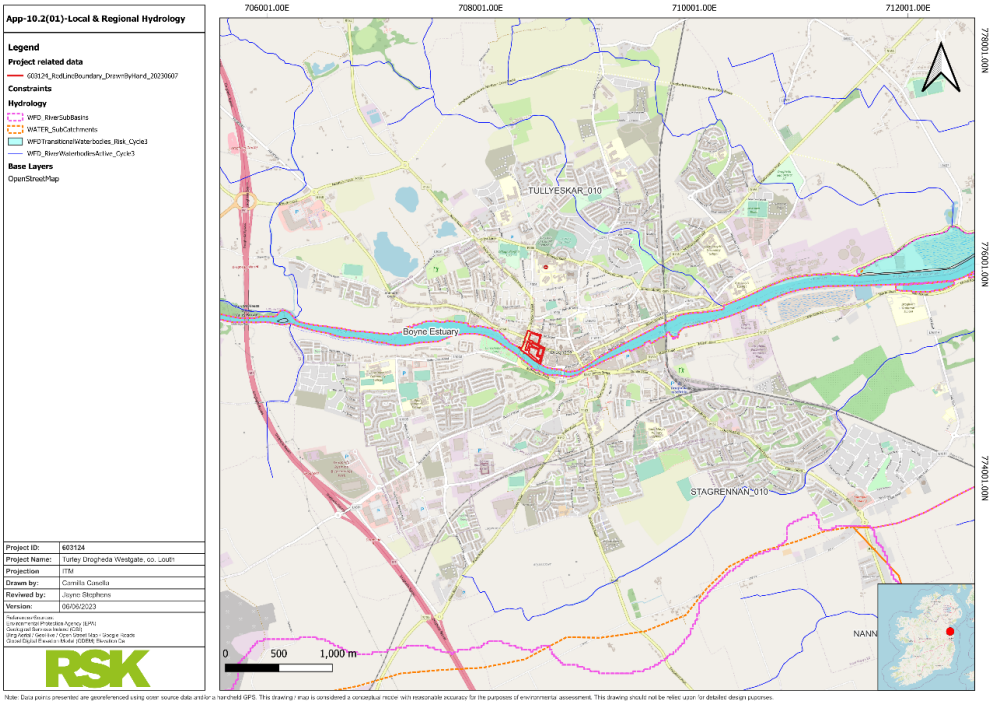

Figure 10.3: Local and Regional Hydrology Flowchart (Source: RSK)

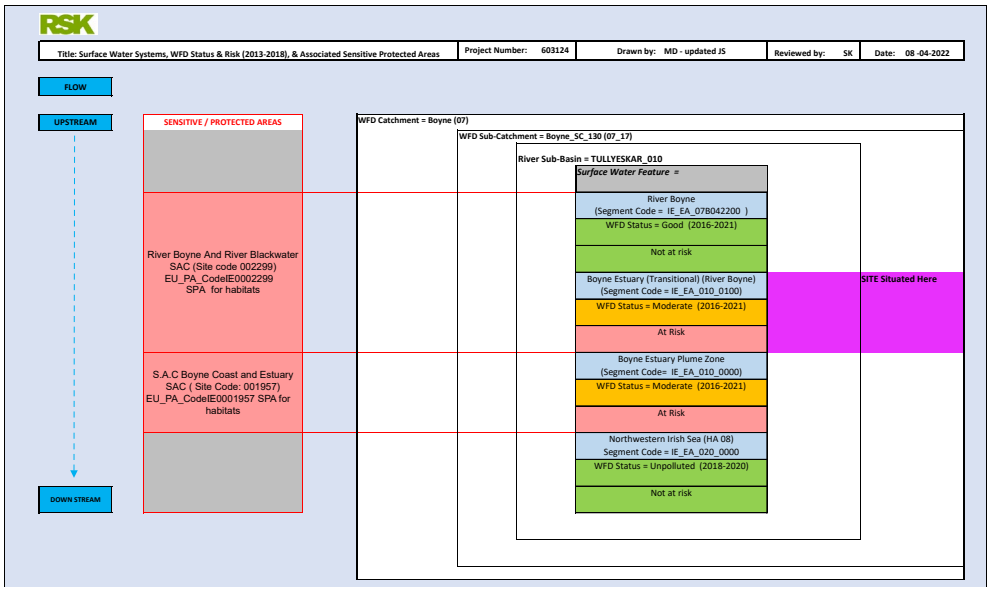

Figure 10.4: Surface water system for the River Boyne and River Blackwater SAC.

Site Drainage

10.33 During initial Site surveying, the area of the Site was observed to be surfaced with hard standing made ground. This hard surfacing was combined with an existing surface water runoff drainage network (i.e., storm water drainage infrastructure), along Father Connolly Way. This storm water sewer systems means that the drainage of the area has been heavily modified, reducing the risk of flooding events within the site. Runoff from the area is either directed to the municipal sewer system or potentially discharges directly into the River Boyne Estuary.

10.34 Photos from field surveying are shown in **EIAR Volume 3: Appendix 10.1**. No additional modification works to the main drainage infrastructure within the site have been proposed to date.

Baseline Surface Water Quality

10.35 Two surface water sampling events took place (March and April 2022) to understand the baseline conditions of water quality associated with the receiving waterbody related to the Site. Sampling locations are presented in **EIAR Volume 3: Appendix 10.3**

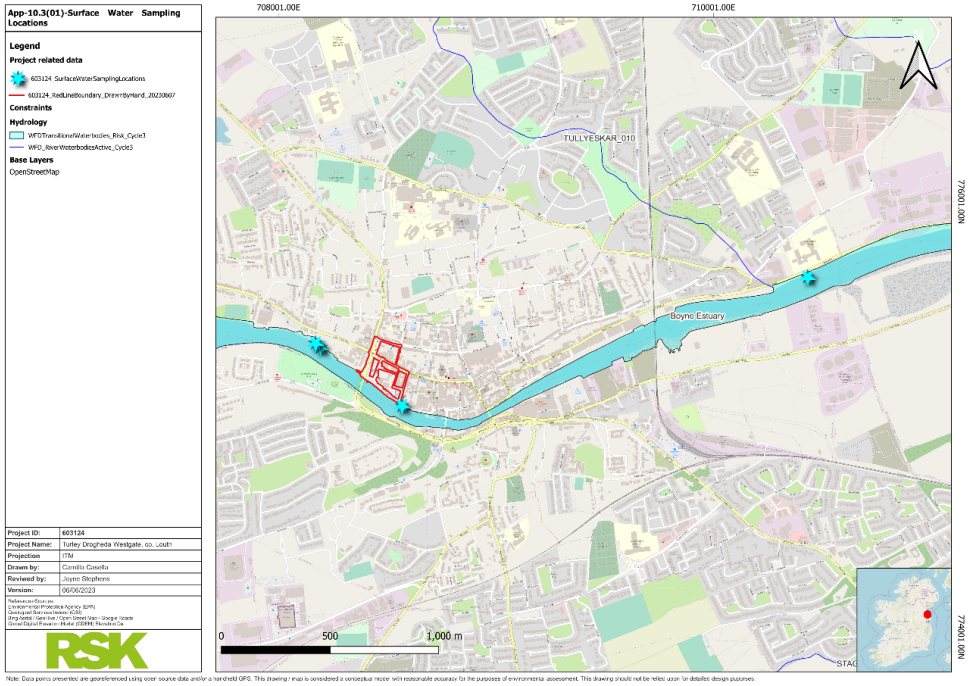

Figure 10.5: Water sampling locations around the site (Source RSK).

10.36 The first round of surface water sampling took place during a hightide at the end of March 2022. The second round of sampling was taken a week later, April 2022, during a low tide. In order to collect samples, a second, separate, sampling location was used (SW2DS) the day of sampling. It should be noted, works were being carried out on St. Dominic's Bridge during both sampling occasions, which has the potential to affect the baseline water quality of the Site. Laboratory certificates and the baseline water quality database are presented in **EIAR Volume 3: Appendix 10.9.** Both downstream of site and upstream of site have elevated levels in conductivity at 20deg, they should read 2.5 or below and readings were 5.4 upstream -5.9 downstream. Levels of ammonical Nitrogen as (N) were also elevated over the recommended 0.02 and ranged from 0.93 downstream – 2.7 upstream. This can often indicate a release of nutrients into the surface water body via agricultural run off or sediments. It is summarised as sediments as the levels for suspended soilds were over the 25mg/l limit and ranged from 32 upstream – 35 downstream. These results show that the surface water is already facing pressures and therefore it is extremely important not to add to the cumulative effects.

10.37 There is one hydrometric gauge station on the River Boyne downgradient of the Site (Station Number: 7061), EPA (2022). Additionally, there are six EPA surface water

monitoring stations on the River Boyne downstream of the Site before discharging into the Irish Sea.

Hydrogeology-Bedrock Aquifer

10.38 Consultation with GSI (2022) Groundwater maps indicates that the Site is underlain by bedrock which is limestone (pale micritised grainstone-wackestone), with an area of 109 km2. The bedrock is classified as a 'Regionally-Important Aquifer – Karstified (diffuse)' (Rkd). Mapped bedrock aquifer is presented in **EIAR Volume 3: Appendix 10.4**

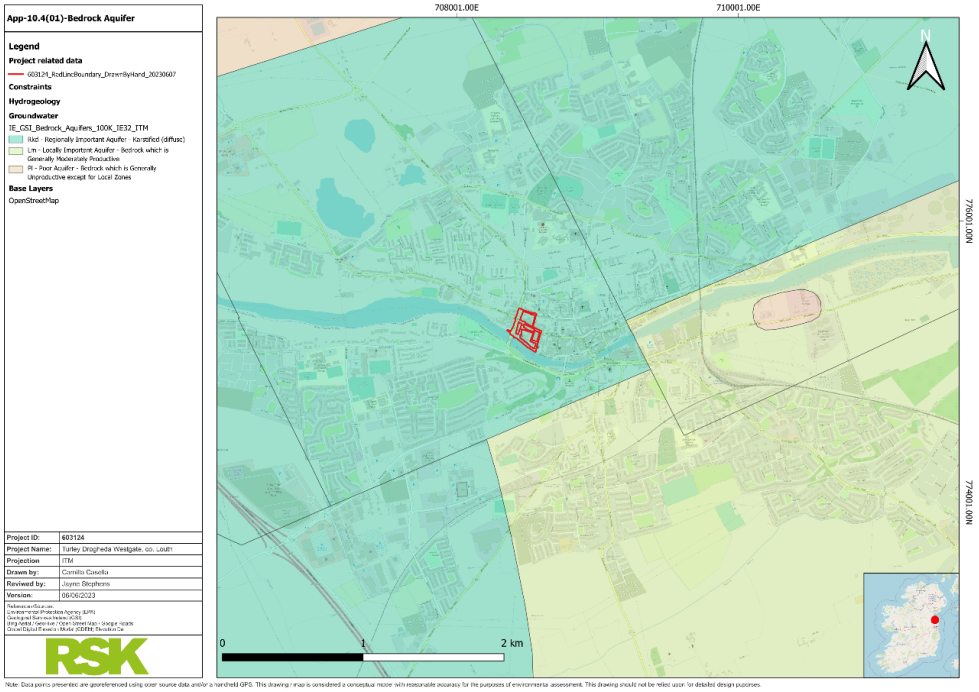

Figure 10.6: Bedrock aquifer across the site and area (Source: RSK).

Groundwater Vulnerability & Recharge

10.39 Vulnerability depends on the quantity of contaminants that can reach the groundwater, the time taken by water to infiltrate to the water table and the attenuating capacity of the geological deposits through which the water travels. These factors are controlled by the types of subsoil that overlie the groundwater, the way in which the contaminants recharge the geological deposits (point or diffuse source) and the unsaturated thickness of geological deposits from the point of contaminant discharge.

10.40 Where low permeability subsoil overlies the bedrock, it is the thickness of subsoil between the release point of contaminants and bedrock that is considered when assessing vulnerability of bedrock aquifers, regardless of whether the low permeability materials are saturated or not. The GSI vulnerability mapping guidelines allow for the assignment of vulnerability ratings from "extreme" to "low", depending upon the subsoil type and thickness. With regard to sites where low permeability subsoil is present, the following thicknesses of unsaturated zone are specified (GSI, 2022).

Table 10.9: Groundwater Vulnerability Ratings

Vulnerability Rating	Thickness of unsaturated zone (m)
Rock at or Near Surface (X)	0
Extreme (E)	0 to 3
High (H)	3 to 5
Moderate (M)	5 to 10
Low (L)	>10

10.41 Consultation with the GSI Groundwater Map Viewer (2022), indicates that the site is underlain by areas classified predominantly by Moderate (M) vulnerability rating, with small areas of High (H) and Low (L) rating within the site boundaries**, EIAR Volume 3: Appendix 10.5**.

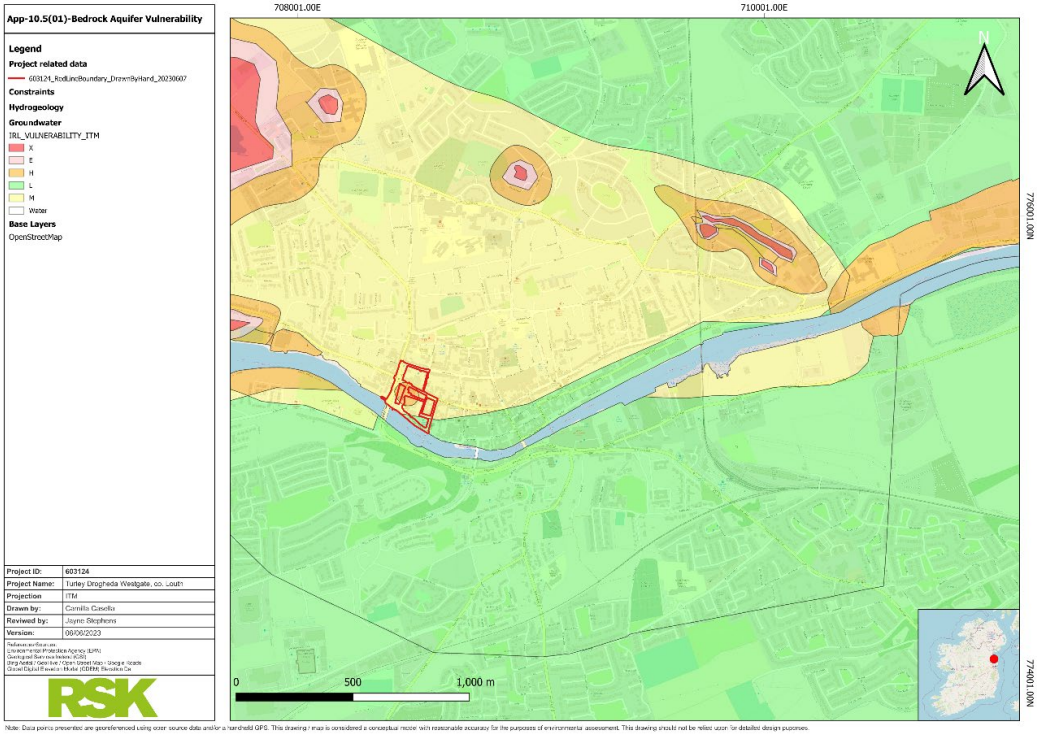

Figure 10.7: Bedrock aquifer vulnerability across the site and area (Source: RSK).

10.42 As mapped by GSI (2022), the effective rainfall is noted as being 367.30 mm/yr with a recharge coefficient of 20% of effective rainfall. Therefore, the average recharge rate of the underlying bedrock aquifer for the area is 73 mm/yr.

Water Framework Directive Water Body Status & Objectives

10.43 Details in relation to the Water Framework Directive (WFD) 2016-2021 status assigned to surface waterbodies associated with the Site are presented in **EIAR Volume 3: Appendix 10.6.**

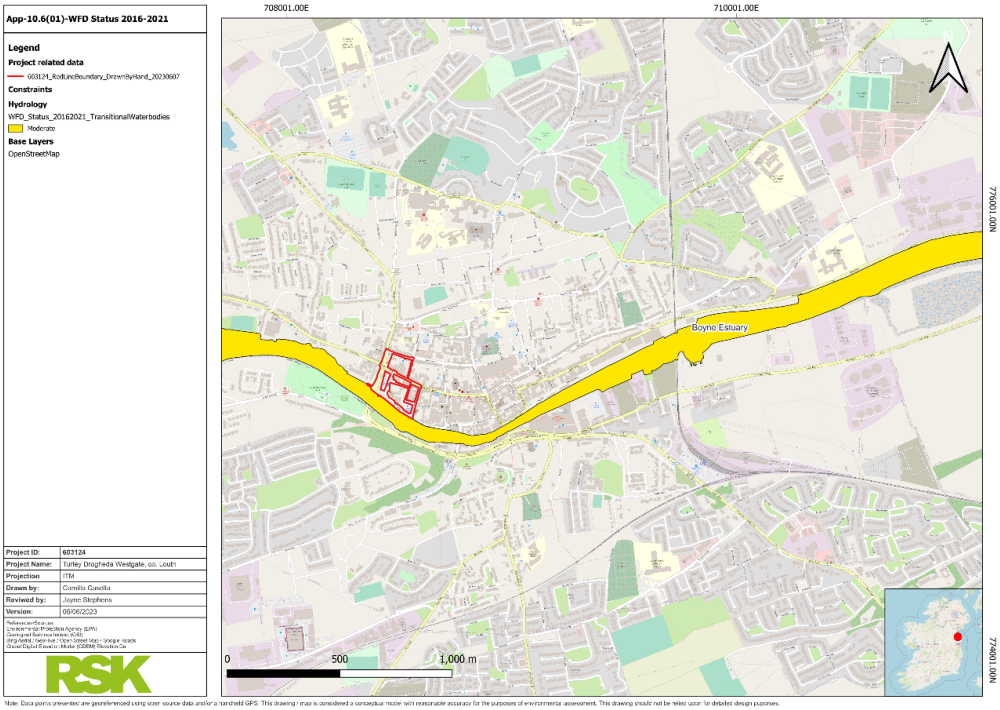

Figure 10.8: Water Framework Directive (WFD) 2016-2021 status assigned to waterbodies (Source: RSK).

10.44 Groundwater underlaying the site holds a WFD Ground Waterbody Status of 'Good' and is 'not at risk' of deteriorating. The River Boyne adjoins the southern boundary of the Site. At this point, along the boundary of the site, the river is estuarine, mixed with the tidal waters of the Irish Sea. The estuary meets the coast approximately 9 kilometres downstream. Under the Water Framework Directive status assessments 2018 – 2020, the transitional waters of the River Boyne are of 'Moderate' status and is 'At Risk' of not achieving 'Good' status during the next assessment. The transitional Water Quality is 'Potentially Eutrophic' in that it is a 'Nutrient Sensitive Area' and subsequent 'Catchment of Interest' by the EPA (2022).

10.45 According to the Boyne Catchment Report published by the EPA (2021), the Boyne Estuary is effected by eutrophication from agriculture and the Drogheda Wastewater Treatment Plant. Organic pollution (phosphorous) associated with run-off from farmyards in particular, has also been identified throughout the catchment. Urban wastewater agglomerations have been identified as a significant pressure, caused by misconnections, leaking sewers and runoff from paved and unpaved areas.

Flood Risk Identification

10.46 Flood risk assessments have been carried out in accordance with the Department of Housing and Local Government (DEHLG) and the Office of Public Works (OPW) document "The Planning Process and Flood Risk Management Guidelines for Planning Authorities" published in November 2009. Consultation with NOD (2023) 'Westgate 2040 Regeneration Scheme Site-Specific Flood Risk Assessment' was used to identify and set out possible mitigation measures against potential risks of flooding from various sources. Sources of possible flooding include coastal, fluvial, pluvial (direct heavy rain), groundwater and human/mechanical error.

10.47 In the FRM Guidelines, the likelihood of a flood occurring in an area is identified and separated into Flood Zones **Figure 10.9 - Indicative Flood Zone Map**, which indicate a high, moderate or low risk of flooding from fluvial or tidal sources, defined as follows:

- Flood Zone A - Where the probability of flooding is highest (greater than 1% Annual Exceedance Probability (AEP) or 1 in 100 for river flooding and 0.5% AEP or 1 in 200 for coastal flooding) and where a wide range of receptors would be located and therefore vulnerable;

- Flood Zone B - Where the probability of flooding is moderate (between 0.1% AEP or 1 in 1000 and 1% AEP or 1 in 100 for river flooding and between 0.1% AEP or 1 in 1000 year and 0.5% AEP or 1 in 200 for coastal flooding); and

- Flood Zone C - Where the probability of flooding is low (less than 0.1% AEP or 1 in 1000 for both river and coastal flooding.

Figure 10.9: Indicative Flood Zone Map (Source: Department of Housing, Local Government and Heritage (2009)).

10.48 The River Boyne, at the location of the development Site is a transitional waterbody, i.e., it is both fluvial and coastal in nature and hence, influenced by both. Consultation with OPW (2022) Fluvial Flood Maps has shown that portions of the Site, predominately along Father Connolly Way and Dominic Street, along with Dominic Street Car Park (the proposed Riverfront area), fall under both Flood Zone A and Flood Zone B within the red line boundary. Consultation with the OPW (2022) Coastal Flood Hazard Maps also indicate the south eastern boundary of the Site is at risk of both Flood Zones A and B, but to a much lesser extent than denoted in the Fluvial Flood Maps.

Wells

10.49 Groundwater is nationally protected under the European Communities (Drinking Water) (No. 2) Regulations 2007 (S.I. no. 278/2007). However, consultation with GSI well database indicates there are no mapped wells within the application site boundary. The closest mapped wells are more than 1.5 kilometres from the boundary of the application site, outside the applied designated 500 metre buffer zone, as shown in **EIAR Volume 3: Appendix 10.7**. The likelihood of significant numbers of unmapped wells being present in closer proximity to the application site is low noting its urban nature.

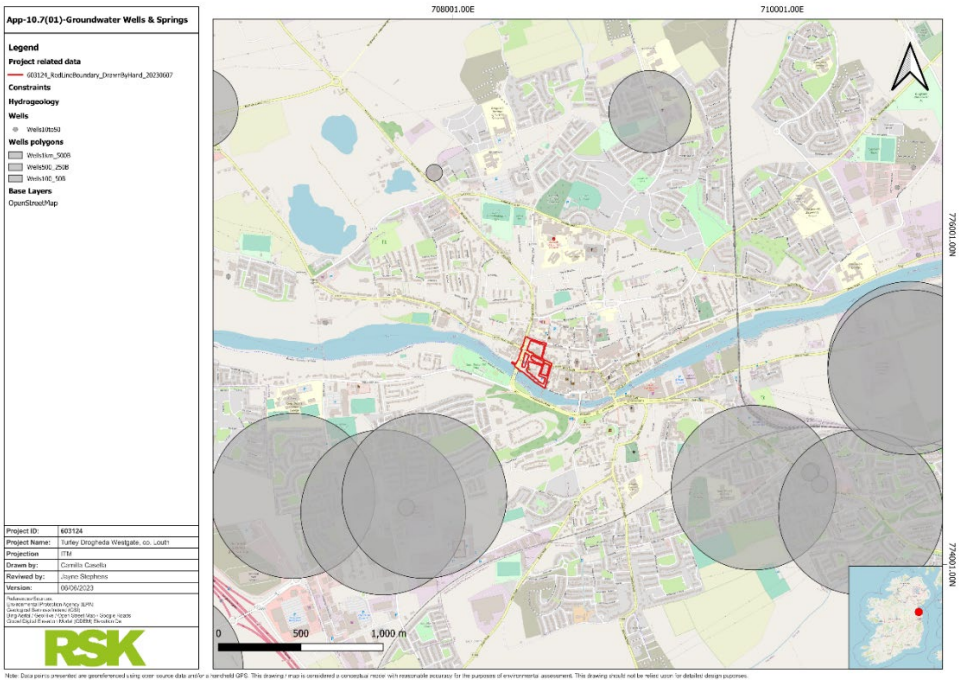

Figure 10.10: Mapped wells across the area (Source: RSK)

Designated Sites & Habitats

European Sites

The River Boyne and River Blackwater SAC is located immediately to the south adjoining the southern boundary of the Site. Potential effects on Natura 2000 sites were considered within a zone of influence of 5 kilometres.

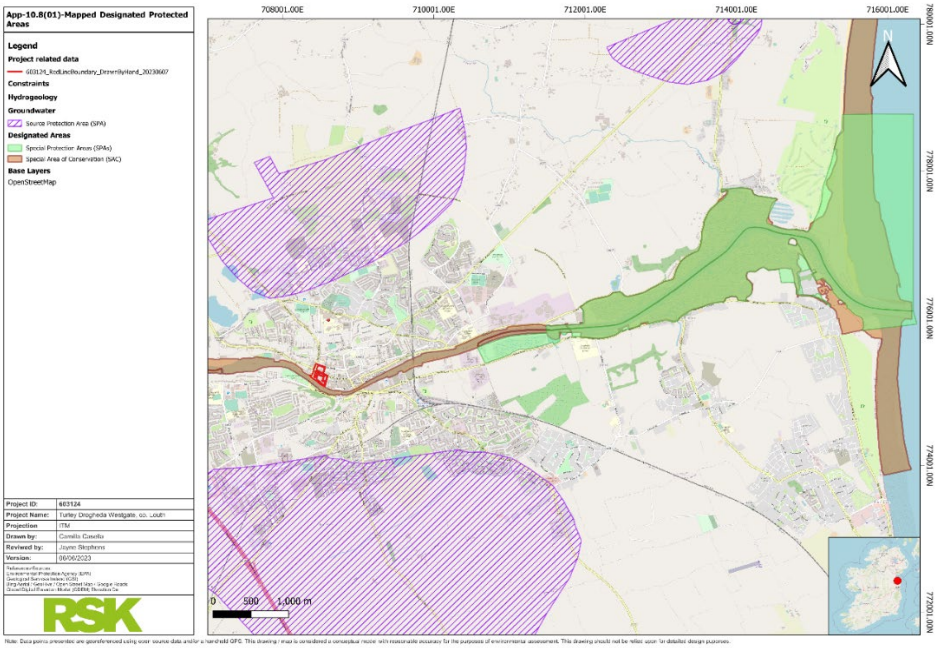

Figure 10.11: Mapped designated protected areas (Source RSK).

10.50 Sites located downstream of the Development are of main concern and are therefore shown in **EIAR Volume 3: Appendix 10.8** However, given the tidal nature of the River Boyne, and pollution potential of sites to the west, sites upstream of the application site were also considered. Relevant sites are presented in **Chapter 8: Biodiversity**.

10.51 Ground water bodies underlying the application site are also protected under EU Water Framework Directive Legislation as Designated Groundwater in SPA and SAC Habitats.

National Sites

10.52 The Site is not within any Natural Heritage Areas. However, again considering the fluvial tidal nature of the Site as above, potential indirect effects were considered within a zone of influence of 5 kilometres. Relevant sites are presented in **Chapter 8: Biodiversity, section on Designated Areas**.

Receptor Sensitivity

10.53 All receptors associated with the Development i.e. streams, rivers, and groundwater, are considered highly sensitive receptors when considering:

- Water Framework Directive (WFD) status (2016-2021) identified as "Moderate". The WFD objective to protect waterbodies with at least Good status and to improve conditions in waterbodies which fall below Good status or are identified as being at risk of deterioration.

- The on-site and down-stream designations (sensitive protected areas e.g. SAC, SPA) associated with the catchment and the sensitive habitats and species associated with same.

- The designation of some waterbodies within the boundary of the site and downstream surface water bodies and all groundwater bodies as sources of drinking water.

10.54 Ultimately, all surface waters and groundwaters associated with the Site are considered sensitive and important attributes in their own right and must be protected as per the WFD. In that context, all waters are considered to be Medium to High Sensitivity attributes and of High to Very High importance. However, waters associated with designated and protected areas should be considered the highest in the scale, that is; High Sensitivity and Very High Importance.

10.55 Risk to receptors must consider both the hazard, and likelihood of adversely impacting on any given sensitive receptor, and therefore parameters such as; distance from potential source of hazard to receptor, pathway directness and/or connectivity, and assimilative capacity of the receiving water body should also be considered.

10.56 In terms of groundwater sensitivity and susceptibility, the bedrock aquifer underlying the site and surrounding area is a "Regionally-Important Aquifer – Karstified" which is expressed by GSI (2022) as an aquifer in which flow is more diffuse, storage is higher, there are many high yielding wells, and development of bored wells is less difficult. The risk of potential adverse effects on groundwater from the Development are low given the distance to the closest mapped wells, as illustrated in **EIAR Volume 3: Appendix 10.7.** The biggest threat to groundwater is the risk of a hydrocarbon spill on site. Referring to

Section **10.85,** the depth to bedrock is anywhere from 3-10 m; therefore hydrocarbons have the potential to percolate into soils below and potentially into the neighbouring estuary.

10.57 In terms of surface water sensitivity, as stated above, the vast majority of potential contaminants or unmitigated adverse effects will readily infiltrate the neighbouring surface waterbody. It must be noted, sensitive receptors and their pathways are located in extreme close proximity to the south side of the proposed Development.

Characteristics of the Proposed Development

10.58 Please refer to Chapter **3** of this EIAR for a detailed description of the proposed project.

Assessment of Potential Effects

10.59 'Do Nothing' Scenario Assessments of the baseline hydrological and hydrogeological conditions at the site indicate that parts of the site have already experienced effects to baseline conditions through urban development.

10.60 Should the proposed development not proceed, the site would remain a previously developed urbanised area, along the waterfront of the River Boyne. The existing land-use practice, including road infrastructure, pedestrian paths/lanes and local community recreation will continue as would the associated pressures on surface water quality from upstream agricultural pressures from the river catchment.

10.61 In contrast to baseline or natural conditions, urban development activities will have a profound effect, with regard to the hydrology or hydrogeology of the site. However to minimise these effects, existing drainage infrastructure will be utilised.

10.62 Runoff from the area is either directed to the municipal sewer system or potentially discharges directly into the River Boyne Estuary.

10.63 The proposed development will have a beneficial impact in contrast to the 'Do Nothing' Scenario and is discussed in the mitigation measures.

Flood Risk Identification

10.64 Historic flood events presented by the OPW (2022) Flood Hazard Maps, recorded a flooding event along the River Boyne at Wellington Quay in 2014, c. 52 m downstream of the Site.

10.65 NOD's FRA (2023) concludes that the proposed development meets an acceptable level of flood risk mitigation management measures and satisfies the Justification Test through topographical surveys and levels information. Inundation from floodwaters will be mitigated through retained and replaced drainage infrastructure as well as SuDS design of soft landscaping. It was also concluded that there is no risk of increasing flood risk elsewhere.

10.66 The risk of flood is expressed in more detail in the form of Stage 2 and Stage 3 Flood Risk Assessments in the NOD (2023) Westgate 2040 Regeneration Scheme Site-Specific Flood Risk Assessment.

10.67 Stage 1 concluded that the proposed development is at risk of potential flood. Riverfront, lower Dominic street and St. Patrickswell lane areas are more exposed to these flood risks.

10.68 NOD (2023) concluded following Stage 2 that certain areas of the proposed development lie within Flood Zone A (1% AEP) and Flood Zone B (0.1%AEP) and at risk of fluvial and coastal flooding, outlined in **Appendix 2**. The remainder areas of the development lies within flood Zone C and NOD concluded that this areas are therefore not at risk of fluvial or coastal flooding. Risks of groundwater flooding, pluvial flooding and flooding from mechanical / human error have been deemed as low.

10.69 Stage 3 analysis of risks and mitigation measures, aided the proposed development pass the Justification Test for development in Flood Zone A. NOD concluded that the need and the sustainable flood risk management were at a satisfactory level.

Potential Effects of the Proposed Development- Construction Phase

10.70 The proposed development has the potential to result in the release of contaminants, particularly suspended solids during the construction phase of the project.

Release of Contaminants-Suspended Solids

10.71 Excavation and construction activities introduce the risk of solids being entrained in runoff. Runoff contaminated with suspended solids will add turbidity to the receiving surface water body, can block fish gills and smother spawning grounds, reduce light penetration for flora growth, and promote bacteria and algae production. Nutrients that are associated with the solids (inorganic nutrients such as phosphorus and organic such as hydrocarbons, and sewage if present) can lead to eutrophication of the water environment and eventually to fish-kills due to lowering of oxygen supply.

10.72 The degree to which inorganic solids are entrained in runoff is related to the particle sizing of the soil components. Smaller inorganic particles (e.g. clay) will be easily entrained and will remain in suspension for a longer period than larger particles (silt / sand), and will require lower flow rates and longer retention rates to settle out of the water column when given the opportunity.

Release of Contaminants- Hydrocarbons and Storage

10.73 Plant equipment and vehicles associated with excavation, material transport, and construction activities introduce the risk of hydrocarbon (fuel and oil) spillages and leaks.

10.74 Similar to suspended solids arising from excavation activities, hydrocarbons accidentally introduced to the environment will likely be intercepted by drainage and surface water networks associated with the application site.

10.75 Hydrocarbons are a pollutant risk due to their toxicity to all flora and fauna organisms. Hydrocarbons chemically repel water and sparingly dissolve in water. The majority of hydrocarbons are light non-aqueous phase liquids (L-NAPL's) which means that they are less dense than water and therefore float on the water's surface (whether surface water or groundwater). Hydrocarbons adsorb ('stick') onto the majority of natural solid objects they encounter, such as vegetation, animals, and earth materials such as soil. They burn most living organic tissue, such as vegetation, due to their volatile chemistry. They are

also a nutrient supply for adapted micro-organisms, which can deplete dissolved oxygen at a rapid rate and thus kill off water based vertebrate and invertebrate life.

Release of Construction or Cementitious Material

10.76 The Development has the potential to result in the accidental spillage or deposition of construction waste into soils and in turn effect on surface water runoff, or accidental spillages directly intercepted by drainage or surface water networks associated with the Development.

10.77 Depending on the material in question, the introduction of such materials can lead to a local change in hydrochemistry and effect on sensitivities such as ecology. For example, the introduction of cementitious material (concrete / cement / lean mix etc.) can lead to changes in soil and water pH, and increased concentrations of sulphates and other constituents of concrete. Fresh or wet concrete is a much more significant hazard when compared to old or set concrete which is considered inert in comparison, however it should also be noted that any construction materials or non-natural materials deposited, even if inert, are considered contaminants.

10.78 Surface water runoff coming into contact with concrete structures will be impacted to a degree, however water percolating through lean mix will be impacted significantly.

Release of Wastewater or Sanitation Contaminants

10.79 The Development has the potential to result in the accidental leakage of wastewater or chemicals associated with wastewater sanitation onto soils, and into the drainage network during the construction phase of the project.

10.80 Wastewater and waste water sanitation chemicals are pollutant risks due to their potential effect on the ecological productivity or chemical status of surface water systems, and toxicity to water-based flora and fauna. The level of risk posed by such facilities is dependent on the condition and upkeep of the facilities that are put in place, and the chemical agents used if applicable.

10.81 The worst case scenario/s associated with waste water sanitation is the potential for sanitation chemical, particularly related to porta-loos, accidentally spilling or leaking and being intercepted by surface water drainage features via runoff during rainfall event and in turn surface water networks associated with the Development.

10.82 In addition to direct adverse effects on ecological sensitivities downgradient of the site, runoff of suspended solids and/or other contaminants will potentially effect on the WFD status and objectives associated with the receiving surface water networks associated with the Development. Considering the 'Moderate' quality of the surface waterbody neighbouring the Site (baseline), and the fact surface waters are 'At Risk' in terms of sensitivity, any introduction of contaminants is considered a potentially profound adverse effect of the Development. Potential incidents of release contaminants at the Site will likely be short lived or temporary, however the potential effects to downstream receptors can be long lasting, or permanent.

10.83 With appropriate environmental engineering controls and mitigation measures, as detailed in the mitigation measures section below, these potential effects can be significantly reduced. Furthermore, if considered adequate, mitigation measures to

address attenuation of potential contaminants have the potential to have a further positive effect on the hydrological response to rainfall at the site.

Hydrologically Connected Designated Sites and Drinking Water

10.84 Contaminants arising as a product of the Development could be potentially intercepted by the drainage and surface water network associated with the Site. The application site is situated in close proximity upstream of designated site(s), as previously discussed. Therefore, maintaining surface water quality is a key component of environmental objectives during this project. Any contaminants arising from the Development will potentially adversely effect on downstream designated site(s).

10.85 The geographical scale of catchments upstream of designated areas downstream of the application site should be considered in terms of the assimilative capacity of the surface water systems which will buffer against any potential contaminants introduced at the Site, that is; contaminants will be 'diluted' in receiving waterbodies, i.e., River Boyne. This does not lessen potential adverse effects in the immediate vicinity of the Site and does not reduce the need for mitigation measures to be implemented but is considered a 'last line of defence' for the protection of designated areas downstream of the application site.

10.86 Surface waters, under the scope of the objectives of the WFD are considered attributes with the 'Very High' sensitivity and importance and will be protected in their own right. Although potential contamination incidents will be temporary in terms of the waters themselves, it is important to consider the potentially long lasting or potentially permanent effect(s) of contaminants on the ecological attributes dependent on the surface water bodies associated with designated areas.

Potential Effects of the Proposed Development- Operational Phase

10.87 The proposed development has the potential to result in the release of contaminants, albeit to a lesser extent during the operational phase relative to baseline conditions.

Increased Hydraulic Loading

10.88 The Development has the potential to result in decreased volumes of runoff during the operational phase of the Development relative to baseline conditions. This is a function of the increase area of landscaped/permeable surface, which is in contrast to baseline conditions, thus adding the hydraulic absorption / buffer control from this part of the Site. Reduced runoff, or an reduced hydrological response to rainfall has the potential to minimise flooding effects and effects on hydro morphology of waterbodies downstream of the development, and/or to minimise flooding effects and erosion within the boundary of the Site.

10.89 It is presumed, from the latest design layout of the Westgate Vision in Drogheda, excavation of an area of 0.1071 ha will be carried out to provide a footpath for the public amenity scheme along the embankment. It is understood that resurfacing of existing streets and side lanes will also be carried out, totalling an area of c. 1.89 hectares.

10.90 Considering baseline characteristics of the Site and the 'Very High' sensitivity and importance of the associated surface water in an SAC as well as surface water bodies downstream, including areas with probable flood risk areas and respective flood management schemes, any net increase in runoff or hydrological response to rainfall is

considered a potentially profound adverse effect. With appropriate environmental engineering controls and mitigation measures these potential effects can be significantly reduced. Furthermore, adequate mitigation measures (such as SuDS) have the potential to have a positive effect on the hydrological response to rainfall at the site.

Storm water Run-off Contamination

10.91 The Development has the potential to effect the water quality associated with surface and foul water drainage. General water quality effects associated with runoff from parking areas and other hard standing areas will be directed towards storm water network observed during Site surveying. A GPR-Utility Survey conducted by Scantech Geoscience was conducted and identified available data on sewer drainage, the survey identified there are extensive storm water drains within the Site.

Assessing the Magnitude of Potential Effects during construction and operational phases

Release of Suspended Soils

10.92 The construction phase of the Development will invariably involve earthworks including; removal of vegetation cover, excavations to facilitate the installation of footpaths and cycle paths. Entrainment of suspended solids and other contaminants in runoff are the principal risks to surface water quality in the receiving surface water network. With appropriate environmental engineering controls and properly executed mitigation measures the risk of these potential effects can be significantly reduced, and the magnitude of any potential effect reduced to within acceptable levels.

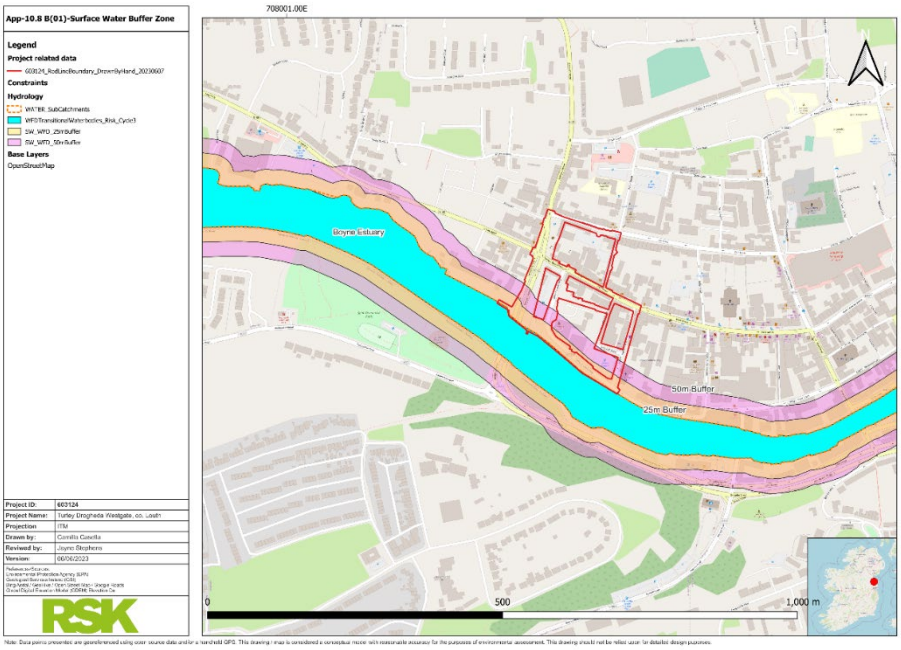

Figure 10.12: Surface water buffer zone map of the site and area (Source: RSK).

10.93 The most vulnerable aspects to surface water quality deterioration are;

- Development within surface water buffer zones (**Appendix 10.8B**) , i.e., the southern boundary of the Site along the Boyne River.

- Exposed soils, temporary stockpiles, not applicable to proposed development.

10.94 Vehicular movements and excavation works associated with the construction phase (earthworks) of the Development have the potential to effect on soil stability at a localised scale. Localised stability issues/erosion or degradation of soil by e.g. vehicular movements, have the potential to increase the potential for entrainment of suspended solids in surface water runoff.

Mechanism/s:	•	Construction activities; Excavation, handling/transport, temporary storage of soils / subsoils / vehicle tracking.#
	•	Erosion in areas effected by construction activities.
Effect:	•	Release of suspended solids entrained in runoff, intercepted by surface water network.
Receptor/s:	•	Surface Water. Surface water quality, ecological sensitivities and WFD status, WFD Registered Protected Areas.
Pre-Mitigation Potential Effect:	•	Negative/adverse, direct, profound, likely, long-term to permanent.

Release of Hydrocarbon Storage

10.95 During the construction phase of the Development, plant equipment and vehicles associated with excavation, material transport, and construction activities introduce the risk of hydrocarbon (fuel and oil) spillages and leaks. Similar to suspended solids arising from excavation activities, hydrocarbons accidentally introduced to the environment will likely be intercepted by drainage and surface water networks associated with the development site.

Mechanism/s:	•	Lubricants and other construction consumables – minor in scale.
	•	Fuel leak from personnel vehicle – minor in scale.
	•	Fuel leak from plant machinery – minor in scale.
	•	Fuel spill during refuelling – significant in scale.
	•	Fuel leak from storage - significant in scale.
Effect:	•	Release of hydrocarbons in runoff, intercepted by surface water network.
	•	Release of hydrocarbons to ground, intercepted by groundwater.
Receptor/s:	•	Surface Water. Surface water quality, ecological sensitivities and WFD status, WFD Registered Protected Areas.
	•	Groundwater. Groundwater quality for the purposes of extraction.

Pre-Mitigation Potential Effect:	• Surface Water - Negative, direct, profound, likely, long-term to permanent. • Groundwater - Negative, direct but limited to extent, significant, likely, long term to permanent.

Release of Wastewater Sanitation Contaminants

10.96 Welfare facilities will be required at the Site during the Construction phase. The level of risk posed by such facilities is dependent on the condition and upkeep of facilities that are put in place, and the chemical agents used if applicable, and therefore can range from a potentially significant to insignificant effect in direct correlation to the type of sanitation used (e.g., septic tank versus port-a-loo). It is envisaged that porta-loos will be used for this Development.

Mechanism/s:	• Wastewater leak – minor in scale. • Chemical leak – minor in scale
Effect:	• Release of wastewater / chemicals in runoff, intercepted by surface water network.
Receptor/s:	• Surface Water. Surface water quality, ecological sensitivities and WFD status, WFD Registered Protected Areas. • Groundwater. Groundwater quality for the purposes of extraction.
Pre-Mitigation Potential Effect:	• Surface Water - Negative, direct, moderate to significant, likely, short to medium term. • Groundwater - Negative, direct but limited to extent, imperceptible, likely, short to medium term.

Release of Construction or Cementitious Materials

10.97 Depending on the material in question, the introduction of any cementitious material can lead to a local change in hydrochemistry and effect on sensitive attributes e.g., ecology. For example, the introduction of cementitious material (concrete / cement / lean mix etc.) can lead to changes in soil and water pH, and increased concentrations of sulphates and other constituents of concrete can further effect water quality.

10.98 Fresh or wet concrete is a much more significant hazard when compared to set or precast concrete which is considered inert in comparison, however it should also be noted that any construction materials or waste deposited, even if inert, is considered contamination.

10.99 Surface water runoff, or groundwater coming into contact with concrete will be effected to a degree, however water percolating through lean mix concrete will be effected significantly. If the Development will require concrete footpaths in close proximity to receptors, this will need to be considered.

10.100 The production/acquisition, transport of material and management of plant machinery must also be considered.

Mechanism/s:	• Accidental spillage or unmanaged deposition of construction materials such as wet concrete which is intercepted by drainage or surface water networks associated with the Development. • Dust generation in relation to the production of concrete and management of raw materials. • Transport of material on Site and washout of plant machinery. • Pouring, forming, deposition of concrete during construction. • Generation of waste.
Effect:	• Release of cementitious material in runoff, intercepted by surface water network.
Receptor/s:	• Surface Water. Surface water quality, ecological sensitivities and WFD status. • Groundwater. Groundwater quality for the purposes of extraction.
Pre-Mitigation Potential Effect:	• Surface Water - Negative, direct, profound, likely, long-term to permanent. • Groundwater - Negative, direct but limited, imperceptible, likely, short to medium term.

Diversion and Enhancement Drainage

10.101 Existing drainage infrastructure identified in the GPR-Utility Survey, will be maintained given the superficial nature of the regeneration project and no new drainage will be engineered. The SI and FRA Reports will provide more detail.

Watercourse Crossings (Mapped Rivers)

10.102 There are no existing watercourse crossings within the Site. The Site is however, as mentioned previously, directly adjacent to the River Boyne. Construction near any watercourse will have inherent risk given the level of disruption involved with construction activities, and the proximity, to the primary sensitive receptor of the watercourse itself.

Potential Cumulative Effects during construction and operational phases

10.103 Water quality in Ireland is in decline, according to the EPA at least half (46%) of the surface water bodies in Ireland are not as ecologically healthy or resilient as they should be (WFD Objectives). In **Section 10.64** the 'Do Nothing Impact' includes the continued pressure on waterbodies generally. Pressures associated with a range of activities

including urban, agricultural, and similar developments or construction contribute to the cumulative effect on receiving waterbodies in the catchment, therefore the cumulative effect associated with the Development must consider this, with a view to qualifying any adverse effect arising from the development as contributing to a catchment wide scenario. In turn, the mitigation measures set out in this report are objective driven with a view to minimising any adverse effect to the receiving waterbody network, and in line with WFD objectives that is; achieving and maintaining at least Good status in all waterbodies. The WFD classification of Surface water, Groundwater and Hydrology of the site has been outlined in previously in this Chapter.

10.104 With respect to hydrology, the effects of the Development are considered to contribute to the cumulative nature of adverse effects imposed on the surface water network in the catchments associated with the Development (**Appendix 10.2**). However, considering the pre-existing the transitional waters of the River Boyne are of ''*Moderate*'' WFD status of the surface waters surrounding the proposed Development (**Appendix 10.6**), the potential for the Development to have adverse cumulative effects on hydrology is limited to the construction phase if prescribed mitigation measures are not adhered to.

10.105 Considering cumulative effects of pressures on the surface water network, if an accidental release of contaminants were to occur, there is a potential to temporarily effect surface waterbodies in the catchment, taking into account this projects works but also additional projects such as the construction of 275 no. residential units on Land adjacent to Scotch Hall Shopping Centre, Drogheda (Planning Ref: 309668) and 215 no. units on Lands at Newtownstalaban (Planning Ref: 305819), the Refurbishment of St. Dominick's Bridge (Planning Ref: 308224), the construction of the Boyne Greenway (Planning Ref: 315460 & 307652). However, the objectives of the outlined mitigation measures in this chapter and in the Flood Risk Assessment (FRA) completed by Nicholas O'Dwyer Ltd, are to reduce any potential effect to acceptable levels. Therefore, the proposed development is not considered likely to significantly contribute to cumulative effects in terms of water quality nor flood risk.

10.106 With respect to hydrogeology, and the potential effects of the Development having been assessed as likely being to be minor and temporary, for example; in the event of a minor spill of fuel / hydrocarbons, the spill will be contained and remediated efficiently. Therefore, the development is not likely to contribute significantly to cumulative effects on groundwater quality, but the residual risk even if small in scale is important to consider in the context of the elevated sensitivity and importance of the receptor.

10.107 Assuming the adequate application and execution of mitigation measures, and achieving the objectives set, for example; <25mg/l Suspended Solids, the Development is not considered to potentially significantly contribute to cumulative surface water or groundwater effects.

Mitigation Measures

Design Phase

10.108 General mitigation measures have been prescribed for protecting the existing hydrological regime of the Site, and where possible, project-specific environmental constraints have been identified and detailed in this EIAR.

Mitigation measures used for identified constraints of the development

10.109 Buffer zones are intended to drive the design process by minimising or avoiding the risk to surface water features by restricting construction disturbance to outside these zones; in turn protecting riparian vegetation and providing potential for filtering of runoff from the proposed site and maintaining the baseline hydrological and drainage regime at the site. The prescription of surface water buffer zones (sometimes referred to as setback distances) is in line with relevant guidance relating to; forestry, agriculture, water resources, and direct discharges guidance documents. Given the location of the Development, directly adjacent to a river waterbody, there is an escalated risk in terms of sensitivity.

10.110 The available guidance stipulates that surface water buffer zones should be prescribed to mapped surface water bodies or aquatic zones i.e. defined as a permanent or seasonal river, stream or lake shown on an Ordnance Survey 6-inch map.

10.111 The available guidance stipulates varying surface water buffer widths depending on type of activity, receptor type and sensitivity, and riparian zone characteristics including topography (steepness). Recommended surface water buffer widths range from 5 m to 50 m depending on site specific and activity specific characteristics. Minimum requirement is 25m Surface Water Buffer Zone – Mapped surface water features i.e. mapped streams, rivers, lakes (WFD, 2000) (DAFM, 2018). Source for mapped surface water features; EPA and 15m Drainage Buffer Zone (WFD, 2000) (DAFM, 2018) – Non-mapped drainage features i.e. non-mapped streams, natural and artificial drainage features. For the purposes of this assessment a buffer has been established, it is necessary to carryout works within the buffer zone. Therefore, it is essential to contain runoff using prescribed mitigation measures as outlined below.

10.112 No additional modification works to the main drainage infrastructure within the site have been proposed to date.

Mitigation measures used for excess Surface water identified in the Flood Risk Assessment

10.113 To manage surface water, the proposed development will utilise the existing underground storm and combined sewers. This involves relocating the road gullies from the wider old road to the proposed new road and redirecting the water into the existing sewers. Furthermore, the proposed development will introduce more permeable areas to the overall area, which is expected to decrease the amount of water flowing into the existing pipes.

Construction Phase

Earthworks Proposed Mitigation Measures

10.114 Preventing run-off is an effective method of preventing sediment pollution in the water environment. Therefore, adoption of appropriate erosion and sediment controls to manage run-off during construction is essential to prevent sediment pollution.

10.115 It is understood the proposed development will aim to maintain existing on-site levels as far as is practical. This should constitute a minimum interference with the natural soils below ground level. This should reduce the volumes of soils being disturbed and soils being stockpiled which will reduce the potential for sediment run-off and sediment loading of surface waters.

10.116 Intrusive ground investigation, by means of a site investigation report going forward will provide more information on the description of the underlying soils of the site. Mitigation measures to address the potential effects sediment loading include the following:

- Management of excavated material, that is: a materials management plan will be established and form part of the Construction & Environmental Management Plan (pCEMP) with a view to establishing material balance during the proposed construction phase, thus minimising the potential for, or the length of time excavated materials are exposed and vulnerable to entrainment by surface water runoff.

- A full GPR-Utility survey was conducted of existing drainage features such as manhole investigation. The existing drainage is expected to have the capacity for any temporary increases in surface water flow where applicable. However surface water will be reduced overall following the construction of the development as green areas are incorporated in the design.

- Drainage and measures to control run-off will be employed to manage sediments prior to any works being undertaken on Site.

- No permanent, or semi-permanent stockpile will remain on the site during the construction phase of the Development.

- Suitable locations for temporary stockpiles will be identified on a case-by-case basis. The suitability of any particular location will consider characteristics of the proposed site including; slope incline and topography, drainage networks in the vicinity and proximity to same, other relevant characteristics which are likely to facilitate, increase, or compound the potential for entrainment by surface water runoff.

- Earthworks will be limited to seasonally dry periods and will not occur during sustained or intense rainfall events. Similarly, controls measures in preparation for and during storm events will be outlined in the SWMP, for example, pause excavation activities during storm events.

- Any permitted, exposed soils (temporary stockpiles) will be covered with plastic sheeting during all relatively heavy rainfall events and during periods where works have temporarily ceased before completion at a particular area (e.g. weekends).

- Silt fencing will be installed around the perimeter of the site at any locations where surface water is likely to run off, directly into the River Boyne. This could include the river bank, land drains, natural depressions in the soil surface, or any other geomorphological feature which might accommodate surface water run-off. The location of the silt fencing will been determined in the construction stage pCEMP and is subject to a detailed assessment of the area or phase to be developed. The purpose of the silt fencing is to prevent silt leaving the site in run-off water and entering adjacent land with the potential to effect nearby watercourses. Silt fences will consist of a geotextile membrane fixed to wooden stakes approximately 600 mm high. The membrane will be anchored into the ground to form a continuous barrier with the soil surface. Silt fences will be monitored and maintained when necessary during the construction period. Maintenance will include the replacement of the geotextile when damaged and the removal of any silt build-up on the upslope side of the silt fence. Silt fences will be temporary features but will remain in place for a period following the completion of the Construction Phase.

- Construction waters will be collected and pumped to the established treatment train prior to discharging from Site, if necessary.

- Emergency contact numbers for the Local Authority Environmental Section, Inland Fisheries Ireland, the Environmental Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent position within the site compound. These agencies will be notified immediately in the event of a pollution incident.

- Site personnel will be trained in the importance of preventing pollution and the mitigation measures described here to ensure same.

- The site manager will be responsible for the implementation of these measures. They will be inspected on at least a daily basis for the duration of the works, and a record of these inspections will be maintained.

- Road sweepers will be employed to clean the site access route as required. For example, Any hard surface site roads will be swept to remove mud and aggregate materials from their surface.

Release of Hydrocarbons Proposed Mitigation Measures

10.117 To control and contain any potential hydrocarbon and other harmful substances spillage by vehicles during construction, it is recommended where possible to refuel plant equipment off the development site, thus mitigating this potential effect by avoidance.

10.118 Despite the management of refuelling and fuel storage, there remains the risk of leakage from vehicles and plant equipment during construction activity. Plant equipment used on site will require regular mechanical checks and audits to prevent spillage of hydrocarbons on the exposed ground (during construction). Construction plant will be

routinely checked by the Contractor for signs of leaks or damage, or unsatisfactory performance. All leaks identified from plant hydraulics, brakes lines, fuel lines will be promptly repaired, and any spillages will be dealt with accordingly with spill kits.

10.119 The risk of water quality effects associated with works machinery, infrastructure and on-land operations (for example leakages/spillages of fuels, oils, other chemicals and waste water) will be controlled through good site management and the adherence to codes and practice. The following measures will be implemented during construction:

10.120 Gerry cans with proper pouring nozzles will be used to move fuel around the site for the purposes of refuelling items of small plant on site.

10.121 Drip trays will be used under items of small plant during refuelling or any repair works which may lead to accidental spillage of hydrocarbons.

10.122 Any gas bottles will be stored in a caged area at a secure location on the site.

10.123 Temporary oil and fuel storage tanks, if necessary, may be kept in a material storage area in suitable containers and will be stored on appropriately bunded spill pallets capable of retaining a volume of equal to or greater than 1.1 times (>110%) capacity of the containers stored on them. In the event of a filling spillage excess oil or fuel will be collected in the bund.

10.124 In the event of an accidental spill during the construction or operational phase of the Development, contamination occurrences will be addressed immediately, this includes the cessation of works in the area of the spillage until the issue is resolved. In this regard, appropriate spill kits must be provided across the site to deal with the event of a spillage and made available at all times. Spill kits will contain a minimum of; oil absorbent granules, oil absorbent pads, oil absorbent booms, and heavy-duty refuse bags (for collection and appropriate disposal of contaminated matter). Staff will be trained in their use and details of personnel and location and type of spill kits should be listed in the Pollution Incident Response Plan to be compiled by the Contractor. No materials contaminated or otherwise will be left on the Site. Suitable receptacles for hydrocarbon contaminated materials will also be at hand. Upon usage, spill kits must be promptly replaced.

Surface Water Contamination Materials Proposed Mitigation Measures

10.125 During the construction phase of the Development, the use of oil booms and, if necessary, a silt settlement tank will reduce the risk of contamination of surface water run-off.

Construction and Cementous Materials Proposed Mitigation Measures

10.126 Fresh concrete is very alkaline and can cause serious pollution in water bodies. It is essential to ensure that the use of wet concrete is carefully controlled so as to minimise the risk of any material entering the water.

- A washdown area will be provided on site, if necessary, for trucks to use after delivery of concrete or on return to the batching plant. This area will be adequately bunded to mitigate the risk of contaminated runoff to the site and

surrounding area. Washdown runoff will be appropriately treated prior to discharge.

- Wash-out areas on site will be properly designed as an impermeable slab with a peripheral drain system.

- Wash-out of vehicles shall not be located within 10 metres of any temporary or permanent drainage features.

Wastewater or Sanitation Contaminants Proposed Mitigation Measures

10.127 During the construction phase potential contamination incidents arising from welfare facilities will be addressed in a similar manner to other contamination incidents whereby issues identified will be isolated and addressed in an efficient and timely manner.

- Site welfare facilities will connect to existing foul sewer system (in consultation with and authorized by Irish Water) or use bunded porta-loos.

Monitoring during Construction Phase

10.128 A Surface Water Management Plan (SWMP) is recommended for the proposed development to detail the site drainage that has been designed for the site using the following principles:

- Sustainable Drainage Systems (SuDS)

- Ecologically Sensitive Processes

- Archaeological Sensitive Areas

10.129 The SWMP will be drafted to incorporate the 'best practice' industry guidance using, for example, Department of Environmental Flood and Rural Affairs (DEFRA) (2010) 'Surface Water Management Plan Technical Guidance'.

10.130 The Surface Water Management Plan is a live document and where there is a requirement for variation at the Site to provide more ecologically sensitive drainage during the construction phase, then the SWMP will be updated to reflect this. The SWMP will be updated by the appointed Contractor and changes to the document will be agreed with the Project Hydrologist, Environmental Clerk of Works (EnvCoW) and relevant stakeholders before drainage works commence. The SWMP aims to:

- Identify environmental sensitives of the site and the associated buffer zones

- Describe how the system will operate to minimise modification and disruption to the existing site hydrology

- Outline the proposed maintenance regime and associated flood risks

- Outline the proposed drainage management for the operational phase

10.131 Furthermore, surface water monitoring is proposed during construction of the development. Surface water samples from the River Boyne were collected at two locations; upstream and downstream of the Site to understand baseline conditions. This

practice should be repeated regularly from the same upstream and downstream locations during the construction period.

10.132 Weekly sampling is proposed, given the close proximity of works to a receptor, as well as sampling following an event such as heavy rainfall or an accidental spillage. Analysis for total suspended solids, pH and total petroleum hydrocarbons would allow for the detection of sediment loading, concrete pollution or spillages of hydrocarbons.

10.133 Appropriate parameter thresholds will be established with a view to monitoring water quality and escalating emergency responses as necessary. This will include, as a minimum:

- Total Suspended Solids (TSS) will be <25mg/L TSS

Operational Phase

Increased Hydraulic Loading

10.134 Under the scope of this Development, and with consultation with NOD (2022) there are no proposed infilling works, and reprofiling of levels for roadways, footpaths and cycle paths are estimated to be minimum. Therefore, there is no overall increase in hardstanding area that existing and planning SuDS management cannot attenuate, reducing the risk of surface runoff flooding. According to NOD (2022), the use of SuDS ensure there will be no additional discharge to the existing surface water drains that would increase surface water runoff. Therefore, the baseline greenfield runoff rate (Q_{BAR}) will be maintained.

Surface Water Contamination

10.135 Before works commence a detailed survey of surface water/storm water drainage system is required.

Monitoring during Operational Phase

10.136 Monitoring of the River Boyne will solely consist of existing monitoring carried out under the National River Monitoring Programme (EPA) as part of the Water Framework Directive (2000).

Residual Effects of the Proposed Development

10.137 Mitigation measures outlined in this report lay down the framework to reduce all identified potential effects of the development on Hydrological and Hydrogeological receptors. The Mitigated Potential Effects lay down the achievable benchmarks provided measures are considered and implemented adequately. These measures, in accordance with S.I. No. 296/2018 avoid and prevent what might otherwise be adverse effects on the environment of the development.

Effect	Mitigated Risk / Effect to Receptor
Release of suspended solids entrained in runoff, intercepted by surface water network.	Very Low Risk / Neutral Effect

Effect	Mitigated Risk / Effect to Receptor
Release of hydrocarbons in runoff, intercepted by surface water network.	Very Low Risk / Neutral Effect
Release of hydrocarbons to ground, intercepted by groundwater.	Low Risk / Neutral Effect
Release of waste water / chemicals in runoff, intercepted by surface water network.	Very Low Risk / Neutral Effect
Release of waste water / chemicals in runoff, intercepted by groundwater.	Low Risk / Neutral Effect
Release of cementitious material in runoff, intercepted by surface water network.	Very Low Risk / Neutral Effect
Reaction between concrete and surface water / runoff and concrete adversely altering surface water hydrochemistry.	Very Low Risk / Neutral Effect
Reaction between concrete and groundwater adversely altering Groundwater hydrochemistry.	Very Low Risk / Neutral Effect
Wetting – Excess discharge in a particular area (local flooding)	Very Low Risk, Neutral to Positive Effect.
Altering hydrological regime at a particular location. Potentially leading to restricting water flow and localised flood risk.	Very Low Risk / Neutral to Positive Effect
Altering hydrogeological regime at a particular location. Potentially leading to restricting groundwater flow and localised Effects to groundwater levels and flow regime.	Very Low Risk / Neutral Effect

Worst Case Scenario

10.138 'Worst-case' effects are the effects arising from a project in the case where mitigation measures fail.

10.139 Given the approved developments outlined below should the mitigation measures fail the accumulation of effects that could arise from these other projects, would have an adverse, large effect on the surface water quality of this ''Moderate'' WFD status transitional waterbody.

10.140 The proposed development due to the proximity of the development to this surface water is of 'high risk' where mitigation measures fail. Surface water runoff and the release of suspended solids, Cementous material, Hydrocarbons, wastewater will all

have a direct negative effect to this sensitive receptor and identified as ‘‘likely significant effects’’ (EPA, 2022). These effects may be temporary but can have lasting effects on the flora and fauna in this ecosystem **(EIAR Chapter 8).** It is important that surface water sampling therefore take place upstream and downstream of the proposed development to ensure that any contamination of surface water detected upstream is not connected to the proposed development.

Assessment of Interactions with other EIAR Chapters

10.141 This Hydrology Chapter is closely linked to Chapter 9: Land Soils and Geology and Chapter 8 Biodiversity, cross references are included in this report where relevant. Other references included Chapter 3 – Site Location and Context. Hydrology is often dependant on the topography and geology of a site. Ecology is also closely linked due to water quality having an effect on the ecosystems and their flora and fauna.

10.142 Of particular significance is the interaction between Land, Soils and Geology and Hydrology and Hydrogeology. Potential effects associated with Geology, including excavations and management of excavation arisings produce potential sources of contamination and a hazard in terms of runoff and surface water quality, e.g. entrainment of solids in runoff and intercepted by receiving surface water network.

10.143 Therefore, mitigation measures for effects which fall under Land, Soils and Geology e.g. excavations and management of arisings, are mitigated through measures detailed under Hydrology and Hydrogeology e.g. management of runoff and construction water.

10.144 Similarly, hazards such as the potential releases of contaminants such as hydrocarbons infiltrating to ground, as well as geological receptors such as soil the underlying groundwater aquifer is a very important hydrogeological receptor to consider.

10.145 In turn, the quality of surface water, groundwater, and soils is important to consider in terms of the dependence of ecological attributes

Difficulties in Compiling Information

10.146 During the desk study of this development there has been no SI data available for use in assessments. There have been no other issues obtaining data.

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11. Air & Climate

Introduction

11.1 Article 3(1) of amended Directive states:

> *'The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors: …*
>
> *c) land, soil, water, **air and climate**; …'* [**our emphasis**.]

Statement of Authority

11.2 This chapter has been prepared by Robert Clark, a senior air quality consultant at RSK Ireland Limited. He is a full member of the Institute of Air Quality Management with over 5 years' experience of engineering and environmental projects relating to infrastructure development, pollution prevention and control, and air quality assessments. The contents of this chapter have been reviewed by Dr Srinivas Srimath, a full member of the Institute of Air Quality Management and a Chartered Environmentalist with over 30 years' experience of engineering and environmental projects relating to infrastructure development, pollution prevention and control, and air quality assessments.

11.3 The significance of effects has been assessed in accordance with the Environmental Protection Agency (EPA) Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR), May, August 2022.

11.4 With regard to the quality of the effect, ratings may have positive, neutral or negative applications. The significance of an effect on the receiving environment is described in the range between imperceptible and profound. The duration of impacts as described in the EPA Guidelines are presented on a scale between momentary and permanent.

Methodology

11.5 This air quality assessment has been prepared in the context of extensive European, national and local policy on the subject of air quality. A full review of this policy is given in **EIAR Volume 3: Appendix 11.1**.

11.6 The assessment addresses effects during both the construction and operational phases of the proposed development. The approach taken for assessing the potential air quality effects of the proposed development may be summarised as follows:

- characterisation of baseline local air quality;
- qualitative impact assessment of construction phase of the development;
- impact assessment of air quality effects of the proposed development whilst it is operational; and

- recommendation of mitigation measures, where appropriate, to ensure any adverse effects on air quality are minimised.

11.7 Climate change comprises two distinct areas:

- Climate Change Mitigation – an assessment of likely significant effects upon climate change resulting from the project and their mitigation, including an estimate of greenhouse gas (GHG) emissions; and

- Climate Change Adaptation – an assessment of likely significant effects of climate change upon the project, including its vulnerability and the need for any adaptation measures to ensure project resilience to projected climate change scenarios.

11.8 The terms "carbon", "carbon dioxide (CO_2)" and "GHG" are used interchangeably in this chapter depending on the terminology of referenced documents, etc.

11.9 The life cycle of the project considers construction, operation and demolition. These are assessed throughout this chapter.

Construction Phase

11.10 Dust and particulate matter (PM) generated during the construction phase may have the potential for an adverse effect on local air quality, and therefore this was assessed in accordance with the Institute of Air Quality Management (IAQM) construction dust guidance (IAQM, 2016).

11.11 In order to assess the potential effects, construction activities are divided into four types:

- demolition;

- earthworks;

- construction; and

- trackout (defined as the transport of dust and dirt from the construction / demolition sites onto public road network, where it may be deposited and then re-suspended by vehicles using the network).

11.12 The first step is to screen the requirement for an assessment. An assessment is required where there are human and/or ecological receptors within certain distances of the site.

11.13 There are human receptors within 350m of the boundary of the site and within 50m of the trackout route; therefore, construction dust may have the potential to cause an adverse effect in the local area. There are designated ecological receptors within 50 m of the trackout route; therefore, construction dust may have the potential to cause an adverse effect on ecological receptors.

11.14 A qualitative construction impact assessment has been conducted to assess the risk of dust impacts and determine appropriate mitigation to adequately control the risk. The level of mitigation recommended for each activity is then determined, being commensurate with the identified risk (high, medium or low risk).

11.15 Mitigation is recommended for all these three risk categories as per the IAQM construction dust guidance. 'Negligible' is also a defined risk category, but mitigation is not required for the 'negligible' risk category. The IAQM construction dust guidance does not recommend assigning the significance of construction activities without mitigation. However, in EIAR terms (and for consistency in wording and terminology for the assessment of impact significance), high, medium, low and negligible (risk) will result in a significant, moderate and slight significance levels, as shown in **Table 11.1**.

Table 11.1: Classification of significant air quality effects (construction phase)

Risk (IAQM)	Significance (EPA)
High	Significant, very significant, profound
Medium	Moderate
Low	Slight
Negligible	Not significant

11.16 The full construction dust assessment methodology is presented in **EIAR Volume 3: Appendix 11.2**.

Operational Phase

11.17 LA 105 of the Design Manual for Roads and Bridges (DMRB) was published by Highways England in November 2019 and sets out the requirements for assessing and reporting the effects of highway projects on air quality. The DMRB, on which the Transport Infrastructure Ireland (TII) guidance was based, states that road links meeting one or more of the following criteria can be defined as being 'affected' by a proposed development and should be included in the air quality assessment:

- Road alignment change of 5m or more;
- Daily traffic flow changes of 1,000 Annual Average Daily Traffic (AADT) or more;
- Heavy Duty Vehicle (HDV) flow changes of 200 AADT or more;
- Daily average speed changes of 10 km/h or more;
- Peak hour speed changes of 20 km/h or more.

11.18 The TII guidance also states that a detailed modelling assessment will be required if:

- Concentrations exceed 90% of the air quality limit values when assessed by the screening method; or
- Sensitive receptors exist within 50m of a complex road layout (e.g. grade separated junction and hills).

11.19 For routes which pass within 2km of a designated area of conservation (Irish or European), TII requires consultation with an Ecologist. However, in practice the potential

for impact to an ecological site is highest within 200 m of the proposed scheme and when significant changes in AADT (>5%) occur.

11.20 **Table 11.2** provides information for judgement of significance of air quality effects of a project as per the DMRB for nitrogen dioxide (NO_2) and PM_{10}. For consistency in wording and terminology for the assessment of impact significance, the equivalent EIAR terms are also presented.

Table 11.2: Classification of significant air quality effects (operational phase)

Magnitude of change in annual mean NO_2 or PM_{10} ($\mu g/m^3$)	Magnitude (DMRB)	Significance (EPA)
>4 (>10%)	Large	Major adverse/beneficial
>2 (>5%)	Medium	Moderate adverse/beneficial
>0.4 (>1%)	Small	Minor adverse/beneficial
<0.4 (<1%)	Negligible	Negligible

11.21 The transport consultants for this application, Hegsons Design Consultancy Limited, provided traffic data for the development for years 2022-2027, however RSK were advised that no new traffic generators are being proposed by the scheme and the improvements to active transport infrastructure are predicted to reduce traffic numbers, therefore the proposed development will not bring any additional traffic to the area.

11.22 The traffic data provided would therefore represent the predicted traffic flows from external sources and not be representative of the operational phase impacts from the development. Although there will be some road narrowing along the road network, no significant road alignment or speed changes will occur as a result of the development.

Based on the Transport Infrastructure Ireland (TII) screening criteria above, the surrounding area is not likely to be 'affected' by the proposed development and no detailed modelling is required.

Climate

11.23 LA 114 Climate of the DMRB was published in 2019. The following scoping criteria are used to determine whether a detailed climate assessment is required. If any of the road links impacted by the proposed development meet or exceed the below criteria, then further assessment is required.

- A change of more than 10% in AADT.
- A change of more than 10% to the number of heavy-duty vehicles.
- A change in daily average speed of more than 20 km/hr.

Climate Change Mitigation

11.24 Climate mitigation assesses likely GHG emissions from the construction and operation of the proposed development, and the measures taken to mitigate these emissions.

Determining the significance of climate change effects is complex given the local scale at which GHG emissions occur relative to the cumulative and global nature of climate change. This assessment estimates the development GHG emissions and compares these with the national (Irish) target. The magnitude and significance of GHG emissions are determined using the EPA and Institute of Environmental Management & Assessment (IEMA) guidance and professional judgement.

Magnitude and Significance of Effect

11.25 **Table 11.3** provides information for judgement of significance of GHG effects of a project. For consistency in wording and terminology for the assessment of impact significance, the equivalent EIAR terms are also presented.

Table 11.3: Classification of significant GHG effects

GHG magnitude of change relative to budget	Magnitude	Significance (EPA)
>10%	Large	Major adverse/beneficial
3-10%	Medium	Moderate adverse/beneficial
1-3%	Small	Minor adverse/beneficial
<1%	Negligible	Negligible

Duration of Effect

11.26 Carbon dioxide equivalent (CO_2eq) is a measure used to compare the emissions from various GHGs based on the amount of CO_2 that would have the same global warming potential (GWP), when measured over a specified timescale (generally 100 years). Given this timescale and the findings of the IPCC Special Report: Global Warming of 1.5°C report that some impacts of climate change may be long-lasting or irreversible, the duration of effect is assumed to be long term and permanent.

Climate Change Adaptation

11.27 Climate change adaptation considers potential impacts to the construction and operation phases of the development from future changes to local climatic conditions that are projected to result from climate change. Measures to mitigate these effects are also discussed.

Baseline/Receiving Environment

11.28 Please refer to 'Chapter 3 - Site Location and Context' of this EIAR which provides a detailed overview of the application site and surrounding area. This section provides a detailed description of the baseline environment with respect to 'Air and Climate'.

Air Quality

11.29 Existing or baseline air quality refers to the concentrations of relevant substances that are already present in ambient air. These substances are emitted by various sources, including road traffic, industrial, domestic, agricultural and natural sources.

11.30 The principal air quality pollutants relevant to this assessment are considered to be NO_2, PM_{10} and $PM_{2.5}$, generally regarded as the three most significant air pollutants released by vehicular combustion processes, or subsequently generated by vehicle emissions in the atmosphere through chemical reactions. These pollutants are generally considered to have the greatest potential to result in human health impacts, and are the substances of most concern in terms of existing levels in the area, as discussed below.

11.31 A desk-based study has been undertaken using data obtained from the EPA website. The Drogheda monitoring site is approximately 3km to the north-east of the application site. The site monitors PM_{10} and $PM_{2.5}$ but was only operational from April 2021. The next nearest monitoring sites are located in Navan and Dundalk which are both over 20km from the application site. Data for 2019 were not available for any of these stations (i.e. data for pre COVID-19). The NO_2, PM_{10} and $PM_{2.5}$ monitoring data recorded are presented in **Table 11.4**.

Table 11.4: Annual Mean Measured Pollutant Concentrations (Source: http://airquality.ie)

Monitoring Site	2021 Annual mean concentrations (µg/m^3)		
	NO_2	PM_{10}	$PM_{2.5}$
Drogheda	-	12.1*	7.3*
Navan	11.2	12.6	-
Dundalk	21.7	13.4	8.1

*April 2021 – April 2022

11.32 No exceedances of the relevant air quality standards (AQSs) were recorded at the monitoring sites in closest proximity to the application site. Therefore, exceedances of the relevant AQSs at the application site is not expected.

11.33 The National Parks and Wildlife Services website (https://www.npws.ie/) indicates that the River Boyne and River Blackwater Special Area of Conservation (SAC) is within 50m of the site boundary or potential routes along which trackout could arise. Trackout is defined as "*the transport of dust and dirt from the construction/demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network*" within the IAQM *Guidance on the assessment of dust from demolition and construction* 2014.

Climate

11.34 Anthropogenic emissions of greenhouse gases in Ireland included in the European Union's Effort Sharing Decision "EU 2020 Strategy" (Decision 406/2009/EC) are outlined in the most recent review by the EPA which details emissions from 1990 up to 2020 (it should be noted that at the time of writing the 1990-2020 review was still provisional and not yet final). Agriculture was the largest contributor of CO_2 emissions in 2020 at 37.1%. The second largest contributor was the transport sector accounting for 17.9%. Ireland had total estimated GHG emissions of 57.70 Mt CO_2eq in 2020. This is a decline of 3.6% on 2019 levels and was driven by the COVID impact on Transport and less peat used for electricity generation.

11.35 The year 2020 is the eighth year where compliance with the EU 2020 Strategy is assessed. The Decision (Decision 406/2009/EC) sets 2020 targets for sectors outside of the Emissions Trading Scheme (known as ESD emissions) and annual limits. Ireland had total GHG ESD emissions of 44.38 Mt CO_2eq in 2020. This is 6.73 Mt CO_2eq higher than Ireland's annual target for emissions in 2020.

11.36 In terms of 2030 reduction targets the EU Effort Sharing Regulation (Regulation (EU) 2018/842) requires that Ireland reduce its non-Emissions Trading Scheme emissions by 30% on 2005 levels by 2030.

11.37 Ireland's GHG Emissions Projections 2020-2040 Report, published by the EPA in 2021, provides an assessment of Ireland's total projected GHG emissions which includes an assessment of progress towards achieving its emission reduction targets out to 2020 and 2030 set under the EU Effort Sharing Decision (Decision No 406/2009/EU) and Effort Sharing Regulation (Regulation (EU) 2018/842).

11.38 The EPA produced two scenarios in preparing these GHG emissions projections: a "With Existing Measures" scenario and a "With Additional Measures" scenario. The emissions projections and specifically the With Additional Measures scenario include the impact of new climate mitigation policies and measures that are in Ireland's Climate Action Plan which was published in 2023.

11.39 Compared to the With Existing Measures scenario, the With Additional Measures scenario (which includes the impact of the 2023 Climate Action Plan) will deliver an emission savings of approximately 5.25 Mt CO_2eq over the period 2026-2030. An average reduction in emissions of 8.3% per year is projected over this period.

Baseline Climate Conditions

11.40 The closest meteorological station to the development site is Dublin Airport. **Table 11.5** presents the average observed climate data for this site 1981 – 2010 available on the Met Eireann website (https://www.met.ie/climate/30-year-averages).

Table 11.5: Baseline Climatic Conditions

Month	Max. temp. (°C)	Min. temp. (°C)	Days of air frost (days)	Daily sunshine (hours)	Rainfall (mm)	Days of rainfall ≥1mm (days)	Monthly mean wind speed (knots)
January	8.1	2.4	6.4	1.9	62.6	12.0	12.5
February	8.3	2.3	6.5	2.7	48.8	10.0	12.0
March	10.2	3.4	3.8	3.5	52.7	11.0	11.6
April	12.1	4.6	2.4	5.3	54.1	10.0	9.9
May	14.8	6.9	0.3	6.2	59.5	11.0	9.2
June	17.6	9.6	0.0	5.8	66.7	10.0	8.6
July	19.5	11.7	0.0	5.3	56.2	10.0	8.7

Month	Max. temp. (°C)	Min. temp. (°C)	Days of air frost (days)	Daily sunshine (hours)	Rainfall (mm)	Days of rainfall ≥1mm (days)	Monthly mean wind speed (knots)
August	19.2	11.5	0.0	5.1	73.3	11.0	8.7
September	17.0	9.8	0.0	4.3	59.5	10.0	9.2
October	13.6	7.3	0.5	3.3	79.0	11.0	10.4
November	10.3	4.5	3.0	2.4	72.9	11.0	11.0
December	8.3	2.8	6.4	1.7	72.7	12.0	11.3
Annual	13.3	6.4	29.4	3.9	758.0	129.0	10.3

Future Climate Baseline

11.41 Potential future baseline conditions are presented in EPA report number 339, published in 2020, High-resolution Climate Projections for Ireland – A Multi-model Ensemble Approach. The report states that mid-century mean annual temperatures are projected to increase by 1.3-1.6°C (under the pessimistic scenario) and heatwave events are expected to increase by the middle of the century. The coldest 5% of daily minimum temperatures are projected to rise by 1–2.4°C. The frequencies of heavy precipitation events are projected to increase over the year as a whole and in the winter and autumn months, with "likely" projected increases of 5–19%. The number of extended dry periods (defined as at least 5 consecutive days for which the daily precipitation is less than 1 mm) is also projected to increase substantially by the middle of the century over the full year and for all seasons except spring. The projected increases in dry periods are largest for summer.

Sensitive Receptors

11.42 The National Risk Assessment of Impacts of Climate Change: Bridging the Gap to Adaptation Action (EPA, 2020) provides guidance on potentially sensitive receptors specific to Ireland. **Table 11.7** sets out a summary of climate change risks and opportunities relevant to the proposed development.

Table 11.6: Climate change-driven risks and opportunities

Hazard	Impact	Consequence
Increased frequency of extreme precipitation	Flooding of built and natural heritage sites	Access difficulties, impacting on tourism Damage to heritage and cultural assets, leading to increased costs associated with repair and maintenance

Hazard	Impact	Consequence
	Increased levels of surface nutrient run-off	Increased compliance difficulties with the EU Nitrates Directive, especially regarding slurry storage and land spreading
		Eutrophication and algal growth in rivers and water bodies
	Flooding of habitats and changes to the structure or geomorphology of river and coastal areas	Degradation of biodiversity and ecosystems – water bodies and wetlands
	Effluent ponding at wastewater treatment systems	Run-off, with subsequent impacts on water quality
Increase in frequency and intensity of strong winds	Erosion of soil and damage to vegetation and habitats Damage to historical buildings and cultural assets	Increased habitat and biodiversity loss Repair costs, strengthening costs and potentially irreparable damage
Increase in frequency of high temperatures and low levels of precipitation	Increases in animal heat stress	Increased animal morbidity and mortality
	Reduced water table and reservoir levels	Increased demands on existing water supplies for agriculture and heightened competition for water resources
Low-temperature events	Increases in animal overwintering stress	Increase in animal morbidity and increased demand on limited fodder supplies
	Persistent snowfall and frozen ground	Increased mortality rates for wildfowl and deer

Hazard	Impact	Consequence
Overall changing climate conditions	Establishment and spread of vector- borne animal diseases	Increased animal treatment costs and animal fatalities
	Warmer average temperatures	Increased shoulder season for tourism
Increased intensity of storm events	Difficult on-the-ground conditions Fallen trees	Restricted access on roads and to natural sites and costs of removal and site repair

Characteristics of the Proposed Development

11.43 The overall objective of the project (known as the 'Westgate 2040 Project') is to act as a catalyst to support positive regeneration, compact growth and sustainable development in the Westgate Vision Area and the broader Drogheda Town Centre. Please refer to Chapter **5** of this EIAR for a detailed description of the proposed project.

Potential Effects of the Proposed Project

'Do Nothing' Scenario

11.44 Under the 'do nothing' scenario, no construction works will take place and therefore no fugitive dust or plant vehicle emissions would be generated. Traffic within the development site and the surrounding road network would not increase. The air quality within the area would therefore not be impacted and air quality within the area would be representative of current baseline conditions.

Construction Phase - Air

Potential Dust Emission Magnitude

11.45 With reference to the IAQM construction dust guidance outlined in **EIAR Volume 3: Appendix 11.2**, the estimation of dust emissions magnitudes (before mitigation) for earthworks, construction and trackout activities are presented in **Table 11.7**.

Table 11.7: Summary of Dust Emissions Magnitudes (Before Mitigation)

Activity	IAQM Criteria	Dust Emission Magnitude
Demolition	Total volume of buildings to be demolished is estimated to be <20,000m^3 No on-site crushing or screening is proposed Height of demolition is expected to be <10m	Small

	Materials to be demolished include concrete and mortar	
Earthworks	Total site area where earthworks may occur is <25,000m^2 Soil likely to contain made ground The number of heavy earth moving vehicles active at any one time will be <5 The height of stockpiles on site will be <4m The total material to be moved is estimated to be 20,000 -100,000 tonnes Earthworks could potentially occur all year round	Small
Construction	Total building volume is estimated to be <25,000m^3 No on-site concrete batching and sandblasting Construction materials are expected to be potentially dusty (aggregates and soil/sand for recreation and amenity areas and concrete/mortar in street works)	Small
Trackout	Number of heavy vehicles per day out of the site is estimated to be <10 Haulage will take place on existing paved road network. Estimated that vehicles may travel on unpaved roads <50m in length The surface type of the site has the potential to be dusty	Small

Sensitivity of the Area

11.46 With reference to the IAQM construction dust guidance outlined in **EIAR Volume 3: Appendix 11.2**, the estimation of dust emissions magnitudes (before mitigation) for earthworks, construction and trackout activities are presented in **Table 11.8**.

11.47 As per the IAQM construction dust guidance, the sensitivity of the area takes into account a number of factors, including:

- The sensitivity of individual receptors in the area;
- The proximity and number of those receptors;
- For the human health assessment, the local background annual mean PM_{10} concentration; and
- Site specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

11.48 Consideration is given to humans from the impact of the construction site boundary and routes along which HDVs may facilitate trackout. RSK anticipate that construction traffic will travel along George's Street (R132) north and southbound and connect onto N51 northbound and R152 southbound.

11.49 **Table 11.8** presents the determined sensitivity of the area with the factors itemised which have helped to define this.

Table 11.8: Sensitivity of the Area

Potential Impact		Demolition	Earthworks	Construction	Trackout
Dust soiling	Receptor sensitivity	High	High	High	High
	Number of receptors	>100	>100	>100	10-100
	Distance from the source	<20m	<20m	<20m	<20m
	Overall Sensitivity of the Area	**High**	**High**	**High**	**High**
Human health	Receptor sensitivity	High	High	High	High
	Number of receptors	>100	>100	>100	10-100
	Distance from the source	<20m	<20m	<20m	<20m
	Overall Sensitivity of the Area	**Medium**	**Medium**	**Medium**	**Low**
Ecological	Receptor sensitivity	High	High	High	High
	Distance from the source	<20m	<20m	<20m	<20m
	Overall Sensitivity of the Area	**High**	**High**	**High**	**High**

11.50 Construction activities are relevant up to 350m from the application site boundary whereas trackout activities are only considered relevant up to 50m from the edge of the road up to 200m from the site exit (for a medium site), as per the IAQM construction dust guidance.

11.51 The National Parks and Wildlife Services website (https://www.npws.ie/protected-sites) was used to identify sensitive ecological receptors near the proposed development site. The River Boyne and River Blackwater Special Area of Conservation (SAC) adjoins and is partly located within a small area of the site. As stated in Chapter 6 of this EIAR, there is a risk of indirect impacts from construction activities, to which the qualifying interests may be vulnerable to waterborne pollutants. As per the IAQM Guidance, the SAC is considered as a 'high sensitivity' receptor.

11.52 Human receptors were identified within 350m of the application site boundary by making reference to online publicly available satellite imagery.

Risk of Impacts

11.53 The dust emission magnitude summarised in **Table 11.7** has been combined with the sensitivity of the area in **Table 11.8** to determine the risk of impacts of construction activities before mitigation. These have been evaluated based on risk categories of each activity in **EIAR Volume 3: Appendix 11.2**.

11.54 The risk of dust impacts from construction activities is identified as medium to low risk, as is shown in **Table 11.9**. Mitigation measures to reduce construction phase impacts are defined based on this assessment.

Table 11.9: Summary of Dust Risk from Construction Activities

Potential Impact	Dust Risk Impact			
	Demolition	Earthworks	Construction	Trackout
Dust soiling	Medium risk	Low risk	Low risk	Low risk
Human health	Low risk	Low risk	Low risk	Negligible risk
Ecological	High risk	High risk	High risk	High risk

Exhaust Emissions from Plant and Vehicles

11.55 The estimated number of employee trips and construction vehicle movements generated by the proposed development is low compared to vehicular trips generated by the proposed development during the operational phase. The number of HDV movements associated with the application site has been estimated to be <10 HDV movements per day during the busiest phase of the construction period. Therefore, the short-term increase in HDVs and employee trips moving to and from site is considered not significant.

11.56 The operation of site equipment and machinery will result in emissions to atmosphere of exhaust gases, but with suitable controls and site management such emissions are considered short-term and not significant (as per Defra's Local Air Quality Management Technical Guidance).

Operational Phase - Air

11.57 As mentioned earlier, the transport consultants for the scheme, Hegsons Design Consultancy Limited, advised that no significant new traffic generators are being proposed by the scheme, therefore, the proposed development will not bring additional traffic to the area. Furthermore, traffic numbers are anticipated to decline in the next few years following the delivery of the proposed development, and the wider active travel measures being implemented by LCC in Drogheda, particularly along the R132. The proposed development has been informed by, and designed to integrate with, the wider active travel measures/initiatives being implemented in Drogheda and will help to encourage active travel means and improve travel networks.

11.58 In summary, no major traffic number or road infrastructure changes are anticipated and no sensitive receptors are within 50m of a complex road layout. No sections within the DMRB and TII Guidance criteria were exceeded and operational phase impacts were not included in the assessment.

11.59 The River Boyne and River Blackwater Special Area of Conservation (SAC) is located adjacent to the southern boundary of the application site and a small section of the SAC is located within a small area of the application site. DMRB states that routes which pass within 2km of a designated area of conservation, TII requires consultation with an Ecologist. As stated in Chapter 6 of this EIAR, the SAC is sensitive to dust and hydrocarbons. This would include the re-suspension of dust and vehicle emissions from road traffic.

11.60 However, as it is anticipated that there will be no significant additional traffic from the proposed development, there are no significant changes in AADT of the existing road network. It is therefore assumed there will be no significant impact on the SAC during the operational phase. Additionally, as traffic is expected to decline with the promotion of active transport, it is likely that pollutants entering the SAC will decrease during the operational phase.

11.61 As per **Table 11.2**, the predicted development is considered to have a negligible magnitude impact on all receptors for NO_2 and PM_{10} when considering the national AQS. As concentrations at the site are well below the relevant AQSs, a detailed air quality modelling assessment is not considered to be required.

Construction Phase - Climate

11.62 GHG emissions will be generated during the construction of the development from various activities, such as during the combustion of fossil fuels by construction plant and vehicles, the generation of consumed mains electricity, the manufacturing of construction materials and the transport to / from site of workers, materials and wastes.

11.63 For both the construction and operational stage when considering mitigation and residual effects, IEMA recommends use of the GHG Mitigation Hierarchy which provides a structure for mitigating GHG emissions, as follows:

- Avoid – Investigate and deploy options to eliminate GHG emissions.
- Reduce – Ensure that construction and operational activities will deliver efficient use of energy and resources.
- Substitute – Commit to deploying renewables and low carbon materials, methods and technologies in place of more carbon intensive sources.
- Compensate – Develop a strategy to compensate for residual or unavoidable emissions.

11.64 In 2017 RICS published 'Whole life carbon assessment for the built environment' guidance which provides a benchmark factor for estimating average building construction site GHG emissions where more specific information is not available (as typically the case at this planning stage prior to detailed design).

11.65 As presented in **Table 11.10**, this factor (1,400 $kgCO_2eq$ per £100k project value) has been applied to the project value (€6,787,144.75 or approximately £6,040,558.83) to estimate total construction site GHG emissions as 84.57 tCO_2eq. As no buildings are proposed within the development, embodied carbon emissions are assumed to be 0 $kgCO_2eq$.

Table 11.10: Estimated Construction Site GHG Emissions

Parameter	Value
Estimate project value	£6,041,000
RICS construction emissions factor	1,400 $kgCO_2eq$/£100k
Estimated construction site emissions	84.57 tCO_2eq

11.66 **Table 11.11** presents the total estimated construction phase GHG emissions.

Table 11.11: Total and Annual Construction Phase GHG Emissions

Parameter	Value
Total Construction Phase GHG Emissions	84.57 tCO_2eq
Average Annual Construction Phase GHG Emissions	84.57 tCO_2eq

11.67 The construction period is likely to be approximately 1-3 years. As a conservative approach, the estimated average annual construction phase GHG emissions are 84.57 tCO_2eq. This is 0.00022% of Ireland's 2020 target (37,651 kt CO_2eq) and 0.00026% of the

2030 target (32,860 kt CO_2eq) and therefore, construction phase GHG emissions are considered negligible and not significant. As per the DMRB climate guidance, further assessment of the construction phase climate impacts is not required.

Operational Phase - Climate

11.68 As mentioned previously, there will be no traffic generated from the development and it is predicted that traffic will reduce within the area due to the improvements to the infrastructure for active transport. Additionally, any energy demand will likely be from street lighting in the area. Based on the guidance 'Measuring Road Infrastructure Carbon: A 'critical' in transport's journey to net-zero' (2022), carbon emissions from street lighting accounts for an average of 13% of life cycle carbon emissions.

11.69 With the information provided by the client, the operation of the development is assumed to produce 137.33 tCO_2eq GHG emissions over its life cycle.

Cumulative Effects

Construction Phase

11.70 The phasing/commencement of any other permitted developments in the locality could potentially result in the scenario where a number of other construction sites are in operation at the same time as the proposed development. However, all permitted developments are expected to agree and follow site specific Construction Environmental Management Plans or Dust Management Plans and Construction Traffic Management Plans that will adequately control emissions from construction. Therefore, cumulative construction phase effects are considered to be not significant.

Operational Phase

11.71 As per construction phase impacts, any other permitted developments are expected to follow best practice mitigation measures to minimise emissions to air during the operational phase. Therefore, significant GHG emissions and exceedance of the relevant AQSs is considered unlikely and cumulative operational phase effects are considered not significant.

Mitigation Measures

Construction Phase

Fugitive Dust Emissions

11.72 The traffic effects of the proposed development during the construction phase will be limited to a relatively short period and will be along traffic routes employed by haulage/construction vehicles and workers. Any effects on air quality will be temporary i.e. during the construction period only and can be suitably controlled by the employment of mitigation measures (described below) and appropriate to the development project, including a construction logistics plan, and are therefore unlikely to materially impact on local air quality.

11.73 The dust emitting activities outlined in **Table 11.9** can be effectively controlled by appropriate dust control measures (described below) and any adverse effects can be greatly reduced or eliminated.

11.74 Prior to commencement of construction activities, it is anticipated that an agreement on the scope of a Dust Management Plan for the construction phase will be reached with the local authority to ensure that the potential for adverse environmental effects on local receptors is minimised. The Dust Management Plan should include inter alia, measures for controlling dust and general pollution from site construction operations, and include details of any monitoring scheme, if appropriate. Controls should be applied throughout the construction period to ensure that emissions are mitigated.

11.75 The dust risk categories identified have been used to define appropriate, site-specific mitigation methods. Site-specific mitigation measures are divided into general measures, applicable to all sites and measures specific to demolition, earthworks, construction and trackout. Depending on the level of risk assigned to each site, different mitigation is assigned. The method of assigning mitigation measures as detailed in the IAQM construction dust guidance has been used.

11.76 In this case, the 'medium risk' site mitigation measures have been applied, as determined by the dust risk assessment. For those mitigation measures that are general, the highest risk assessed has been applied. Two categories of mitigation measure are described in the IAQM construction dust guidance – 'highly recommended' and '*desirable*', which are indicated according to the dust risk level identified in **Table 11.9**.

11.77 The mitigation measures described below will be used to control potential fugitive emissions from the construction project. Therefore, the measures listed below, whether cited as 'highly recommended' or 'desirable' in the IAQM construction dust guidance, should be applied on/around site.

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.

- Display the name and contact details of people accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.

- Display the head or regional office contact information.

Dust Management

- Develop and implement a Dust Management Plan, which may include measures to control other emissions, to be approved by the Local Authority. The level of detail will depend on the risk and should include at a minimum the highly recommended measures. The desirable measures should be included as appropriate for the site. The Construction Environmental Management Plan may include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/ or visual inspections.

Site Management

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.

- Make the complaints log available to the local authority when asked.

- Record any exceptional incidents that cause dust and/or air emissions, either on- or off site and the action taken to resolve the situation in the log book.

Preparing and maintaining the site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.

- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.

- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.

- Avoid site runoff of water or mud.

- Keep site fencing, barriers and scaffolding clean using wet methods.

- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.

- Cover, seed or fence stockpiles to prevent wind whipping.

Operating Vehicles/Machinery and Sustainable Travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles.

- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.

- Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on unsurfaced haul roads and work areas.

- Produce a construction logistics plan to manage the sustainable delivery of goods and materials.

- Implement a travel plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.

- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.

- Use enclosed chutes and conveyors and covered skips.

- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.

- Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- No bonfires or burning of waste material.

Specific to Demolition

- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).

- Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.

- Avoid explosive blasting, using appropriate manual or mechanical alternatives.

- Bag and remove any biological debris or damp down such material before demolition.

Specific to Construction

- Avoid scabbling (roughening of concrete surfaces) if possible.

- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.

- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.

- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Specific to Trackout

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site.

- Avoid any dry sweeping of large areas.

- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.

- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.

- Record all inspections of haul routes and any subsequent action in a site log book.

- Install hard surfaced haul route, which are regularly cleaned and damped down with fixed or mobile sprinkler systems, or mobile water bowsers.

- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.

- Access gates to be located at least 10 m from receptors where possible.

Exhaust Emissions from Plant and Vehicles

11.78 The traffic effects of the proposed development during the construction phase will be limited to a relatively short period and will be along traffic routes employed by haulage/construction vehicles and workers. Any effects on air quality will be temporary i.e. during the construction period only and can be suitably controlled by the employment of mitigation measures and appropriate to the development project, including a construction logistics plan, and are therefore unlikely to materially impact on local air quality.

11.79 Any emissions from non-road mobile machinery (NRMM) can be reduced by ensuring that any plant used on-site comply with the NOx, particulate matter and carbon monoxide emissions standards specified in the EU Directive 97/68/EC and subsequent amendments as a minimum, where they have net power of between 37kW and 560kW. The emissions standards vary depending on the net power the engine produces. The Construction Environmental Management Plan will include these emissions controls.

Operational Phase

11.80 It is considered unlikely that the development would introduce additional sensitive receptors into an area of known poor air quality and the development is not anticipated to have a significant impact on local air quality. Therefore, no specific operational phase mitigation measure is considered to be required.

Climate

11.81 The Construction Environment Management Plan should set out measures to mitigate the potential impacts of climate change during construction. Such as measures related to increased flood risk, overheating risks to construction employees and equipment, potential for water shortages and dust mitigation.

Monitoring and Reinstatement Measures

11.82 Reinstatement measures are not applicable within this chapter.

Construction Phase

11.83 The appointed contractor will be required to monitor levels of dust during critical construction periods at nearby sensitive locations and/or development site boundaries.

11.84 Tailored monitoring requirements as per IAQM guidance are summarised below:

Desirable monitoring measure:

- Undertake regular on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary.

Highly recommended monitoring measure:

- Carry out regular site inspections to monitor compliance with the dust management plan, record inspection results, and make an inspection log available to the local authority when asked.

- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

11.85 Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations and duration (including baseline monitoring) with the local authority.

Operational Phase

11.86 No additional monitoring is proposed for the operational phase of the proposed development.

Residual Effects

Construction Phase

11.87 All construction effects were assessed to be not significant provided that appropriate dust control and construction phase mitigation measures are applied as listed in the mitigation measures section. During the construction phase, potential climate change effects are considered likely to be appropriately mitigated and not significant. Residual effects are therefore also not significant with suitable mitigation measures in place.

Operational Phase

11.88 The development is not anticipated to have a significant impact on local air quality, and the residual impacts of the development on air quality whilst it is in operation are likely to be acceptable. During the operational phase, potential climate change effects are considered likely to be not significant.

Worst Case Scenario

11.89 A worst-case scenario describes the most significant potential environmental impacts arising from the proposed development.

Air Quality Impacts

11.90 A worst-case scenario during construction phase can be considered as 'pre-mitigation' scenario (relating to mitigation per IAQM 2014), which could cause temporary, significant impacts on human health, nuisance from dust soiling and on ecological designations.

11.91 As no mitigation measures are required for the operational phase, this assessment can be considered 'worst-case'. However, the potential for increased traffic in the area may cause negative impacts on local air quality (as per IAQM 2014). Without promotion of active travel, it is possible for local air quality to worsen, therefore the development would have the potential to cause a long-term, minor adverse impact.

Climate Impacts

11.92 A worst-case scenario during construction phase can be considered as 'pre-mitigation' scenario (relating to mitigation as per IAQM 2014). Without mitigation measures, it can be considered that construction traffic has the potential to insignificantly contribute to Ireland's GHG emissions and cause temporary, minor adverse impacts.

11.93 As stated previously, no mitigation measures are required for the operational phase, therefore this assessment can be considered 'worst-case'.

Construction Phase Cumulative Impacts

11.94 Cumulative dust impacts and vehicle emissions may arise from developments within 350m of the Site. These developments have the potential to contribute to local pollutant concentrations, however nearby developments anticipated to use appropriate mitigation measures such as the use of a Construction Environmental Management Plan (CEMP). With this in place, it is considered unlikely that these cumulative impacts will be significant.

11.95 Plant vehicles will contribute to GHG emissions during construction phase. HGVs. However due to the temporary nature, it is not likely that construction vehicles will cause a significant impact on climate from nearby developments.

Operational Phase Cumulative Impacts

11.96 Any developments within the local area may cause increased traffic to the nearby road network. Although it is expected that there will be no additional traffic from the Site, increased traffic may run through the development and cause cumulative effects on local air quality. However, any cumulative traffic associated with nearby existing developments has been included in the traffic data provided by Hegsons. It is unlikely that other developments within the area will cause a significant impact on local air quality and any large-scale developments would require an EIA and similar assessment to ensure no significant and adverse impacts would occur from future developments.

11.97 Any additional traffic is likely to contribute to the area's GHG emissions, however no significant additional traffic is anticipated, therefore the cumulative impacts on climate are considered not significant.

Interactions

11.98 Relevant interactions considered within this EIAR are summarised below. These include interactions between; Population and Human Health, Traffic & Transportation, Biodiversity, and Land, Soils & Geology.

Population and human health

11.99 The proposed scheme has the potential to create impacts relevant to dust nuisance during construction and vehicular emissions during both the construction and operational phase.

Traffic & Transportation & Material Assets

11.100 The proposed scheme has the potential to increase traffic related emissions from moving construction materials to and from Site during the construction phase and contribute to congestion within the local road network.

11.101 Any additional traffic as a result of attracting visitors to the development has the potential to increase traffic related emissions during the operational phase.

Biodiversity

11.102 The proposed scheme also has the potential to create impacts on local biodiversity in the area (including all relevant designations) during the construction phase.

Land, Soils & Geology

11.103 The proposed scheme has the potential to create dust nuisance impacts from earthworks, construction and track out during the construction phase.

Difficulties Encountered in Compiling the Chapter

11.104 No site specific air quality monitoring was carried out and it was assumed that the monitoring data available from the EPA website was representative of the site.

References

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- http://airquality.ie
- https://www.npws.ie/
- European Union, Effort Sharing Decision “EU 2020 Strategy” (Decision 406/2009/EC)

- EPA Ireland's Final Greenhouse Gas Emissions 1990-2019 (2021)
- EPA Ireland's Greenhouse Gas Projections 2020-2040 (2021)
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- RICS, Whole life carbon assessment for the built environment (2017)
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12. Noise & Vibration

Introduction

12.1 This Chapter aims to identify and assess the potential noise and vibration impacts associated with the proposed project at Westgate, Drogheda , Co. Louth.

Statement of Authority

12.2 This chapter has been prepared by Aarron Hamilton and James Mangan of RSK. Aarron is an Acoustic Consultant with RSK Ireland Ltd. Aarron has been working in the field of Acoustics since 2019, he is an associate member of the Institute of Acoustics (AMIOA) and has completed the IOA Diploma in Acoustics and Noise Control from UL (Liverpool). He has extensive knowledge in aspects of environmental noise monitoring, analysis, impact assessment and reporting and has prepared environmental impact assessments reports for various developments.

12.3 James is Associate Director with RSK Ireland Ltd. and has been working in the field of Acoustics since 2001, he is a corporate member of the Institute of Acoustics (MIOA) and has completed the IOA Diploma in Acoustics and Noise Control from UWE (Bristol). He has extensive knowledge in aspects of environmental noise monitoring, analysis, impact assessment and reporting and has prepared environmental impact assessments reports for various major developments. James is the current Chairman of the Irish Branch of the Institute of Acoustics.

12.4 This chapter includes a description of the receiving ambient noise climate in the vicinity of the application site, an assessment of the potential noise and vibration impacts associated with the proposed development during both the short-term construction phase and the long-term operational phase on its surrounding environment. The assessment of direct, indirect and cumulative noise and vibration impacts on the surrounding environment have been considered as part of the assessment.

12.5 During the construction phase, the range of activities with potential to generate noise and vibration emissions to off-site sensitive receptors will include site preparation works, construction of the proposed development, landscaping and erection of any temporary buildings/compounds that may be required.

12.6 During the operational phase, the potential sources of noise are those associated with traffic on public roads, noise from recreational activity and car parking.

12.7 The significance of impacts has been assessed in accordance with the EPA *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EIAR), 2022.

12.8 With regard to the quality of the impact, ratings may have positive, neutral or negative applications. The significance of an impact on the receiving environment is described in the range between imperceptible and profound. The duration of impacts as described in the EPA Guidelines are presented on a scale between momentary and permanent.

12.9 Noise and vibration emissions from the development will vary in terms of quality, duration and magnitude. The following sections analyse the expected construction and operational phase noise and vibration impacts both in terms of the proposed assessment criteria and the expected impacts in terms of the significant effects.

Consultation

12.10 Consultations between RSK and other members of the planning/design team have been undertaken in order to obtain information required to assess the potential construction and operational phase noise and vibration impacts.

Methodology

12.11 A review of relevant standards and guidelines has been conducted to set noise and vibration criteria for the development's construction and operational phases.

12.12 Baseline noise monitoring has been undertaken to characterise the receiving noise environment.

12.13 Predictive calculations have estimated the likely noise emissions during the construction phase at nearest sensitive locations (referred to as NSLs from hereon, outlined in Figure 12.1).

12.14 Predictive calculations have assessed potential impacts associated with the proposed project's operation at Noise Sensitive Locations (NSL's) surrounding the application site. Noise sensitive locations are defined in the EPA NG4 document as *"any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels".*

12.15 A schedule of mitigation measures has been proposed to reduce potential impacts relating to noise and vibration to and from the proposed development.

12.16 Relevant noise & vibration criteria for the development's construction and operational phases, along with the methodology for conducting baseline noise surveys, are outlined below.

Construction Phase Noise

12.17 The closest neighbouring NSLs to the proposed development are a number of residential dwellings which surround the site at various points. The distance between the construction site and nearby NSLs varies, with the closest distance between the site and neighbouring dwellings being approximately 10 metres, but generally construction works will occur between 15 and 100 metres from existing dwellings, depending on the location where specific works are occurring.

12.18 There are no statutory limits with respect to construction noise in Ireland, additionally, limits for construction noise are not outlined in Louth County Council's (LCC) Noise Action Plan 2018 to 2023 (NAP). However, LCC's NAP, Section 2 "Existing Noise Management Legislation and Guidance" provides an overview of existing noise management legislation, regulations and guidance in Ireland and regional scale.

12.19 Section 2.1.4 of the NAP states the following in relation to construction noise:

> *"The National Roads Authority (NRA) (now Transport Infrastructure Ireland TII) has published the document "Guidelines for the Treatment of Noise and Vibration in National Road Schemes", which sets out the procedure to be followed in respect of the planning and design of national road schemes. These guidelines specify design goals for noise associated with the construction and operation of new national road schemes".*

12.20 The TII identifies overall acceptable levels of construction noise (see Table 12.1 below), which should not be exceeded at noise sensitive locations during the construction phase of a development.

Table 12.1: TII Maximum Permissible Noise Levels at the Facade of Dwellings during Construction

Days and Times	Noise Levels (dB re. $2x10^{-5}$ Pa)	
	$L_{Aeq(1hr)}$	L_{Amax}
Monday to Friday 07:00 to 19:00hrs	70	80
Monday to Friday 19:00 to 22:00hrs	60*	65*
Saturdays 08:00 to 16:30hrs	65	75
Sundays & Bank Holidays 08:00 to 16:30hrs	60*	65*

Note* Construction activity at these times, other than that required for emergency works, will normally require the explicit permission of the relevant local authority.

12.21 BS 5228-1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites* is also considered to represent industry standard methodologies for the assessment of construction noise and describes two methods for deriving noise significance thresholds for construction sites.

12.22 Appendix E.1 of BS 5228:2009+A1:2014 (describes a method for identifying 'Potential significance based upon noise change'. Utilising this methodology, BS 5228:2009+A1:2014 designates noise sensitive locations (NSLs) a specific category based on pre-existing ambient noise levels and then sets a threshold noise value that, if exceeded, indicates a significant construction noise impact.

12.23 Table 12.2 presents the threshold values for significant noise impacts for weekday daytime and Saturday morning activity.

Table 12.2: BS5228 Construction Noise Thresholds for Significant Effects

Assessment category and threshold value period (L_{Aeq})	Threshold value, in decibels (dB)		
	Category A [A]	Category B B	Category C [C]
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	65	70	75

A. Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.

B. Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.

C. Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values.

D. 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

12.24 Annex E.2 of BS 5228-1:2009+A1:2014 also provides the following comments in relation to 'Potential significance based on fixed noise limits':

> *"Noise from construction and demolition sites should not exceed the level at which conversation in the nearest building would be difficult with the windows shut. The noise can be measured with a simple sound level meter, as we hear it, in A-weighted decibels (dB(A))– see note below. Noise levels, between say 07.00 and 19.00 hours, outside the nearest window of the occupied room closest to the site boundary should not exceed:*
>
> - *70 decibels (dBA) in rural, suburban and urban areas away from main road traffic and industrial noise;*
> - *75 decibels (dBA) in urban areas near main roads in heavy industrial areas.*
>
> *These limits are for daytime working outside living rooms and offices. In noise-sensitive situations, for example, near hospitals and educational establishments – and when working outside the normal hours say between 19.00 and 22.00 hours – the allowable noise levels from building sites will be less: such as the reduced values given in the contract specification or as advised by the Environmental Health Officer (a reduction of 10 dB(A) may often be appropriate). Noisy work likely to cause annoyance locally should not be permitted between 22.00 hours and 07.00 hours."*

12.25 Taking account of the measured ambient noise levels, other Local Authority recommendations and BS5228 significance thresholds, the recommended noise limits for construction activity are as follows:

Monday to Friday	07.00 – 18.00	70 dB $L_{Aeq,11hr}$
Saturday	08.00 – 14.00	70 dB $L_{Aeq,6hr}$

12.26 It is assumed that construction works will take place during normal working hours only.

Construction Phase Vibration

12.27 Following the same approach, BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites. With respect to vibration, BS 5228-2:2009+A1:2014 recommends that, for soundly constructed residential property and similar structures that are generally in good repair, a threshold for minor or cosmetic (i.e. non-structural) damage should be taken as a peak component particle velocity (in frequency range of predominant pulse) of 15mm/s at 4Hz increasing to 20mm/s at 15Hz and 50mm/s at 40Hz and above.

12.28 The standard also notes that below 12.5 mm/s PPV the risk of damage tends to be zero. The recommended construction vibration criteria are presented in Table 12.3.

Table 12.3: Vibration Criteria During Construction Phase

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of:-		
Less than 15Hz	**15 to 40Hz**	**40Hz and above**
15 mm/s	20 mm/s	50 mms

Operational Phase Noise

Industrial / Commercial Plant Noise

12.29 There are no industrial/commercial sound sources proposed during the operational phase of the proposed development. No additional noise/vibration impact assessment is therefore required.

Additional Road Traffic on Public Roads

12.30 The potential noise impact associated with the proposed development introducing additional traffic onto the existing road networks during the operation stage has been considered. Table 12.4 identifies the likely impact associated with any particular change in traffic noise level (Source DMRB LA 111, 2020).

Table 12.4: DMRB impact associated with change in traffic noise level (long term)

Noise Change (dB $_{LA10,18hr}$)	Magnitude of Impact
0	No Change
0.1 - 2.9	Negligible
3 - 4.9	Minor
5 - 9.9	Moderate
10+	Major

12.31 **Table 12.4** has presented the DMRB (2012) likely impacts associated with long-term change in traffic noise level, the corresponding significance of impact presented in the EPA's 2022 *'Guidelines on the information to be contained in Environmental Impact Assessment Reports'* is presented in **Table 12.5** for consistency in wording and terminology for the assessment of impact significance.

Table 12.5: DMRB impact associated with change in traffic noise level (Updated)

Noise Change (dB $_{LA10,18hr}$)	Magnitude of Impact	Impact Guidelines on the Information to be contained in EIAR (EPA)
0	No Change	Imperceptible
0.1 - 2.9	Negligible	Not Significant
3 - 4.9	Minor	Slight
5 - 9.9	Moderate	Moderate
10+	Major	Significant, Very Significant, Profound

Other Noise Sources

12.32 For any other non-traffic or plant related sources appropriate guidance on internal noise levels for dwellings is contained within BS 8233: 2014: *Guidance on Sound Insulation and Noise Reduction for Buildings*. This British Standard sets out recommended noise limits for indoor ambient noise levels in dwellings as summarised in Table 12.6:

Table 12.6: Recommended Indoor Ambient Noise Levels from BS 8233: 2014

Typical Situation	Daytime $L_{Aeq,16hr}$ (07:00 to 23:00hrs)	Night-time $L_{Aeq,\ 8hr}$ (23:00 to 07:00hrs)
Living / Dining Rooms	35 - 40	n/a
Bedrooms	35	30

12.33 External limits can be derived from the internal criteria in Table 12.6 by factoring the noise reduction afforded by a partially open window. BS8233:2014 states a typical 15dB attenuation. Using this correction value across a partially open window, the following external noise levels would result in appropriate internal noise levels within nearby NSL's.

- Daytime (07:00 to 23:00hrs) 50 - 55 dB $L_{Aeq,1hr}$
- Night-time (23:00 to 07:00hrs) 45 dB $L_{Aeq,15\text{-}min}$

Operational Phase Vibration

12.34 Guidance as to an acceptable magnitude of vibration during the operational phase of the development is best taken from British Standard BS 6472 (1992): *Guide to Evaluation of*

human exposure to vibration in buildings (1Hz to 80Hz). The Standard contains recommendations that continuous vibration in residential buildings should not exceed nominally 0.3mm/s by daytime and 0.2mm/s by night-time.

12.35 No significant sources of vibration are expected to arise during the operational phase of the development. Operational vibration has therefore not been addressed further in this chapter.

Receiving Environment

12.36 Please refer to 'Chapter 3 - Site Location and Context' of this EIAR which provides a detailed overview of the application site and surrounding area.

12.37 A baseline noise survey has been undertaken as part of the assessment for the proposed development to assist with establishing the baseline environment with respect to 'Noise & Vibration'.

12.38 The survey was conducted in general accordance with ISO 1996-2:2017 *Acoustics -- Description, measurement and assessment of environmental noise -- Part 2: Determination of sound pressure levels*. Specific details are set out in the following sections.

Choice of Measurement Locations

12.39 Five Noise Monitoring Locations (NML's) surrounding the site were selected for the noise survey and each of these locations are described in turn below:

- NML1: Along the Patrickswell Lane to the east of the site, immediately adjacent to Drogheda Court House.
- NML2: Along the Old Abbey Lane within the central area of the site where a community space is proposed.
- NML3: Along the Scholes Lane at a central north position of the site.
- NML4: To the North of the site immediately adjacent the Fair Street road.
- NML5: To the west of the site immediately adjacent the George's Street road.

12.40 The position of each noise measurement locations in relation to the site boundary are identified in **Figure 12.1**.

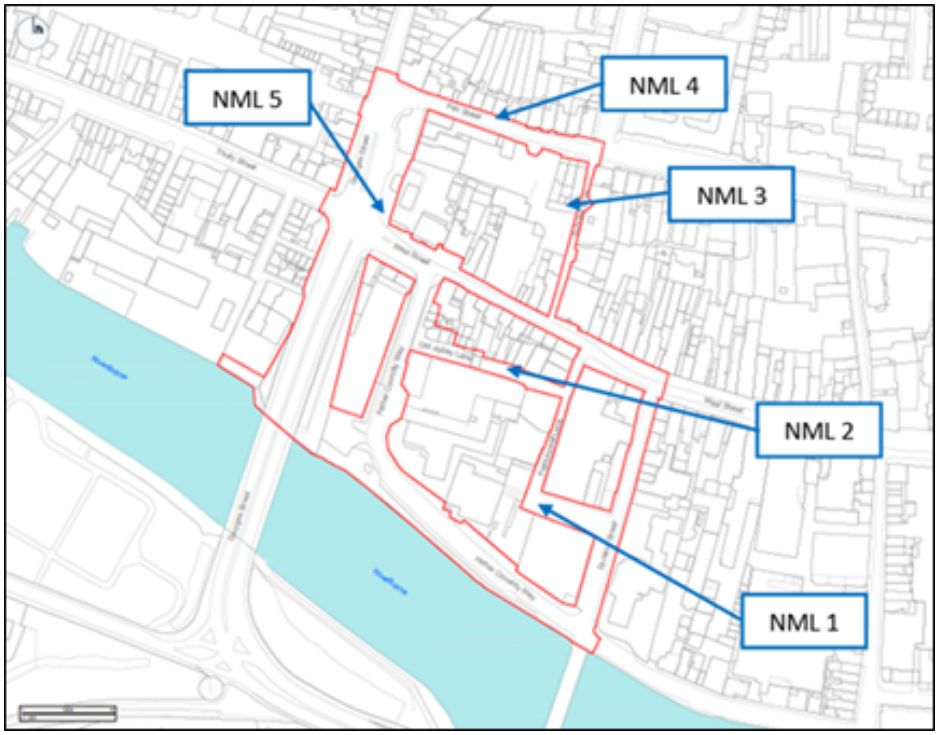

Figure 12.1: Site Location Plan annotated with Baseline Noise Monitoring Locations

Survey Periods

12.41 Daytime attended noise measurements were conducted between 11:50hrs on 8 April 2022 to 16:51hrs on 8 April 2022. The weather during the daytime survey was dry and calm with temperatures in the range 4 to 9 degrees, wind speeds of <2 m/s in a north westerly direction.

Instrumentation

12.42 Measurements were made using a Rion NL 52 Sound Level Meter. Sample periods were 15-minute log periods. The instrumentation was calibrated using a Rion calibrator and all equipment is laboratory calibrated. Calibration certificates are available on request.

Measurement Parameters

12.43 The noise survey results are presented in decibels (dB), using the following parameters:

$L_{Aeq,T}$ is the equivalent continuous sound level and is used to describe a fluctuating sound as a single value over the sample period (T).

$L_{AFmax,T}$ The maximum A-weighted sound pressure level occurring within a specified time period (T). Measured using the "Fast" time weighting.

$L_{AF10,T}$ Refers to those A-weighted noise levels in the top 10 percentile of the sampling interval; it is the level which is exceeded for 10% of the measurement period (T). It is used to determine the intermittent high noise level features of locally generated noise and usually gives an indicator of the level of road traffic. Measured using the "Fast" time weighting.

$L_{AF90,T}$ Refers to those A-weighted noise levels in the lower 90 percentile of the sampling interval (T). It is the level which is exceeded for 90% of the measurement period. It will therefore exclude the intermittent features of traffic and is used to describe a background level without contribution from intermittent sources. Measured using the "Fast" time weighting.

12.44 All sound levels in this report are expressed in terms of decibels (dB) relative to $2x10^{-5}$ Pa.

Baseline Noise Survey Results

Location NML1 – St. Patrickswell Lane

12.45 Table 12.7 presents a summary of the attended daytime (i.e. 07:00 to 23:00) noise levels measured at Location NML1.

Table 12.7: Summary of Measured Baseline Noise Levels at Location NML1

Date and Start Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)			
	$L_{Aeq,15min}$	$L_{Amax,15min}$	$L_{A10,15min}$	$L_{A90,15min}$
08 April 2022 at 11:50	57	72	59	52
08 April 2022 at 13:26	55	74	57	50
08 April 2022 at 14:52	54	71	57	51

12.46 During the noise survey, the dominant noise sources were noted to be from occasional local road traffic and distant road traffic, construction activities, birdsong and occasional pedestrian activity.

12.47 Daytime ambient noise levels were in the range 54 to 57 dB $L_{Aeq,15min}$. The daytime background noise was in the range 50 to 52 dB $L_{A90,15min}$.

Location NML2 – Old Abbey Lane

12.48 Table 12.8 presents a summary of the attended daytime (i.e. 07:00 to 23:00) noise levels measured at Location NML2.

Table 12.8: Summary of Measured Baseline Noise Levels at Location NML2

Date and Start Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)			
	$L_{Aeq,15min}$	$L_{Amax,15min}$	$L_{A10,15min}$	$L_{A90,15min}$
08 April 2022 at 12:07	51	75	52	47
08 April 2022 at 13:43	51	67	53	48
08 April 2022 at 15:09	51	63	53	47

12.49 During the noise survey, the dominant noise sources were noted to be from distant and occasional local road traffic, birdsong and occasional pedestrian activity.

12.50 The daytime ambient noise level was 51 dB $L_{Aeq,15min}$. The daytime background noise was in the range 47 to 48 dB $L_{A90,15min}$.

Location NML3 – Scholes Lane

12.51 Table 12.9 presents a summary of the attended daytime (i.e. 07:00 to 23:00) noise levels measured at Location NML3.

Table 12.9: Summary of Measured Baseline Noise Levels at Location NML3

Date and Start Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)			
	$L_{Aeq,15min}$	$L_{Amax,15min}$	$L_{A10,15min}$	$L_{A90,15min}$
08 April 2022 at 12:24	53	75	55	45
08 April 2022 at 14:00	51	69	54	45
08 April 2022 at 15:32	50	75	53	46

12.52 During the noise survey, the dominant noise sources were noted to be from distant road traffic, car parking activities, birdsong and occasional pedestrian activity.

12.53 Daytime ambient noise levels were in the range 50 to 53 dB $L_{Aeq,15min}$. The daytime background noise was in the range 45 to 46 dB $L_{A90,15min}$.

Location NML4 – Fair Street

12.54 Table 12.10 presents a summary of the attended daytime (i.e. 07:00 to 23:00) noise levels measured at Location NML4.

Table 12.10: Summary of Measured Baseline Noise Levels at Location NML4

Date and Start Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)			
	$L_{Aeq,15min}$	$L_{Amax,15min}$	$L_{A10,15min}$	$L_{A90,15min}$
08 April 2022 at 12:40	65	87	69	52
08 April 2022 at 14:17	63	87	68	51
08 April 2022 at 16:05	61	78	65	50

12.55 During the noise survey, the dominant noise sources were noted to be from local road traffic and distant road traffic, car parking activities, birdsong and occasional pedestrian activity.

12.56 Daytime ambient noise levels were in the range 61 to 65 dB $L_{Aeq,15min}$. The daytime background noise was in the range 50 to 52 dB $L_{A90,15min}$.

Location NML5 – George's Street/Square

12.57 Table 12.11 presents a summary of the attended daytime (i.e. 07:00 to 23:00) noise levels measured at Location NML5.

Table 12.11: Summary of Measured Baseline Noise Levels at Location NML5

Date and Start Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)			
	$L_{Aeq,15min}$	$L_{Amax,15min}$	$L_{A10,15min}$	$L_{A90,15min}$
08 April 2022 at 13:07	69	89	72	61
08 April 2022 at 14:34	70	81	75	59
08 April 2022 at 16:26	71	95	79	61

12.58 During the noise survey, the dominant noise sources were noted to be from local road traffic and distant road traffic, birdsong and occasional pedestrian activity.

12.59 Daytime ambient noise levels were in the range 69 to 71 dB $L_{Aeq,15min}$. The daytime background noise was in the range 59 to 61 dB $L_{A90,15min}$.

Characteristics of the Proposed Development

12.60 Please refer to Chapter **5** of this EIAR for a detailed description of the proposed project.

12.61 During the construction phase, the main site activities will include site clearance, demolition, ground excavation works and construction of the new structures, resurfacing of public realm/footpaths/road surfaces, landscaping and etc. Potential impacts during the construction phase will be short term.

12.62 Operational phase outward noise impacts will be long-term and will typically consist of:

- any increased noise due to additional vehicular traffic on public roads, and;
- pedestrian/recreational noise from the proposed site operation.

Potential Impact of the Proposed Development

'Do-Nothing' Scenario

12.63 The existing noise climate will remain unchanged on site and at nearby noise sensitive locations. As such it is anticipated that the effects from the Do-Nothing scenario would be neutral with a permanent, imperceptible significance

Construction Phase - Noise

12.64 During the construction phase, the main site activities will include site clearance, demolition, ground works, construction of the new structures, resurfacing of public realm/footpaths/road surfaces, landscaping and etc. Potential impacts during the construction phase will be short term.

12.65 BS 5228-1:2009+A1:2014 provides a catalogue of source noise levels for various construction plant, machinery and activity, along with a clear methodology and procedure for the prediction of noise from construction to sensitive receptors. This allows for an indicative assessment of the likely impacts of construction activity to nearby dwellings.

12.66 **Table 12.12** presents construction plant items that are considered to be typical for a site of this nature, along with the BS5228-1 reference noise emission values at the nominal distance of 10 metres.

Table 12.12: Typical Construction Plant Items and BS5228-1 Reference Noise Emission Values

Phase	Item of Plant (BS 5228-1 Ref.)	Construction Noise Level at Reference Distance (10m) dB $L_{Aeq,1hr}$
Site Preparation	Wheeled Loader Lorry (C2 28)	74
	Diesel Generator (C4.76)	61
	Track Excavator (C2 22)	72
	Dozer (C2.13)	78
	Dump Truck (C4.2)	78
Demolition	Tracked/wheeled excavators (C.4 64)	75
	Breaker (C.1 6)	83
	Skip wagon (C.8 21)	78
General Construction	Tracked Excavator (C3.24)	74
	Concrete Pump (C3.25)	78
	Compressor (C3 19)	75
	Poker Vibrator (C4 33)	78
	Articulated lorry (C12.10)	77
	Hand tools	81
	Pneumatic Circular Saw (D7.79)	75
Landscaping	Dozer (C2.13)	78
	Dump Truck (C4.2)	78
	Surfacing (D8.25)	68

12.67 There are a number of third-party noise sensitive locations in relative close proximity to various aspects of the proposed development that may be impacted by short-term construction works.

12.68 The closest works area is likely to be approximately 10-15m from the nearest properties with the remainder of works taking place across the site at varying distances. Occasionally some works may occur closer than 10m i.e. paving when occurring outside of noise sensitive locations, however this is expected to be only for short periods. In order to assess a typical worst-case scenario, construction noise levels at distances of 15m, 30m and 100m have been used although a prediction to 10m distance is also provided as a reference in **Table 12.12.**

12.69 The calculations also assume that the equipment will operate for 66% of a typical working day and that a standard site hoarding, typically 2m height will be provided around the construction site, where practical, for the duration of works. **Table 12.13** summarises the construction noise predictions.

Table 12.13: Typical Construction Noise Predictions at Various Distances

Construction Phase	Predicted Construction Noise Level dB $L_{Aeq,11hr}$ at 15m	Predicted Construction Noise Level dB $L_{Aeq,11hr}$ at 30m	Predicted Construction Noise Level dB $L_{Aeq,11hr}$ at 100m
Site Preparation	71	64	52
Demolition	73	66	54
General Construction	74	67	56
Landscaping	69	63	51

12.70 With consideration of the site location, the likely construction phase activities, the distances from these works to nearby dwellings and the proposed construction noise criteria (i.e. 70dB $L_{Aeq,T}$), it is expected that potentially significant noise impacts will be encountered when works are occurring approximately 15 metres or closer to neighbouring dwellings.

12.71 Works associated with the site preparation and landscaping are likely to be the most significant construction noise sources, due to the proximity of these works to site perimeters. Other general construction works occurring close to the site boundary adjoining neighbouring dwellings also have the potential to generate significant short-term noise impacts.

12.72 Noise mitigation measures will therefore be necessary in order to reduce impacts as far as is reasonably practicable. The use of best practicable means (BMP) to control emissions can constitute a ground of defence against charges that a nuisance is being

caused. Typical mitigation measures that should be considered are presented in the mitigation section below.

Construction Phase - Vibration

12.73 With consideration of the distance from site boundaries to nearby sensitive receptors, and proposed general methods of construction, it is projected that vibration emissions to nearby receptors will not cause structural or cosmetic damage to any nearby buildings.

12.74 Vibration emissions from construction works occurring close to the site boundaries may be such that vibration is perceptible at nearby dwellings, and may lead to residential complaint. Mitigation measures are presented in the relevant sections of this document in order to ensure that construction vibration emissions are adequately monitored and controlled.

Operational Phase - Noise

Additional Road Traffic Noise on Public Roads

12.75 A Material Assets (Traffic & Transportation) chapter for this EIAR has been prepared by Hegsons. Information provided by the traffic consultant was provided to RSK and this information has been used to determine the predicted change in noise levels in the vicinity of the adjacent road network along which traffic will travel to and from the site. Traffic data for the following scenarios has been reviewed in preparing this assessment:

- Existing Traffic 2022 (Surveyed Year);
- Future Traffic 2027 (+ 5 years), and;
- Future Traffic 2039 (+ 15 Years).

12.76 AADT flow data has been used to assess the potential change in noise levels along the adjacent roads between the base year and the scenarios incorporating future site traffic. Changes in road traffic noise on the local road network have been considered using prediction guidance contained within *Calculation of Road Traffic Noise* (CRTN) issued by the Department of Transport in 1988. The future traffic flow data takes account of the proposed development.

12.77 **Tables 12.14 and 12.15** summarise the calculated change in road traffic noise level for the assessment years.

Table 12.14: Assessment of Change in Traffic Noise Levels on Roads Surrounding the Site. AADT: 2022 vs 2027 (+5 Years)

Link	Total AADT Traffic Flows		Predicted Change in noise Level, dB (L_{A10})
	Year: 2022	Year: 2027 (+5 Years)	
ATC No.1: R168 Trinity Street (East of Simocks Lane Junction)	10,352	11,408	+0.4

Link	Total AADT Traffic Flows		Predicted Change in noise Level, dB (L_{A10})
	Year: 2022	Year: 2027 (+5 Years)	
ATC No.2: R900 West Street (West of Dominic Street Junction)	2,485	2,734	+0.4
ATC No.3: R900 Fair Street (East of Bolton Street Junction)	2,311	2,540	+0.4
ATC No.4: R132 (North of Windmill Lane Junction)	12,223	13,471	+0.4
ATC No.9: Bridge of Peace	20,231	22,426	+0.4
ATC No.12: John Street	17,989	19,940	+0.4

Table 12.15: Assessment of Change in Traffic Noise Levels on Roads Surrounding the Site. AADT: 2022 vs 2037 (+15 Years)

Link	Total AADT Traffic Flows		Predicted Change in noise Level, dB (L_{A10})
	Year: 2022	Year: 2037 (+15 Years)	
ATC No.1: R168 Trinity Street (East of Simocks Lane Junction)	10,352	12,744	+0.9
ATC No.2: R900 West Street (West of Dominic Street Junction)	2,485	3,048	+0.9
ATC No.3: R900 Fair Street (East of Bolton Street Junction)	2,311	2,828	+0.9
ATC No.4: R132 (North of Windmill Lane Junction)	12,223	15,051	+0.9
ATC No.9: Bridge of Peace	20,231	25,214	+1.0
ATC No.12: John Street	17,989	22,420	+1.0

12.78 The calculated increase in noise level on the majority of roads is less than 2dB, referring to Table 12.5 confirms that this calculated change in noise level is 'Negligible' and the associated impact is 'Not Significant'.

Recreational/Pedestrian Noise from the Proposed Site Operation

12.79 Noting the proposed development's location in Drogheda, the area is generally comprised of commercial/retail land uses and there are a limited number of existing dwellings within the area/adjoining the application site. A review of properties in the area, however, has highlighted the following dwellings that may be impacted upon by the operation of the proposed development:

- Potential dwellings at first/second Floor along West Street that are approximately 15 metres from the proposed new Abbey Square area of the site.

- Dwellings to the West of George's Street, accessed from Tara Street/Mill Lane, that are approximately 30 metres from the proposed new sloped walkway.

- Dwellings along George's Street/Fair Street/Fair Green, that are approximately 15 metres from the proposed new external terrace area in this section of the site.

12.80 Activity at Abbey Square, along the new sloped walkway and within other external walkway/terrace areas is anticipated to take place during daytime, evening and weekend periods. Noise emissions from these activities are expected to be limited to human voices, which can be expected to include occasional raised voices. The noise impact of the proposed site operation is not expected to be significant, given the distance to nearby dwellings, expected use and the existing daytime ambient noise levels in these areas.. Operational phase noise emissions from the site are expected to comply with the Daytime (07:00 to 23:00hrs) noise criteria of 50 dB $L_{Aeq,1hr}$ at nearby dwellings. No further noise mitigation measures are considered necessary.

12.81 A noise management plan shall be prepared and implemented by the site operator to ensure that noise emissions from activity within Abbey Square, along the new sloped walkway and within other external walkway/terrace areas does not generate a noise nuisance to nearby noise sensitive locations.

Cumulative Impacts – Construction Phase

12.82 The phasing/commencement of any other permitted developments in the locality could potentially result in the scenario where a number of other construction sites are in operation at the same time as the proposed development. The location of any cumulative construction sites in relation to each other and to nearby noise sensitive locations, means that there is minimal risk of cumulative construction noise emissions resulting in an exceedance of the relevant criteria.

Cumulative Impacts – Operational Phase

12.83 The location of the proposed development site in relation to nearby noise sensitive locations and the distance from the proposed development site in relation to other nearby lands means that there is minimal risk of cumulative operational phase noise emissions resulting in an exceedance of the relevant criteria. No additional mitigation measures are therefore required.

Mitigation Measures

Construction Phase

12.84 With regard to construction activities, best practice control measures for noise and vibration from construction sites are found within BS 5228:2009+A1:2014 '*Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2*'. Whilst construction noise and vibration impacts are calculated to be within the criteria set out in this document for the majority of the time, the contractor will ensure that all necessary noise and vibration control measures will be used, in order to ensure impacts to nearby residential noise sensitive locations are not significant.

12.85 The following mitigation measures are required during the construction of the proposed development:

- Where practical, use of a site hoarding, minimum height of 2m, where the distance of works is 30m or less to nearby noise sensitive locations;
- Limiting the hours of construction to the following:

  Monday to Friday 07.00 – 19.00

  Saturday 07.00 – 13.00

12.86 In exceptional circumstances, and subject to agreement with the Local Authority, extended hours of operation may be applied for. In such instances an assessment of potential noise impacts shall be carried out in advance of works taking place, and submitted to the Local Authority, as part of the extended hours request.

- Monitoring levels of construction noise and vibration at the closest noise sensitive location;
- Maintaining site access roads so as to mitigate the potential for vibration from lorries;
- Selection of plant with low inherent potential for generation of noise and/ or vibration;
- Erection of barriers as necessary around items such as generators or high duty compressors;
- Situate any noisy plant as far away from sensitive properties as is reasonably practicable and the use of vibration isolated support structures where necessary;
- Establishing channels of communication between the contractor/developer, Local Authority and residents, and;
- Appointing a site representative responsible for matters relating to noise and vibration.

Operational Phase

Additional Road Traffic Noise on Public Roads

12.87 During the operational phase of the development, noise mitigation measures with respect to the traffic from the development are not deemed necessary.

Recreational/Pedestrian Noise from the Proposed Site Operation

12.88 During the operational phase of the development, noise mitigation measures with respect to noise on site are not deemed necessary.

12.89 However, a noise management plan shall be prepared and implemented by the site operator to ensure that noise emissions from activity within Abbey Square, along the

new sloped walkway and within other external walkway/terrace areas does not generate a noise nuisance to nearby noise sensitive locations.

Monitoring

Construction Phase

12.90 The appointed contractor shall monitor levels of noise and vibration at the closest noise sensitive location to the proposed site during the development's construction phase.

Operational Phase

12.91 No additional monitoring is proposed for the operational phase of the proposed development.

Residual Effects

Construction Phase

12.92 During the construction phase of the project there will be some negative impact on nearby noise sensitive locations due to noise/vibration emissions from construction activity. The implementation of suitable control measures will ensure that the impact is minimized. The residual impact from construction is as follows.

Table 12.16: Construction Phase Residual Noise/Vibration Impacts

Quality	Significance	Duration
Negative	Moderate	Short-term

Construction Phase Noise and Human Health

12.93 In terms of the noise exposure of construction workers, the *Safety, Health and Welfare at Work (General Application) Regulations 2007* (Statutory Instrument No. 299 of 2007) provides guidance in terms of allowable workplace noise exposure levels for employees. The Regulations specify two noise Action Levels at which the employer is legally obliged to reduce the risk of exposure to noise. The appointed contractor will be required to comply with the Regulations and provide appropriate noise exposure mitigation measures where necessary.

12.94 The noise exposure level to off-site receptors during the construction phase will be below the lower Action Level and therefore the risk of noise exposure resulting in hearing damage to off-site receptors is not significant.

12.95 In terms of construction noise emissions to nearby off-site receptors, provided that noise emissions are controlled to comply with the recommended significance thresholds, as outlined in previous sections, and considering the short-term nature of the works, the potential health impacts associated with construction noise is not significant.

Operational Phase

12.96 The anticipated residual impact from the operational phase of the development is summarised as follows.

Table 12.17: Operational Phase Residual Noise/Vibration Impacts

Quality	Significance	Duration
Neutral	Not Significant	Permanent

Operational Phase Noise and Human Health

12.97 Provided that operational phase outward noise emissions are controlled to comply with the recommended criteria, the potential health impacts associated with operational phase site noise emissions are not significant.

'Worst Case' Scenario

12.98 Should a significant impact occur as a result of either construction or operational phase noise, the likely outcome would be a noise nuisance resulting in a loss of amenity.

12.99 Should a significant impact occur as a result of either construction or operational phase vibration, the worst-case outcome would be that of structural damage to nearby buildings.

12.100 However, based upon the assessments conducted, the worst-case impacts are expected to be Moderate for the construction phase, and Not Significant for the operational phase.

Interactions

Population and Human Health

12.101 This assessment of noise and vibration has concluded that additional noise associated with the Proposed Development will not have any major negative impacts beyond the site boundary. Mitigation and monitoring measures will be incorporated to further reduce the potential for noise generation from the Proposed Development. No human health impacts are anticipated as a result of noise from the Proposed Development.

Biodiversity

12.102 The Noise and Vibration effects of the Proposed Development will cause disturbance to the local fauna including birds during the Construction Phase of the Proposed Development, however, the proposed mitigation measures will reduce this disturbance. Please refer to the relevant Biodiversity EIAR Chapter.

Traffic

12.103 There is the potential for traffic related noise to impact residents during the Operational Phase of the Proposed Development; however, due to the implementation of the proposed mitigation measures, there will be no significant impact. Noise and vibration interactions with Roads and Traffic and information provided in the traffic assessment has been used in preparing this EIAR Noise & Vibration Chapter.

Difficulties Encountered in Compiling the Chapter

12.104 There were no significant difficulties encountered in the preparation of this document.

References

- Environmental Protection Agency (2022) Guidelines on the information to be contained in Environmental Impact Assessment Reports
- British Standard (2014) *Code of practice for noise and vibration control on construction and open sites (*BS 5228-1:2009+A1:2014) Part 1 Noise
- British Standard (2014) *Code of practice for noise and vibration control on construction and open sites (*BS 5228-1:2009+A1:2014) Part 2 Vibration
- International Standard (1996) ISO 1996-2:2017 *Acoustics -- Description, measurement and assessment of environmental noise -- Part 2: Determination of sound pressure levels*.
- Highways England (2020) Design Manual for Roads and Bridges LA 111 Noise and Vibration
- *Calculation of Road Traffic Noise* (CRTN) issued by the Department of Transport (1988).
- British Standard (2014) *Guidance on Sound Insulation and Noise Reduction for Buildings* (BS 8233: 2014)
- Environmental Protection Agency (EPA) Office of Environmental Enforcement (OEE) *"Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)"* January 2016
- Louth County Council (2018) Noise Action Plan Summary

13. Material Assets (Waste)

Introduction

13.1 This Chapter of the EIAR has been prepared by RSK Ireland Ltd, an environmental and engineering consultancy, to identify and assess waste impacts associated with the proposed development at Westgate, Drogheda, Co. Louth.

13.2 This chapter includes a description of the type of waste to be generated from the development during both the short-term construction and demolition phase and the long-term operational phase. The chapter also identifies mitigation measures to ensure that the proposed development is constructed and operated in an environmentally sustainable manner.

Assessment Methodology

13.3 The assessment of the impacts of the proposed development arising from the generation of waste materials was carried out taking into account the methodology specified in the 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, May 2022), along with an extensive document review to assist in identifying current and future requirements for waste management including Directives, national and regional waste policy, waste strategies, management plans and relevant

13.4 This Chapter is based on the project description which is provided in Chapter 5 of this EIAR. This section considers the following aspects:

- The legislative context;
- The construction phase (including excavation and demolition); and
- The operational phase.

13.5 A desk study was carried out which includes the following tasks:

- Review of applicable policy and legislation which creates the legal framework for resource and waste management in Ireland;
- Description of the typical waste materials that will be generated during the construction and operational phases; and
- Identification of mitigation measures to prevent waste generation and promote management of waste in accordance with the waste hierarchy.

13.6 These documents will ensure the sustainable management of wastes arising at the application site in accordance with legislative requirements and best practice standards.

Legislation & Guidance

Construction Phase

13.7 Waste management in Ireland is subject to EU, national and regional waste legislation which defines how waste materials must be managed, transported and treated. The overarching EU legislation is the Waste Framework Directive (2008/98/EC) which is transposed into national legislation in Ireland. The cornerstone of Irish waste legislation is the Waste Management Act 1996 (as amended).

13.8 In addition, the Irish government issues regular policy documents which outline measures aimed at improving waste management practices in Ireland and helping the country to achieve EU targets in respect of recycling and disposal of waste.

13.9 The most recent policy document "A Resource Opportunity – Waste Management Policy in Ireland" was published in 2012 and is strongly influenced by the EU Waste Management Hierarchy. The document stresses the environmental and economic benefits of better waste management, particularly in relation to waste prevention. A key policy objective is that when waste is generated, the maximum value must be extracted from it by ensuring it is reused, recycled or recovered.

13.10 The waste hierarchy is implemented through the amendment made to the 1996 Waste Management Act (S.I. No 126/2011 – the "European Communities (Waste Directive) Regulations 2011"). The following hierarchy shall apply as a priority order in waste prevention and management legislation and policy:

(a) Prevention;

(b) Preparing for re-use;

(c) Recycling;

(d) Other recovery (including energy recovery); and

(e) Disposal.

13.11 The Environmental Protection Agency (EPA) have published a recent National Waste prevention Plan (NWPP) 'Towards a Resource Efficient Ireland' which runs until 2020. The aim of the NWPP is to encourage hazardous and non-hazardous waste prevention and minimisation. This plan has since been superseded by the Waste Action Plan for a Circle Economy 2020 – 2025.

13.12 The strategy for the management of waste from the construction phase is carried out in line with the requirements of the "Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects" published by the Department of The Environment, Heritage and Local Government (DoEHLG) in 2006. The guidance document "Construction and Demolition Waste Management: A handbook for Contractors and Site Managers", published by the Construction Industry Federation in 2002, was also consulted in the preparation of this assessment.

13.13 There are currently no Irish guidelines on the assessment of operational waste generation and guidance is taken from industry guidelines, British Standards and other relevant studies and reports.

13.14 The Eastern Midlands Region Waste Management Plan 2015 - 2021 provides a framework for the prevention and management of waste in a sustainable manner in 12 local authority areas including Louth County Council. The plan includes a mandatory target of recycling and reuse of 70% of Construction and Demolition (C&D) waste (excluding soil and stone) by 2020. This plan has been adopted as stated in ENV 24 Policy in the Louth County Council Development Plan 2021 – 2027.

13.15 The three key objectives of the Eastern-Midlands Region Waste Management Plan are:

- Prevent waste: a reduction of one per cent per annum in the amount of household waste generated over the period of the plan.
- More recycling: increase the recycle rate of domestic and commercial waste from 40 to 50 per cent by 2020.
- Further reduce landfill: eliminate all unprocessed waste going to landfill from 2016 onwards

13.16 Future targets set in the Plan for 2030 include:

- Preparing for reuse and recycling of 60-70% of municipal waste by the end of 2030;
- Reduce and where possible, eliminate the landfilling of all major waste streams including municipal, industrial and construction & demolition wastes in favour of the recovery of residual wastes.

13.17 The Regional Plan sets out the strategic targets for waste management in the region and sets a specific target for C&D waste of '*70% preparing for reuse, recycling and other recovery of construction and demolition waste*' (excluding natural soils and stones and hazardous wastes) to be achieved by 2020.

13.18 The National Waste Statistics update published by the EPA in October 2022 identified that Ireland achieved a 78% material recovery of C&D waste in 2020 surpassing the 70% recovery target. In an additional target in our progress against 'Preparing for reuse and recycling of >55% by weight of household derived paper, metal, plastic & glass (includes metal and plastic estimates from household WEEE)' by 2025 is at 53%. Both of these targets are required to be met by December 2025 and thereafter in accordance with the requirements of the Waste Framework Directive.

Operational Phase

13.19 There are several applicable primary legislative instruments that govern waste management for hazardous and non-hazardous waste Ireland. It is worth noting that this development during its operational phase will not produce mass waste. The likelihood of producing any hazardous waste is minimal.

13.20 One of the guiding principles of European waste legislation, which has in turn been incorporated into the Waste Management Act 1996, as amended, is that the waste producer is responsible for waste from the time it is generated through until its legal disposal (including its method of disposal). As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final disposal area, waste contractors or local authority will be employed to physically transport waste to the final waste disposal site.

13.21 It is therefore imperative to undertake on-site management of waste in accordance with all legal requirements and employ suitably permitted/licensed contractors to undertake off-site management of their waste in accordance with all legal requirements with particular emphasis within the public realm area This includes the requirement that a waste contractor or local authority handle, transport and reuse/recover/recycle/dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

13.22 A collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the Waste Management (Facility Permit & Registration) Regulations 2007 as amended or a waste or IED (Industrial Emissions Directive) licence granted by the EPA. The COR/permit/licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the specified site.

13.23 The Eastern Midlands Region Waste Management Plan 2015 - 2021 provides a framework for the prevention and management of waste in a sustainable manner in 12 local authority areas including Louth County Council.

13.24 The three key objectives of the Eastern-Midlands Region Waste Management Plan are:

- Prevent waste: a reduction of one per cent per annum in the amount of household waste generated over the period of the plan.

- More recycling: increase the recycle rate of domestic and commercial waste from 40 to 50 per cent by 2020.

- Further reduce landfill: eliminate all unprocessed waste going to landfill from 2016 onwards.

13.25 Further to this, the development will comply with the requirements set out in the Louth County Council Bye-Laws for the Segregation, Storage and Presentation of Household and Commercial Waste, 2019 or any revision thereof, must be adhered to and, in particular, the requirement in the Bye-Laws to segregate waste into separate fractions to facilitate the collection of dry recyclables, organic kitchen/garden waste and residual waste in line with the applicable regulations, including the Waste Management (Food Waste) Amendment Regulations 2015 (S.I. 190 of 2015) and the European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. 430 of 2015), and the Eastern - Midlands Region Waste Management Plan 2015-2021.

Receiving/Baseline Environment

13.26 The application site is located within the 'Westgate Vision Area' of Drogheda in County Louth. Please refer to 'Chapter 3 - Site Location and Context' of this EIAR which provides a detailed overview of the application site and surrounding area.

13.27 This section provides a detailed description of the baseline environment with respect to Site Services (Waste).

13.28 In terms of waste management, the receiving environment is defined by Louth County Council as the local authorities are responsible for measuring and administering waste management activities in the Westgate area. Louth County Councils waste management policies are governed by the requirements set out in the Eastern Midlands Region Waste Management Plan 2015 – 2021, at the time of reporting no newly revised iteration had been released posts 2021. The waste management plan sets the following targets for this area:

- Prevent waste: a reduction of one per cent per annum in the amount of household waste generated over the period of the plan.
- More recycling: increase the recycle rate of domestic and commercial waste from 40 to 50 per cent by 2020.
- Further reduce landfill: eliminate all unprocessed waste going to landfill from 2016 onwards

13.29 The Regional Plan sets out the strategic targets for waste management in the region and sets a specific target for C&D waste of '*70% preparing for reuse, recycling and other recovery of construction and demolition waste*' (excluding natural soils and stones and hazardous wastes) to be achieved by 2020.

13.30 In terms of physical waste infrastructure, Louth County Council no longer operate any municipal waste landfill in their respective areas. There are numerous waste permitted and licensed facilities located in the Eastern-Midlands Waste Region for management of waste from the construction industry as well as municipal sources. These include soil recovery facilities, inert C&D waste facilities, hazardous waste treatment facilities, municipal waste landfills, material recovery facilities, waste transfer stations and waste-to-energy facilities.

Characteristics of the Proposed Development

13.31 Please refer to Chapter **5** of this EIAR for a detailed description of the proposed project. The following section provides an overview of the Material Assets (Waste) component of the proposed project. With regard to waste management, the proposed development will generate waste materials during the construction and demolition phases and when the new building is operational.

Demolition Phase

13.32 There will be some demolition required including the demolition of the existing public toilet block at George's Square, a 21.8m section of wall located between Old Abbey Lane

and Father Connolly Way, and a 37.1m section of wall located between Dominic Street and the Dominic Street car park;. There is a minimal amount of waste expected to be generated on the site with the removal of some assumed hardstanding surfacing in areas.

13.33 As referenced above, the Eastern Midlands Region Waste Management Plan 2015 – 2021 includes a mandatory target of recycling and reuse of 70% of C&D waste (excluding soil and stone) by 2020. Therefore, the contractor will have to ensure that waste is managed appropriately to ensure this target is met.

Construction Phase

13.34 During the Construction phase, from surplus materials such as broken or off-cuts of timber, plasterboard, concrete, tiles, bricks, etc. Waste from packaging (cardboard, plastic, timber) and oversupply of materials may also be generated. The construction contractor will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised. In addition, excavations will be required to facilitate construction.

13.35 The main non-hazardous and hazardous waste streams that are likely to be generated by the removal of existing hardstanding on site, site preparation and construction activities at site are shown in the table below.

Table 13.1: Typical C&D Non-hazardous and Hazardous Waste Streams

Waste Material	EWC Code
Concrete, bricks, tiles, ceramic	17 01 01-03 & 06-07
Wood, glass and plastic	17 02 01-04
Bituminous mixtures, coal tar and tarred products	17 03 01-03
Metals (including their alloys)	17 04 01-07 & 09-10
Soil and stones	17 05 03-04
Gypsum-based construction material	17 08 02
Mixed C&D waste	17 09 04
Electrical and electronic components	20 01 35-36
Batteries and accumulators	20 01 33-34
Liquid fuels	13 07 01-03
Paints	08 01 12
Chemicals (solvents, pesticides, paints, adhesives, detergents etc.)	20 01 13, 19, 27-30
Insulation materials	17 06 04

13.36 Should a volume of material be required to be excavated, it has been advised that there are limited or no opportunities for reuse onsite and that it will require removal offsite for reuse, recovery and/or disposal, as appropriate.

13.37 Environmental soil analysis should be carried out prior to construction on a number of the soil samples in accordance with the requirements for acceptance of waste at landfills (Council Decision 2003/33/EC Waste Acceptance Criteria). This legislation sets limit values on landfills for acceptance of waste material based on properties of the waste including potential pollutant concentrations and leachability.

13.38 As per Chapter 9 Land, Soils and Geology, surplus soils/stones may be suitable for acceptance at either inert or non-hazardous soil recovery facilities/landfills in Ireland or, in the event of hazardous material being encountered, be transported for treatment/recovery or exported abroad for disposal in suitable facilities.

13.39 Proposed works are limited to superficial, minimum re-profiling of roadways, footpaths and cycle paths along with seating areas.

13.40 If excavation works are required, it is a requirement that it is carefully monitored by a suitably qualified person to ensure contaminated soil is identified and segregated from any potentially uncontaminated soil, where encountered. In the event of excavation, additional soil testing will be required in order to reclassify soil and the material will be required to be classified as hazardous or non-hazardous using the HazWasteOnline application (or other similar application) and then classified as inert, non-hazardous or hazardous in accordance with the EC Council Decision 2003/33/EC for acceptance of waste at landfills.

13.41 Discussions about the acceptance of the material should be undertaken with individual landfill operators before removal of any material from site is carried out and further investigation may be required to satisfy the operators waste acceptance requirements.

13.42 Any identified contaminated material will be required to be removed from site for treatment or disposal as appropriate. The contaminated material may be suitable for recovery or disposal in Ireland depending on the limitations of the facilities licence.

Operational Phase

13.43 The proposed development will give rise to a variety of waste streams when the development is completed. This report will help to ensure that the development meets the targets outlined in the Eastern Midlands Regional Waste Management Plan 2015 – 2021.

13.44 All waste materials will be segregated into appropriate categories and will be stored in appropriate bins or other suitable receptacles in designated, easily accessible areas of the site in accordance with the Louth County Council Development Plan 2021 – 2027 (Policy RES 31).

13.45 Table 13.2 summaries the various waste streams and the anticipated management strategy to be used for typical wastes to be generated at this type of development.

Table 13.2: Typical Operational Phase Waste Streams and Management Strategy

Waste Type	Hazardous	Onsite Storage Method	Removal Offsite
Dry Mixed Recyclables	N	Segregated bins	Recycle
Mixed Non-Recyclables	N	Segregated bins	Recovery
Organic (food and garden) waste	N	Segregated bins	Composting
Glass (segregated by colour)	N	Segregated bins	Recycle
WEEE	Y	Segregated bins	Return to supplier
Batteries	Y	Segregated bins	Return to supplier
Cleaning Products	Y/N	Segregated bins	Disposal

13.46 All waste leaving site will be recycled or recovered, with the exception of those waste streams where appropriate recycling/recovery facilities are currently not available. All waste leaving the site will be transported by suitable permitted contractors and taken to suitably permitted or licenced facilities. All waste leaving the site will be recorded and copies of relevant documentation maintained.

13.47 Hazardous waste may be generated from WEEE, batteries, fluorescent tubes, and cleaning products. Any waste classed as hazardous will be stored in designated area(s) and will be removed off site by suitably authorised waste contractor(s).

Assessment of Potential Impacts

'Do Nothing' Scenario

13.48 If the proposed development was not to go ahead there would be no demolition or construction waste and existing operational waste generation would remain unchanged at the site.

Construction Phase

13.49 The construction stages of the project (which includes preparation) will generate a range of non-hazardous and hazardous waste materials from which there is a risk of potential impact. A waste management strategy from the regeneration activities undertaken on site will ensure that there are no significant impacts from waste generated throughout the project by methods such as safe and secure storage of waste and raw materials, just in time deliveries and on-site security services.

13.50 The use of authorised waste hauliers and permitted/licensed waste facilities will ensure that the waste materials generated from the removal of the hardstanding area, site preparation and construction activities are appropriately managed off site. The potential impacts associated with handling and treating waste off site at permitted/licensed facilities are considered in the authorisation of these waste facilities.

13.51 Waste materials will be required to be temporarily stored on site pending collection by a waste contractor. Dedicated segregated areas for waste skips and bins will need to be identified across the site. These areas will need to be easily accessible to waste collection vehicles and for segregation.

13.52 Should there be a quantity of soil to be excavated to facilitate the proposed development, where possible, suitable soil will be reused on site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and offsite.

13.53 The opportunities for waste materials to be reused off-site will provide positive impacts in the resourcing of materials for other developments and reduce the requirement for raw material extraction.

13.54 The potential impacts on the environment from waste generation during the construction phase are expected to be likely, negative, short term and not significant.

Operational Phase

13.55 The nature of the proposed development means that the generation of waste materials during the operational phase is an unavoidable impact. Operational Waste is already being produced within the public realms of this site. Networks of waste collection, treatment, recovery and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. Waste which is not suitable for recycling is typically sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables which is typically exported for conversion in recycled products. The waste materials generated on a daily basis will be stored in dedicated waste storage area(s) and/or public street bin containers.

13.56 Factors such as waste material not being managed and stored correctly, and the use of non-permitted waste contractors or unauthorised facilities could give rise to inappropriate management of waste and result in negative environmental impacts or pollution such as litter issues or the presence of vermin within the development and the surrounding areas.

13.57 The mitigation measures outlined below will ensure no significant negative environmental impacts will occur.

Potential Cumulative Impacts

Construction Phase

13.58 The phasing/commencement of any other identified permitted developments in the locality could potentially result in the scenario where a number of other construction sites are in operation at the same time as the proposed development.

13.59 Should construction of nearby sites coincide with construction of the proposed development, this could result in a general increase in construction waste generation in the wider Westgate area.

13.60 However, there will be sufficient capacity in the local waste collection and disposal network to ensure that all construction waste is removed from site and disposed of in an environmentally sustainable and responsibly manner. In the event that the local waste capacity is stretched, where necessary, appropriate waste management facilities outside the local area will be considered.

Operational Phase

13.61 The development of the proposed site along with other developments is capable of having in-combination effects could potentially result in a general increase in operational waste generation in the wider Westgate area.

Mitigation (Ameliorative, Remedial or Reductive Measures)

Proposed Development

Construction Phase

13.62 Adherence to the waste hierarchy (prevention, minimisation, reuse, recycling, recovery and disposal of waste material generated during the construction and demolition phases of the proposed development) will be implemented.

13.63 Should excess waste be generated from the enabling works be required to facilitate the construction phase, it is anticipated that there will be limited or no opportunities for reuse of this material onsite and it will require removal for offsite reuse, recovery, recycling and/or disposal. The contractor(s) will endeavour to ensure that material is reused or recovered off-site insofar as is reasonably practicable before considering disposal at an authorized facility.

13.64 During the construction phase there will be a number of mitigation methods put in place including:

- Onsite segregation of waste materials into concrete, rubble, Plasterboard, metals, glass and timber.
- Any hazardous wastes produced will be stored separately.
- All waste materials will be stored in skips or other suitable receptacles and appropriately labelled.
- Reuse of left-over materials where possible (e.g. timber off cuts, broken concrete)
- A waste manager/site representative will be appointed to ensure waste management procedures are followed.
- All waste leaving the site will be reused, recycled or recovered, where possible.
- All waste leaving the site will be recorded and accounted for with all relevant documentation maintained.

13.65 These mitigation measures will ensure that the waste arising from the construction and demolition phases of the development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations, the Litter Pollution Act 1997 and the EMR Waste Management Plan (2015 - 2021). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will encourage sustainable consumption of resources.

Operational Phase

13.66 During the Operational Phase of the proposed development, all waste materials will be segregated into appropriate receptacles and stored in appropriate bin containers throughout the regeneration project area. A number of mitigation methods put in place including:

- The segregation of waste materials including Organics, dry mixed recycling, mixed non-recycling, glass, WEEE and cleaning chemicals.
- All wastes will be stored in appropriate containers and colour coded.
- All applicable waste leaving the area will be reused, recycled or recovered where possible.
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

13.67 These mitigation measures will ensure that the waste arising from the operation of the proposed development will be dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations, the Litter Pollution Act 1997 and the EMR Waste Management Plan (2015 - 2021). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

Monitoring

Construction Phase

13.68 It is important that during the construction phases of the development that the waste generation volumes are calculated, recorded and compared to the targets outlined.

13.69 A competent and trained waste manager/site representative should be appointed. It is recommended that it is their responsibility to monitor and track the waste volumes being generated. It is also their responsibility to ensure that all contractors and sub-contractors are segregating waste as required.

Operational Phase

13.70 It is important that during the operational phase of the development that the waste generation volumes are calculated, recorded and compared to the targets.

Residual Impacts

Proposed Development

13.71 The implementation of the mitigation measures outlined will ensure that a high rate of reuse, recovery and recycling is achieved at the development during the construction phase as well as during the operational phase. It will also ensure that European, national and regional legislative waste requirements with regard to waste are met and that associated targets for the management of waste are achieved. Primarily, implementation of the waste strategy during site preparation and construction activities and compliance with the site's waste management procedures during the operational phase will minimise the volume of waste requiring disposal at landfill.

Construction Phase

13.72 Implementation and adherence to the waste strategy will ensure that waste generated during the construction phase of the project will be managed in accordance with best practice and relevant legislation.

13.73 Recovery or disposal of excavated materials off-site at licensed/permitted facilities will ensure that the deposition of excavated materials is appropriately controlled.

13.74 Provided the mitigation measures outlined are followed, the residual effect of the construction phase on the environment will be **likely, negative, short term and not significant**.

Operational Phase

13.75 During the operational phase, a structured approach to waste management as set out in this waste strategy will promote resource efficiency and waste minimisation. Provided the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted impact of the operational phase on the environment will be **likely, negative, long-term and not significant**.

'Worst Case' Scenario

13.76 In the case where the mitigation methods fail and / or are not complied with, there would be potential for significant effects on the environment. For example, the incorrect segregation of waste, the use of unlicensed waste contractors, lack of appropriate paperwork and the failure to reuse materials where possible could lead to non-compliance with National and European legislation, which could potentially result in pollution to the environment. Such a failure may result in enforcement action, and an increase in overall costs for the development.

Reinstatement

13.77 This is not applicable for the proposed development.

Interactions

13.78 The following interactions were identified in this Material Assets (Waste) EIAR Chapter

- **Population and Human Health**: interactions between 'Material Assets - Waste' and 'Population & Human Health' have been considered in this EIAR as the proposed project has the potential to create impacts during the construction stage as a result of the removal, handling and storage of waste.

- **Biodiversity**: interactions between 'Material Assets - Waste' and 'Biodiversity' have been considered in this EIAR as the proposed project has the potential to create impacts during the construction and operation stages as a result of the handling and storage of waste.

- **Land, Soils & Geology**: interactions between 'Material Assets - Waste' and 'Land, Soils & Geology' have been considered in this EIAR as the proposed project has the potential to create impacts, such as contamination of soil and stones excavated from the site, during the construction stage as a result of handling and segregation of hazardous or contaminated wastes.

- **Material Assets – Traffic & Transportation**: interactions between 'Material Assets - Waste' and 'Material Assets – Traffic & Transportation' have been considered in this EIAR as the proposed project has the potential to create impacts during the construction and operational stages as a result of waste collection activities.

Difficulties Encountered

13.79 There were no difficulties encountered in the preparation of this chapter.

References

In preparing the Material Assts (Waste) chapter of this Environmental Report, reference is made to the following documents and Standards:

- *Guidelines on the Information to be contained in Environmental Impact Assessment Reports*' (EPA, May 2022).

- *Waste Framework Directive* (2008/98/EC).

- '*Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects*', National Construction and Demolition Waste Council (NCDWC) / Department of the Environment, Heritage and Local Government, July 2006.

- Waste Management Act 1996 (Act No. 10 of 1996) as amended 2001 (Act No. 36 of 2001), 2003 (Act No. 27 of 2003) and 2011 (S.I. No 20 of 2011). Subordinate and associated legislation includes:

  – *European Communities (Waste Directive) Regulations 2011* (SI 126 of 2011) as amended 2011 (S.I. No. 323 of 2011)

  – *Waste Management (Collection Permit) Regulations 2007* (S.I No. 820 of 2007 as amended 2008 (S.I No 87 of 2008) and 2016 (S.I No. 24 of 2016)

- *Waste Management (Facility Permit and Registration) Regulations*, (S.I No. 821 of 2007) as amended 2008 (S.I No. 86 of 2008), 2014 (S.I No. 320 and No. 546 of 2014) and 2015 (S.I. No. 198 of 2015)
- *Waste Management (Licensing) Regulations 2000* (S.I No. 185 of 2000) as amended 2004 (S.I. No. 395 of 2004) and 2010 (S.I. No. 350 of 2010)
- *European Union (Packaging) Regulations 2014* (S.I. 282 of 2014) as amended 2015 (SI No. 542 of 2015).
- *Waste Management (Planning) Regulations 1997* (S.I. No. 137 of 1997)
- *Waste Management (Landfill Levy) Regulations 2015* (S.I. No. 189 of 2015) o European Communities (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
- *Waste Management (Batteries and Accumulators) Regulations 2014* (S.I. No. 283 of 2014) as amended 2014 (S.I. No. 349 of 2014) and 2015 (S.I. No. 347 of 2015)
- *Waste Management (Food Waste) Regulations 2009* (S.I. 508 of 2009) as amended 2015 (S.I. 190 of 2015) and European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 191 of 2015)
- *Waste Management (Hazardous Waste) Regulations, 1998* (S.I. No. 163 of 1998) as amended 2000 (S.I. No. 73 of 2000)
- *Waste Management (Shipments of Waste) Regulations 2007* (S.I. No. 419 of 2007) as amended by European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011 (S.I. No. 324 of 2011)
- *European Communities (Transfrontier Shipment of Waste) Regulations 1994* (S.I. No. 121 of 1994)
- *European Union (Properties of Waste which Render it Hazardous) Regulations 2015* (S.I. No. 233 of 2015)

- *Planning and Development Act 2000 (as amended)* – 2010 (Act No. 30 of 2010) and 2015 (S.I. No. 264 of 2015, S.I. 310 of 2015).
- *Protection of Environment Act 1992* as amended (Act. No. 27 and S.I. 413 of 2003) as amended by the *Planning and Development Act 2000* (Act No. 30 of 2000).
- *Litter Pollution Act 1997* (Act No. 12 of 1997) as amended by the *Litter Pollution Regulations 1999* (S.I. No. 359 of 1999) and *Protection of the Environment Act 2003*.
- "*A Resource Opportunity – Waste Management Policy in Ireland*" Department of the Environment, Community and Local Government, 2012.

- National Waste Prevention Plan (NWPP) "*Towards a Resource Efficient Ireland, A National Strategy to 2020*", EPA.
- "*Construction and Demolition Waste Management: A handbook for Contractors and Site Managers*", FÁS and the Construction Industry Federation, 2002.
- *The Eastern Midlands Region Waste Management Plan* 2015 – 2021.
- *The National Waste Statistics*, EPA, December 2017.
- *The National Waste Statistics Summary Report for 2020, EPA, December 2020*
- W*aste Management (Facility Permit & Registration) Regulations 2007.* .
- *Preventing and Recycling Waste - Delivering Change'* Department of the Environment and Local Government, 2002.
- *Making Irelands Development Sustainable - Review, Assessment and Future Action*', Department of the Environment and Local Government, 2002.
- *Changing Our Ways*, Minister for the Environment and Local Government, October 1998.
- 'Waste Management - *Taking Stock and Moving Forward' EPA,* April 2004.
- *Hazardous Waste Statistics for Ireland Report*" EPA, 2017
- *Waste Action Plan for a Circular Economy, Irelands National Waste Policy 2020 – 2025 prepared by the Department of Communications, Climate Action and Environment.*
- *Segregation, Storage and Presentation of Household and Commercial Waste Bye-Laws 2019, Louth County Council*
- *Louth County Council Development Plan 2021 – 2027, Louth County Council*

14. Material Assets (Traffic & Transportation)

Introduction

14.1 This chapter of the EIAR has been prepared by Hegsons Design Consultancy Ltd to identify and assess potential traffic and transportation related impacts associated with the proposed project at Westgate, Drogheda, Co. Louth.

14.2 This chapter assesses how the proposed works will impact the surrounding road network. It will consider appropriate access arrangements and the transport choices available to future users of the area and how the existing/proposed transport infrastructure surrounding the site will influence those choices. The impact of any traffic demand generated by the proposals will be considered and quantified.

14.3 The aim of this assessment is to:

- identify the characteristics of the application site and surrounding area;
- examine the likely traffic and transport implications; and
- ensure sustainable accessibility is maximised and appropriate infrastructure provided.

14.4 This chapter will present the baseline transport environment including reporting on traffic counts carried out on the surrounding street network and an analysis of the available road safety data. The projected change in traffic associated with the operation of the proposed scheme and its likely significant effects on the baseline transport networks is also presented.

14.5 An assessment of the likely phasing and scheduling of the proposed construction works and their likely significant effects on the receiving environment is also undertaken. Finally, any mitigation measures and monitoring to assist in reducing the effects of the proposed scheme on the surrounding transport network and any resultant residual effects are outlined.

Methodology

14.6 This Traffic and Transportation chapter is prepared based on Transport Infrastructure Ireland's Traffic and Transportation Assessment Guidelines 2014 and assesses the impact of the proposals on the street network during the construction and operational stages. Other relevant documents consulted include:

- Environmental Protection Agency (EPA) - Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022);
- Department of Housing, Planning and Local Government (DHPLG) - Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018);

- Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licensing Systems – Key Issues Consultation Paper, Department of Housing, Planning, Community and Local Government, 2017; and

- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report, European Commission, 2017.

14.7 Notwithstanding ongoing public consultation events, the Design Team, have engaged with Transport Infrastructure Ireland (TII) and various departments within LCC with a view to considering the respective issues raised as part of the design process of the scheme. These engagements have informed the final layout of the scheme including access arrangements for vehicular, pedestrian and cycle modes of transport.

Transport Planning Policy Context

National Policy: Smarter Travel: A Sustainable Transport Future

14.8 This national policy document for the period 2009-2020 sets out 49 actions aimed at reversing 'current unsustainable transport and travel patterns' to 'reduce the health and environmental impacts of current trends and improve our quality of life'. Implementation of Smarter Travel can be summarised as a number of overarching actions:

- To reduce distance travelled by private car and encourage smarter travel, including focusing population growth in areas of employment and to encourage people to live in close proximity to places of employment and the use of pricing mechanisms or fiscal measures to encourage behavioural change;

- Ensuring that alternatives to the car are more widely available, mainly through a radically improved public transport service and through investment in cycling and walking; and

- Improving the fuel efficiency of motorised transport through improved fleet structure, energy efficient driving and alternative technologies.

National Cycle Policy Framework

14.9 This national policy sets out specific objectives along with individual, integrated actions aimed at ensuring that a cycling culture is developed in Ireland, '*The vision is that all cities, towns, villages, and rural areas will be bicycle friendly. Cycling will be a normal way to get about, especially for short trips.'*

14.10 Cycling contributes to:

- improved quality of life;

- quality of the public realm;

- a stronger economy and business environment; and

- an enhanced environment.

14.11 The policy framework looks to develop a culture of cycling in Ireland to the extent that by 2020, 10% of all trips will be by bike.

Receiving Environment

14.12 For the purpose of this assessment, the subject site is located primarily to the east of the R132 St Georges Square and the Bridge of Peace. The site currently comprises of a mixture of land uses, ranging from retail and commercial premises along Narrow West Street to the Garda Station and Court House off Father Connolly Way and includes various car parks. The area currently generates traffic related to its land uses and also through traffic along Narrow West Street.

14.13 The study area considered as part of this assessment includes the following roads/ streets/lanes and their adjoining footpath/public realm/junction areas:

- R132/Bridge of Peace/George's Street (including the underpass on the northern side of the River Boyne);
- George's Square;
- Father Connolly Way (including part of an existing car park area);
- Dominick Street;
- Patrickswell Lane;
- Old Abbey Lane (including an area to the rear of 56/57 West Street);
- Scholes Lane;
- R900/West Street/Narrow West Street;
- Fair Street; and
- Wellington Quay.

14.14 The application site is considered to be the primary zone of influence with respect to the management of traffic during the operational and construction of the proposed scheme and is the area most likely to experience changes in traffic flow.

14.15 Access to the application site is primarily via the R132 St Georges Square with vehicular access also achieved via Wellington Quay, the R900 Fair Street / Narrow West Street. A number of internal streets form the subject area which include Father Connolly Way, Dominick Street and Patrickswell Lane to the south of Narrow West Street and a pedestrian only street consisting of Old Abbey Lane and Scholes Lane. Pedestrian and cycle access is also achieved via the Dominick Street Bridge which connects the area to the R132 Georges Street, south of the River Boyne.

R132 George's Square/Bridge of Peace

14.16 R132/George Square is a regional road and primary route for traffic moving in a north-south direction across the River Boyne. The road is a single carriageway, two-way road

to the north of the study area. As the R132 approaches its junction with the R168 Trinity Street / R900 Narrow West Street junction the road widens to two straight ahead lanes and a turning lane in both the northbound and southbound direction. The R132 currently operates as a dual carriageway across the Bridge of Peace and onward toward Drogheda Rail Station to the southeast of the study area.

14.17 The R132/Georges Square/R168 Trinity Street junction is a signalised junction and provides pedestrian crossing facilities on all arms of the junction. There are pedestrian footpaths on both side of the R132 but no cycle facilities are currently provided. The road is subject to an urban speed limit of 50 km/hr.

R900 Narrow West Street

14.18 The R900 Narrow West Street is a single carriageway two-way street from the junction with the R132 but continues eastbound passed the junction with Father Connolly Way as a one-way street. The street connects the R132 to Shop Street / Peter Street in an eastbound direction. Generous footpaths run the length of the street on both sides of the road and on-street parking and loading facilities are provided on the northern side of the street for its entire length.

R900 Fair Street

14.19 The R900 Fair Street is a single carriageway one-way street and connects Shop Street in the east to the R132 via a signalised junction at Georges Square. The street has footpaths running the length of the street on both sides of the road and currently accommodates on-street parking.

Father Connolly Way

14.20 Father Connolly Way is a single carriageway two-way street connecting the R132 / Narrow West Street to the river front. The street provides access car parking for private use (OPW & Garda Station). The street has footpaths on both side of the street. The street experiences a drop in height from Narrow West Street towards the River Boyne.

Dominick Street

14.21 Dominick Street is a single carriageway one-way street northbound, connecting the river front / Father Connelly Way to the R900 Narrow West Street. The street provides access to a number of on-street car parking spaces and has footpaths on both sides of the road. Access to the Dominick Street public car parking is also obtained from the street.

Patrickswell Lane

14.22 Patrickswell Street is a narrow one-way northbound street which connects Dominick Street to the R900 Narrow West Street. The street is quite narrow, especially at the northern end, and a narrow footpath is provided on the eastern side of the street.

Old Abbey Lane

14.23 Old Abbey Lane is a narrow pedestrian street running from east to west, connecting Patrickswell Lane to Father Connolly Way. The lane is a pedestrian only route.

Scholes Lane

14.24 Scholes Lane is a narrow pedestrian street running from north to south, connecting R900 Fair Street the R900 Narrow West Street. The lane is a pedestrian only route.

Existing Public Transport Facilities

14.25 The area is served by a northbound and southbound bus stop on the R132/Georges Square, on the west side of the subject area. The bus stop is served by a number of bus services in both directions. The southbound bus stop caters for the D4 and D5 local bus services and also the 188 service from Dundalk. The northbound bus stop caters for the aforementioned D4, D5 and 188 services, but also caters for the 100 (Intercity service), 168, 182A, 190 and 901 services.

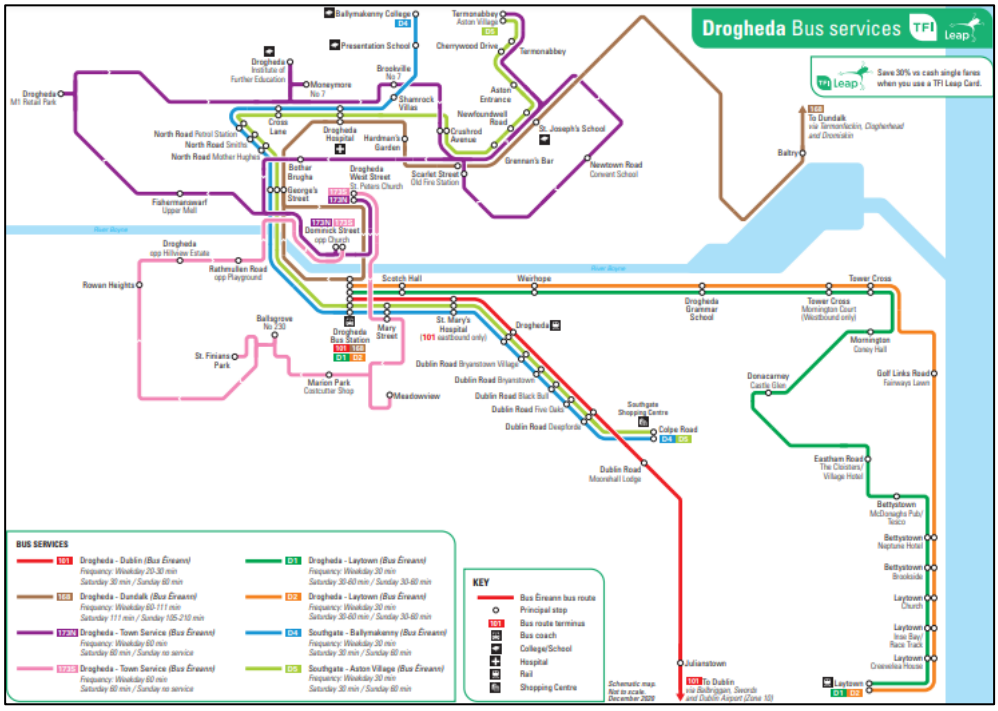

Figure 14.1: Drogheda Bus Services

14.26 Table 14.1 outlines the details of the services operating via the R132/Georges Street

Table 14.1: Bus Service serving Georges Street

Bus Service	Route	Service Frequency
D4 Service (North & Southbound)	Southgate – Ballymakenny (Bus Eireann) (Serving Drogheda Rail & Bus Station)	Weekday 30mins Saturday 60 mins Sunday 60mins
D5 Service (North & Southbound)	Southgate – Aston Village (Bus Eireann) (Serving Drogheda Rail & Bus Station)	Weekday 30 mins Saturday 30mins Sunday 60mins
188 Service (North & Southbound)	Drogheda Hospital – Rathcairn (Local Link)	8 Services a day Monday – Sunday 60-120 mins
100 Intercity Service (Northbound Only)	Drogheda – Dundalk	Weekday 60 mins (Monday – Friday Only)
168 Service (Northbound Only)	Drogheda – Dundalk (Bus Eireann)	Weekday 60-111 mins Saturday 111 mins

		Sunday 105-210 mins
182A Service (Northbound Only)	Drogheda – Ardee - Monaghan	Weekday 120 mins Saturday 120-240 mins Sunday 120-240 mins
190 Service (Northbound Only)	Drogheda – Navan – Trim – Mullingar – Athlone	Weekday 60 mins Saturday 60 mins Sunday 60 mins
901 Service (Matthews Coaches) (Northbound Only)	Marshes Shopping Centre Dundalk – Trinity College Dublin	Weekday 60 mins Saturday 60 mins Sunday 60-210 mins

14.27 Drogheda Rail Station is located to the southeast of the area. The station services trains running between Dublin and Dundalk and onward to Northern Ireland. As well as inter-city train services, there are commuter services running from the station as well.

Existing Pedestrian/Cycling Facilities

14.28 There is a good level of provision of pedestrian facilities in the area, connecting to the town centre and surrounding areas. Pedestrian footpaths run along all the major streets in the study area.

14.29 There are no dedicated cycle facilities currently within the study area other than the provision the Dominick Street Bridge which offers good pedestrian and cycle connectivity with the southern side of the River Boyne and to the bus and rail station.

14.30 Walking and cycling catchment areas from the site based on 10-20 minute journey times have been plotted and analysis can be seen in Figures 14.2 and 14.3.

Figure 14.2: Pedestrian Walking Catchment - Journey Time Analysis[20]

[20] Source: Created with TravelTime API: http://www.traveltimeplatform.com/

Figure 14.3: Cycle Catchment - Journey Time Analysis[21]

14.31 It should be noted that an Active Travel Scheme, promoted by LCC and the NTA, is being proposed along the R132 between St Georges Square to Drogheda Rail Station. The provision of dedicated cycle lanes and enhanced pedestrian facilities will further improve the safety of all road users travelling to and from the area.

Existing Traffic & Parking Conditions

14.32 A number of traffic surveys were undertaken on behalf of LCC to inform the traffic impact of the proposals. TRACIS Ltd and IDASO Ltd obtained data relating to traffic volumes, traffic speeds and parking space utilisation. This data has been used to inform the design development.

14.33 The objectives of the traffic survey were to obtain accurate data on:

- The traffic volumes in and around the study area were undertaken to assess the effect of the design decisions on the capacity of the road network within the study area. These survey too the form of 12-hour classified turning counts (16 sites) and 7-day automatic traffic counts (8 sites);
- The speed of vehicles using these roads, to ensure that the designed layout takes account of the actual speed of vehicles in the area and, if appropriate, seek to modulate the speed of users through design.
- Parking usage statistics inform about the volume of parking available in the area, appropriate for the current and future utilisation, while also providing a high-quality urban public realm design.

[21] Source: Created with TravelTime API: http://www.traveltimeplatform.com/

14.34 Traffic counts and parking surveys were carried out in February and March 2022. The traffic counts were carried out to establish junction and link flows during both the peak hour periods and on an all-day basis.

14.35 The junction turning count surveys were undertaken as part of this and other studies and these surveys were carried out using video cameras at each of the junctions for a 12-hour period. Tables 14.2 and 14.3 outline the main findings of the traffic surveys.

Table 14.2: Traffic Count Location - Summary of Junction Count Survey Data

Location	Road No.	AM Peak Traffic Volume (0800-0900)	PM Peak Traffic Volume (1700-1800)
R132 Georges Street/West Street/Trinity Street Junction	R132	1,336	1,539
R132 Rathmullan Road Junction	R132	1,697	2,106
R132 Donore Road/Meat Market Lane Junction (@ Bus Station)	R132	2,016	2,459
R167 Shop Street Junction	R167	2,072	2,218
R132 Mary Street Junction	R132	1,602	1,654
West Street/Father Connolly Way	R900	213	387
R168 Trinity Street/Fair Green Junction (East Junction)	R168	725	942
R168 Trinity Street/Fair Green Junction (West Junction)	R168	648	862
Fair Street/Magdalane Street	R900	788	657
R900 West Street/Peter Street	R900	596	706
R132 Georges Street/R166 Patrick Street Junction	R132	1,482	1,586
R132/Cross Lane Junction	R132	1,624	1,742

Table 14.3: 2022 Traffic Count Location – Summary of ATC Survey Data (7-day Traffic Flow by Composition & AADT)

Location	Road No.	24 hr Traffic Volume (Light Vehs)	24 hr Traffic Volume (HGV's) (%)	AADT Traffic Volume (vehs)
R168 Trinity Street (East of Simocks Lane Junction)	R168	9,969	383 (3.7%)	10,352
R900 West Street (West of Dominick Street Junction)	R900	2,435	49 (2.0%)	2,485

R900 Fair Street (East of Bolton Street Junction)	R900	2,293	18 (0.6%)	2,311
R132 (North of Windmill Lane Junction)	R132	11,755	468 (38%)	12,223
R132 Bridge of Peace	R132	18,248	1,984 (9.8%)	20,231
John Street		16,220	1,769 (9.8%)	17,989

14.36 A parking survey of the main car parking areas within the study area was also undertaken in order to establish the parking demand within the area. An on-street parking beat survey was also undertaken within the study area for a 12-hour period (07.00-19.00) period on a neutral weekday and summarised by 30-minute time intervals.

Table 14.4 On-Street Parking Surveys Locations – Summary of Survey Data

Car Parking Area	No. of Parking Spaces	Average Occupancy Rate (0700-1900)	Peak Occupancy Rate
Fair Street (West of Bolton St)	17	49%	71%
Fair Street (East of Bolton St)	77	46%	61%
Father Connolly Way	10	60%	80%
Wellington Quay	25	70%	80%
Patrickswell Lane *	7	75%	100%
Dominick Street *	16	75%	100xx%
Scholes Lane	0	0%	0%
Total	152		

* Works at Dominick Street impacted surveys: best estimated assumed.

Table 14.5: Main Off-Street Parking Surveys Locations – Summary of Survey Data

Car Parking Area	No. of Parking Space	Average Occupancy Rate (0700-1900)	Peak Occupancy Rate
Dominick Street Car Park	34	61%	100%
OPW Car Parking Area	60	45%	60%

Accident Information Analysis

14.37 The Road Safety Authority's (RSA) online collision database provides information on historic accident records on roads across Ireland over a 12 year period (2005 – 2016).

14.38 It should be noted that the RSA database is not a comprehensive record of collisions and does not include damage only collisions which might have been reported to the Local Authority / Gardaí. It does, however, provide a useful evidence base that can be used to identify roads that may currently suffer from an existing safety issue. Figure 14.4 illustrates that over the 12-year period, a number of accidents were recorded in the Westgate area, in close proximity to Masterplan area.

Figure 14.4: Collisions Recorded in and around the subject site.

14.39 The initial accident analysis indicated that some accident clusters are experienced around the main junctions of the R132 / Rathmullan Road and the R132/Georges Street /Fair Street junction. There are no details of any factors which could have caused the various accidents however vulnerable users were present in c. 30% of all the accidents recorded. It is possible that vehicle accidents only may have occurred but were unrecorded. Full accident data is contained in the Appendix to this report.

Description of Proposed Project

14.40 The proposed development comprises public realm regeneration works on lands within the Westgate Vision Area of Drogheda, Co. Louth. Please refer to Chapter **5** of this EIAR for a detailed description of the proposed project.

14.41 It should be noted that one of the key proposals, the proposed realignment of the George Square, has been undertaken in conjunction with the NTA / Louth County Council Active Travel Schemes proposed for the area, which involve the upgrade of junctions to better facilitate pedestrian / cyclist / transport movement along this route, slowing the existing traffic speeds along the R132. The relevant schemes include:

- Drogheda R132 Bridge of Peace to MacBride Train Station: Construction of segregated cycle lanes from the Bridge of Peace along the old Dublin Road (the R132) and terminating at MacBride Railway Station (approximately 1.55km); and

- Drogheda Dublin and North Road Cycle/ Pedestrian Design Scheme: Provision of cycle lanes along the R132 North Road from the Rosehill Junction south to the R900 Fair Street junction (approximately 2.0 km).

Potential Impacts

'Do Nothing' Scenario

14.42 If nothing is done to create a more dynamic public realm across the town centre, the area will remain the same and the quality of life for visitors and residents of the town will continue to be negatively impacted by the hostile environmental impacts from unrestrained traffic through the town.

Construction Phase

14.43 During the construction phases some level of impact will be experienced locally on the road network and surrounding area, to include for temporary closures of section of roads to enable removal of existing street furniture, ground works, importing and exporting of materials, storage of material close to the site, etc.

14.44 The construction stage of the proposed development will be phased depending on funding and a detailed programme.

14.45 A Preliminary Construction Environmental Management Plan (pCEMP) has been prepared and is submitted as part of this planning application. This details the scope of the site works and processes. A detailed scheme of works is described in the pCEMP.

14.46 A Construction Stage Temporary Traffic Management Plan will be developed, including the identified haulage routes, in compliance with the Preliminary Temporary Traffic Management Plan developed in consultation with the local authority. The surrounding road network is suitable to accommodate the construction traffic associated with the proposed development and the Construction Traffic Management Plan will include a range of mitigation measures as identified in the pCEMP, to ensure the safety of the workforce on the site and accessing the site, and public safety on the surrounding roads, to minimise construction traffic generation and disruption on the surrounding road network.

14.47 The initial enabling works are to be carried out in accordance with the Project specific pCEMP (Traffic Management, control of surface water, storage of materials etc.). Any movement of materials / excavation works in the various character areas designated will be undertaken and all vehicular access will be via the main distributor road network. Any site compound and materials storage area will be constructed in a suitable location with good accessibility to limit impact on the adjoining road network.

14.48 All construction materials will be sourced locally where possible. This will be based on the necessary constraints of performance, durability, and cost.

14.49 The construction phase may have minimal localised effects in relation to traffic and environmental impacts, but these will only be experienced for brief periods (occasional few hours or day) to enable the movement of material, etc.

Operational Phase

Proposed Access to the Area

14.50 This section considers the measures to be implemented as part of the overall development, to influence the use of more sustainable modes of transport and help minimise the need for private vehicle trips.

14.51 The access strategy for the area recognises the opportunities to encourage use of sustainable modes of travel by:

- Promoting cycling and walking as viable sustainable transport modes for all members of the community; and

- Providing, where possible, traffic free pedestrian and cycle routes, especially where they would facilitate more direct, safer, and pleasant alternatives to those used by the private car.

14.52 The proposed development, with urban realm and street network improvements, comprise:

- Improvements to the Georges Square area (to incorporate the proposed Active Travel Schemes for the wider Drogheda area); and

- Street and laneway improvements in Narrow West Street, Scholes Lane, Father Connolly Way areas.

14.53 The creation of a high-quality pedestrian and cycle network through the Westgate area is a key objective for the scheme, with footpath widths varying from a minimum width of 2m. A plaza area has been provided to the west of the R132 in Georges Square and other plaza areas and footpaths (where width is sufficient) will feature street furniture to encourage people to stay within these pedestrian areas. Pedestrian crossing points have been provided throughout the scheme to coincide with pedestrian desire lines identified by the design team.

14.54 All pedestrian crossings points within the site are sited to create a heightened sense of awareness for drivers of the presence of pedestrians. It is envisaged that the area will become pedestrian dominated and allow for free-flowing pedestrian movement through raised table and courtesy crossing points. The surface and junction treatments will require vehicles to stop or travel slowly at these locations when moving through the site. This will be assisted using tight corner radii at junctions which will also slow vehicles down in line with DMURS guidance. Corduroy tactile paving will be provided at the edge of the carriageway to warn those with visual impairment to the potential hazard of passing vehicles. This tactile paving will also provide a colour contrast for partially sighted users to define pedestrian and vehicle zones.

14.55 Planting will be used at the edge of carriageways to visually differentiate pedestrian footpaths from the shared surface area in the carriageway and encourage pedestrians to stay within the footpath areas. This will be achieved using moveable tree planter boxes and fixed tree planting. The movable planters can be relocated to create unobstructed space during civic events, when road closures are in place within the area. Formal pedestrian crossing points will be provided at either end of the shared surface to encourage formalised crossing.

Georges Square

14.56 The Georges Square area aims to create a quality gateway / arrival space, public spaces, pedestrian linkages, and public realm to ensure inclusivity for all members of the community. The site extends from R900 Fair Street along the R132 to the northern bank of the River Boyne at the Bridge of Peace. However, it should be noted that the proposed design is required to incorporate the current Active Travel Scheme (LCC / NTA Projects) which is being prepared for the area – one of which includes the area south of the R132 / R168 Trinity Street junction and the Bridge of Peace. Therefore, the effective length of the design area within George Square that this application will relate to is less than 100m long.

14.57 In order to accommodate the aforementioned Active Travel Schemes (North and south of the Georges Square area) the existing junction of the R132 Georges Street / R132 Trinity Street / R900 West Street junction Road will receive upgrades to pedestrian and cycle facilities as illustrated on the Figure 14.6, with a reduction in the number of carriageway lanes and widths to facilitate the provision of an on-road cycle lane. The existing vehicular traffic arrangement at this junction has been maintained wherever possible and no realignment of the R168 Trinity Street is proposed.

14.58 As part of the wider Active Travel Scheme, on-road cycle facilities are proposed along the R132 from Drogheda Railway Station in the south to the Rosehall Roundabout in the north – a total length of approximately 4km. In the southbound direction, a 1.5m wide cycle lane are required to commence just south of the R900 Fair Street junction (due to the width of the R132 north of the study area) and travel through George Square on road with the provision of advance stop lines at the junction R168 Trinity Street junction. Cycle parking will be provided on the plaza area to the west of the R132. A 1.5 m wide cycle lane will be provided in the northbound direction through the study area. Generous footpaths and pavement are provided, and a shared used area incorporated within the scheme to connect the western and eastern side of Georges Square. The existing bus stop facilities are to be accommodated within the streetscape in their current locations.

14.59 The lane configuration of the R132 Georges Street within the study area has been broadly influenced by the Active Travel Scheme on either side of the study area and result in the reduction of a through lane in both directions. However, it should be noted that as the Active Travel Schemes extend across the wider Drogheda area and the impact of these schemes will significantly change the volume of traffic arriving into the study area from both directions (e.g. reduced number of traffic lanes and new traffic signals proposed south of the Bridge of Peace at the R132 / Rathmullen Road junction in order to manage traffic flow into Georges Street).

14.60 The measures to be implemented as part of the overall development will increase the use of more sustainable modes of transport and help minimise the need for private vehicle trips. The design and layout of the development will facilitate ease of access to public transport, support walking and cycling and meet the needs of people with disabilities and others whose mobility is impaired through adherence to current design guidelines.

Father Connolly Way / Dominick Street / Patrickswell Lane

14.61 As part of the development scheme, it is proposed to enhance the public realm in and around Abbey and along Father Connelly Way, Dominick Street and Patrickswell Lane. The proposed enhanced layout will include:

- The provision of shared surface area along at the Father Connolly Way / Dominick Street junction with some minor modifications to the junction layout;
- The removal of car parking / bus lay-over along the southern side of Father Connelly Way in order to provide a 2.0m wide cycle lane, footpath and enhance hard and soft landscape along the River Boyne;
- Narrowing of Dominick Street and the removal of car parking spaces in order to enhance user safety;
- Shared Surface treatment on Patrickswell Lane and limit access to the area for 'local access only';
- Relocation of the vehicular access into Dominick Street car park off Dominick Street; and
- Provision of hard and soft landscaping measures to enhance the public realm in the area.

14.62 The development proposals for the area are to enhance the safety and connectivity for sustainable modes in and around the town centre. In the short to medium term, the proposed scheme will maintain and cater for the current level of traffic movements as the current traffic flows (existing one-way and two-way carriageway is being maintained). However, the width of the carriageway has been reduced in order to better channelise vehicle movements and create a safer environment for pedestrians, cyclists and vulnerable road users. The proposed streetscape improvements will also reduce vehicles speeds and thus enhance the environmental credentials of the area.

14.63 The car parking proposals within the area have been reduced and re-orientated in order to enhance the safety of the area and to reduce the number of vehicle manoeuvres within the area. The provision of enhanced cycle and pedestrian facilities along Father Connelly Way will provide an alternative to the need for vehicles to parking in the area. A shared surface area at the Dominick Street junction provides good connection to the pedestrian and cycle facilities on the bridge and onto the southern side of the River Boyne.

14.64 The proposed scheme will have a **positive environmental impact** in relation to providing good pedestrian and cycle connectivity through the area and providing safe connects to the wider area. No traffic impacts are envisaged as a result of the proposals.

14.65 The enhancement of the existing riverbank will have positive effects for the area and long-term benefits as it will encourage a positive travel behaviour in terms of cycling and walking.

Parking Provision

14.66 As there is no quantum of new floorspace proposed as part of the development, there will be no additional parking provided. The development proposals do, however, propose to reduce the level of car parking within the site, with spaces reallocated for urban realm and to facilitate walking and cycling to/from and within the site. As part of the development proposals, a total of 9 no. on-street car parking spaces will be removed from the Georges Street and Fair Street area. An additional 10 parking spaces and space for approximately 2 buses in a parking / lay-over area is to be removed from the southern side of Father Connolly Way. A further 22 on-street parking spaces along Dominick Street and Patrickswell Lane will be removed.

14.67 In total, 41 car parking spaces and a bus lay-over area are to be removed from the within the study area. These spaces have all been removed to maximise permeability of the site for walking and cycling. Details of the existing and proposed parking spaces are provided in Table 14.6.

Table 14.6 On-Street Parking – Existing and Proposed

Parking Facilities	Existing No. of Spaces	Proposed No. of Spaces
Standard Parking Spaces	46	7
Accessible Parking Spaces	4	2
Loading Bays	2	2
Bus Stops / Facilities	4	3
Bicycle Parking Spaces	0	36

14.68 The reconfiguration of spaces has also facilitated a consolidation of the existing disabled bay parking spaces an allows for the provision of Electric Vehicle (EV) charging points.

14.69 The future reconfiguration of the off-street Dominick Street car park will enable future provision for car parking spaces, including additional accessibility spaces and Electric Vehicle spaces right in the heart of the Westgate area.

14.70 The existing car parking facilities within and nearby the application site area are to remain, such as car parking areas at Bolton Street, Fair Street, Dominick Street and Father Connolly Way, and the multistorey Haymarket Car Park is also located approx. 200m to the southeast of the area. With the additional cycle parking facilities proposed for the area, the reduction in the on-street car parking provision within the site will be mitigated.

14.71 Future proposals to extend the Mell Car Park by 15-20 car parking spaces is being reviewed by LCC, and if delivered, will provide additional parking spaces in close proximity to the Westgate area to help cater for any potential car parking shortfall.

Servicing

14.72 All existing accesses to properties will be retained at their existing locations. Access roads within car parks will be realigned and have two-way traffic flow accommodated. Deliveries to the central development site will be maintained and loading bays have been provided to assist this.

14.73 It is envisaged that deliveries access will be required along Patrickswell Lane to service the various premises and the Courthouse and this will be accommodated within the shared surface area proposed for the street. However, through traffic, other than for delivery purposes, will not be encouraged to use the route.

Road Safety Audits

14.74 A Stage 1 Road Safety Audit (RSA) was undertaken of the proposed layout to assess user safety and to highlight potential issues requiring further consideration. The RSA was undertaken by two independent approved auditors and all potential issues and recommendations are to be addressed by the designer and subsequently carried forward within the finalised design layout and during the construction design stage.

Summary of Effects

14.75 An accessibility review was undertaken to assess the opportunities for travel to the site by all relevant modes of transport including walking, cycling public transport and private car. The Westgate Area is located within an existing and established urban centre and therefore benefits from good pedestrian and cycle links. The proposed development will significantly improve pedestrian and cycle facilities within the scheme area.

14.76 The development proposals will not generate any additional traffic to that already experienced in the town centre but could in fact achieve a reduction to the need for private vehicle movements through the provision of the enhanced sustainable travel facilities. Therefore, it is concluded that the proposed development can be accommodated within the surrounding road network.

Cumulative Impacts

14.77 A review of historical planning permissions was undertaken to identify any relevant planning history on or adjacent to the application site that either impacts on the prospects of planning permission being granted for the proposed development, or that could be impacted upon by the proposed development.

14.78 No planning application / decisions have been found within the red line boundary of the site that would inform the proposed development. However, two significant Active Travel Schemes are proposed and will be Part 8 Approval by mid-2024. The various scheme will have significant positive environmental effects for the area by the reduction in traffic lanes and provision of more active travel facilities across the study area.

It should also be noted that the proposed realignment of George's Street/George's Square, has been undertaken in conjunction with the NTA / Louth County Council and the wider active travel proposals for the area. The relevant active travel schemes include:

- Drogheda Dublin and North Road Cycle/Pedestrian Design Scheme: Provision of cycle lanes along the R132 North Road from the Rosehill Junction south to the R900 Fair Street junction (approximately 2.0 km), where possible. This project involves the design work of the provision of cycle lanes along the R132 North Road from the Rosehill Junction south to the R900 Fair Street junction (approximately 2.0 km), where possible. The proposed design work involves the review of existing pedestrian and cycle crossing facilitate along the routes and aims to upgrade junctions and to better facilitate pedestrian/cyclist/transport movement along this route. The slowing the existing traffic speeds along the R132 and an introduction of a shift in current transport modes along this route to sustainable modes is a key aim. Louth County Council is working to submit a planning application for this proposal in March 2024 with a view to complete construction in December 2025.

- Drogheda R132 Bridge of Peace to MacBride Train Station: Construction of segregated cycle lanes from the Bridge of Peace along the old Dublin Road (the R132) and terminating at MacBride Railway Station (approximately 1.55km). The scheme also considers improved cycle facilities from the Boyne Viaduct on Marsh Road and terminating at Mary St. Junction approximately (0.8km). The project also involves the upgrade of junctions to better facilitate pedestrian / cyclist / transport movement along this route, slowing the existing traffic speeds along the R132, an introduction of a shift in current transport modes along this route from car to more sustainable cycle alternative, creating a linkage with proposed Bettystown/Mornington Greenway and creating a linkage between MacBride Station and Drogheda Bus Station. Louth County Council is working to submit a planning application for this proposal in June 2024 with a view to commence construction in March 2025.

14.79 Subject to the approval of both of these developments and due to their direct connection to the area/the enhanced connectivity proposed by these schemes, the road user experience will be enhanced inn terms of active travel and a reduction in the volumes and speed of motorised traffic on the road network. The overall traffic implication of the scheme and associated Active Travel Schemes needs to be assessed on a town wide basis but in principle will make a significant contribution to the reduction of traffic movements on the existing road network.

14.80 We consider that these Part 8 applications will, subject to planning approval, have a direct impact on the proposed development in relation to reducing the level of traffic entering the area, in particular along the R132 and they have been considered as part of the design concept evolution to ensure that the 2040 Westgate Vision Regeneration maximises the potential to link to existing and future infrastructure where possible.

Avoidance, Remedial, and Mitigation Measures

14.81 The following summarises the key mitigation measures proposed to manage the travel demand generated by the scheme during the construction and operational phases.

Construction Phase

Construction Traffic Management Plan

14.82 A detailed Construction Traffic Management Plan, will incorporate the relevant traffic management measures identified in the Outline Construction Environmental Management Plan and will be finalised by the Contractor for the construction stage . This Plan will include the following transport-related measures:

- Working hours that will avoid any significant staff trips during peak hours;
- Appropriate amount of car parking for construction staff to mitigate any potential car parking overspill onto the surrounding residential areas;
- Separation of construction traffic from general traffic where possible and necessary;
- Management and marshalling of construction vehicles when required;
- Contractor will be required to implement a Mobility Management Plan for construction staff, where travel by sustainable modes and car-pooling will be encouraged; and
- Contractor will ensure that the proposed works are carried out in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013).

14.83 The renewal and reconfiguration of street layouts will necessitate the excavation of the existing footpaths and pavements, formation of suitable subbase and levels, relocation of existing utilities, installation of new street surface paving, street furniture and lighting.

14.84 The phasing of the construction works shall be outlined in the detailed Construction & Environmental Management Plan (CEMP) prior to construction. The CEMP will be prepared by the appointed contractor and issued to TCC for agreement prior to works commencing and will be implemented for the duration of the works. Access to the approach roads and properties within the area will be maintained at all times during the construction phase. This may require limited night works for final surfacing and utility installation etc.

14.85 Scheduling of these activities will be addressed in the CEMP. The construction works will always allow one lane of traffic on any section of road under construction. The key streets and bus routes will be maintained through the town.

14.86 As construction works are standard in nature and well understood, there is a low probability that traffic accidents will occur. Normal good construction and traffic management practices are to be employed and will ensure that the risk of accidents will be low.

Operational Phase

Development Proposals

14.87 The overall proposed scheme will include a number of measures that are deemed beneficial to improve the public realm, enhancing the pedestrian and cycle connectivity and road safety across the area. The measures which will be implemented as part of the overall development to influence the use of sustainable modes of transport and help minimise the need for private vehicle trips. The design and layout of the development will facilitate ease of access to public transport, support walking and cycling and meet the needs of people with disabilities and others whose mobility is impaired through adherence to current design guidelines.

14.88 The development proposals recognise opportunities to encourage use of sustainable modes of travel by promoting and providing, where possible, traffic free pedestrian and cycle routes, especially where they would facilitate more direct, safer, and pleasant alternatives to those used by the private car. These opportunities are achieved by the:

- Realignment and narrowing of the carriageway on Georges Square to accommodate proposed Active Travel Schemes, provided from the Railway Station to Rosehill Roundabout; and

- Creation of new urban civic spaces, streets, road junctions, pedestrian pavements, steps, and cycle routes to encourage active travel.

14.89 Please refer to Chapter 5 of this EIAR for a detailed description of the proposed development.

Active Travel Strategy

14.90 An 'Active Travel Strategy' is a strategy for managing multi-modal access to a site or development, focusing on promoting access by sustainable modes. The objective of national and local policy is to reduce reliance on the car for travel. Inducements and encouragement should be applied to influence change, and this can be achieved through the delivery of 'An Active Travel Strategy' for the area.

14.91 An Active Travel Strategy would encourage use of sustainable transport measures during the operational phase and should relate to all future developments within the area in order to form part of the wider mitigation measures (e.g., strategy highlighting the proximity of local services, public transport provision, schools and walking/cycle distances to same, etc). The proposed 'hard measures' that will facilitate safer pedestrian, cycle and public bus access will be provided as part of this application and could be further complimented by future works in the area.

14.92 The overarching ambition of this Active Travel Strategy is to: *Make active travel an attractive and realistic choice for short journeys in the area.* Delivering on this ambition will lead to more people walking and cycling, contributing to the following outcomes:

- Improved health through an increase in physical activity;

- Reduced congestion on the highway network by providing better travel choices; and

- Safer active travel.

14.93 These outcomes will be realised by delivering the following actions:

14.94 **Action 1**: Integrate active travel into planning: The strategy would influence the layout and design decisions and ensure active travel is prioritised in future planning processes. In addition, the strategy will encourage active travel to be better integrated with other types of transport e.g. walking to the bus stop or cycling to schools. This will be led by current commissioning guidance and best practice, existing policies and strategies with a commitment to encouraging active travel. These include:

- Inform the site layout and development in line with guidance and best practice;
- Support the policies to ensure that active travel is used to deliver sustainable growth and development within the planning applications;
- Ensure active travel routes are a priority, both within developments and linking sites to other services, community facilities and transport hubs making active travel an attractive and realistic choice for short journeys;
- Ensure sufficient areas within developments for green spaces and attractive routes and environments that encourage active travel; and
- Work with strategic transport providers to deliver infrastructure that supports active travel.

14.95 **Action 2**: Provide and maintain appropriate routes for active travel: The area will provide fit-for-purpose active travel routes that people want to use. The existing and proposed cycling and walking routes will be developed over time as the wider development allow. They will be continuous and direct where possible and serve important community services in the area, which means that some people who would like to actively travel can be. There is a need to provide facilities such as safe crossings along routes and secure cycle storage at the proposed residential development. It is also important that these routes are well maintained and designed to be as inclusive as possible. These include:

- Giving appropriate consideration to active travel within the proposed development in terms of pedestrian and cycle facilities and connections;
- Ensure active travel resources such as appropriate signage is provided to enable safe and effective active travel;
- Make reasonable adjustments to active travel route design to maximise the inclusivity and accessibility to all users; and
- Evaluate funding for active travel infrastructure and maintenance.

14.96 **Action 3:** Support active travel in the community: There is a need to encourage and promote active travel in the community. People need the skills, confidence, information

and, most importantly, the motivation to make active travel their preferred choice. Initiatives needed to support this change include pedestrian and cycle training, road safety campaigns, projects to encourage active travel to schools and work and promotion of available routes and facilities. These include:

- Supporting initiatives including area wider travel planning and other active travel programmes.
- Promote active travel and provide support to increase levels of active travel within the proposed development
- Integrate walking and cycling for travel purposes into local services through the provision of safer facilities.
- Develop and maintain recreational routes as a means of introducing people to active travel.
- Support road safety initiatives for all road users, especially the most vulnerable such as cyclists and pedestrians
- Promote locally-based programmes to encourage walking and cycling, and integrate active travel as part of longer journeys involving public transport

Monitoring & Reinstatement Measures

Construction Phase

14.97 A detailed Construction Traffic Management Plan will operate during construction of the proposals, and this will be monitored and amended where necessary during the works. The plan will be finalised for the construction stage of the project by the Contractor and will address all transport-related measures.

14.98 Any construction access point, compounds, or other requirements necessary during the construction stage will be reinstated.

Operational Phase

14.99 The implementation of an Active Travel Strategy for the area, in conjunction with the proposed schemes for the wider town, would encourage use of sustainable transport measures during the operational phase and should relate to all future developments in order to form part of the wider mitigation measures. The proposed 'hard measures' that will facilitate safer pedestrian, cycle and public bus access will be provided as part of this application, in conjunction with the pending schemes.

Residual Impacts

Construction Phase

14.100 The key residual impacts associated with the proposal include:

- The proposals may have a minor short term negative impact in relation to reducing noise and air quality through the operation of construction vehicle in

the area, however this will only be for short periods of time and subject to a details Construction Management Plan.

Operational Phase

14.101 The key residual impacts associated with the proposal include:

- The proposals for the area consist of the urban street and public area improvements and is not seen as a generator of vehicular destination trips. The vehicle movements generated by these proposals with particular reference to the character and number of trips in/out combined per day will therefore have a **negligible impact** on the adjoining existing road network;

- The proposals for the R132 St Georges Street have been designed to a line with future Active Travel proposals on the Bridge of Peace and along the R132 towards the rail station in terms of promoting a shift towards more sustainable modes of travel in the town;

- The proposals are consistent with national, regional and local policy by encouraging shared spaces urban street design which encourages the prioritisation of pedestrian and cyclists over vehicles;

- The proposals will not increase traffic volumes in the town centre, in fact the aim is to encourage a shift in modal split toward more sustainable modes of travel;

- The proposals are designed in line with DMURS and therefore have been designed in accordance with the best practice taking the safety of all street users, pedestrian and cyclists, into account;

- The overall proposed scheme will include a number of measures that are deemed beneficial to improve the public realm, enhancing the pedestrian and cycle connectivity and road safety across the area. The measures which will be implemented as part of the overall development to influence the use of sustainable modes of transport and help minimise the need for private vehicle trips. The design and layout of the development will facilitate ease of access to public transport, support walking and cycling and meet the needs of people with disabilities and others whose mobility is impaired through adherence to current design guidelines.

- The proposals will have a positive impact in relation to reducing noise and air quality through the better management of vehicle movements and parking within the town centre.

14.102 Given that the proposals will encourage prioritisation of pedestrian and cyclist travel in the town, it will have a **positive effect** by setting a benchmark for lowering traffic levels in the town in the short, medium, and long term.

'Worst Case' Scenario

Construction Stage

14.103 The worst-case scenario would be that the construction activities required to replace the public realm paving and street furniture could have a **negative impact for a short period of time** on the highly sensitive fabric of the town and its operations in terms of traffic movements. This will be very short lived and can be mitigated across through traffic management and scheduling of works.

Operational Stage

14.104 It has been clearly demonstrated that the development proposals fall within the category of development where the use of sustainable transport solutions will provide the town centre with a real option for change. The enhanced pedestrian and cycle offering is aimed at making a real behavioural change to how the area is accessed.

14.105 Future traffic growth predictions have been undertaken for the area and surrounding area, however, these represent a worst case scenario situation only. Once the town wide Active Travel Schemes are provided this will assist in reducing traffic and HGV movement through the town, thus reducing congestion levels and allowing for ease of access around the town to reduce reliance on the car.

14.106 Table 14.4 outlines the future year AADT volumes envisaged for the study area if normal growth rates are applied.

Table 14.4: Worst Case Scenario - Future Year Traffic Predication – Environmental Purposed Only

Location	2022 AADT Traffic Volume (vehs)	2027 AADT Traffic Volume (vehs)	2032 AADT Traffic Volume (vehs)	2037 AADT Traffic Volume (vehs)
R168 Trinity Street (East of Simocks Lane Junction)	10,352	11,408	12,185	12,744
R900 West Street (West of Dominick Street Junction)	2,485	2,734	2,916	3,048
R900 Fair Street (East of Bolton Street Junction)	2,311	2,540	2,708	2,828
R132 (North of Windmill Lane Junction)	12,223	13,471	14,390	15,051
R132 Bridge of Peace	20,231	22,426	24,047	25,214
John Street	17,989	19,940	21,382	22,420

14.107 Future traffic predictions are based on the current traffic behaviour in the area. The proposed scheme, the enhanced connectivity for sustainable modes of travel and delivery of the Active Travel Scheme around the town centre will result in a **significant reduction** in the level of traffic to and through the area.

Interactions

14.108 This section of the EIAR Chapter identifies interactions that are likely to occur between Material Assets (Traffic and Transportation) and the various other environmental factors considered within this EIAR as a result of the construction and/or operation stages of the proposed project and/or any proposed monitoring/mitigation measures.

Population and Human Health

Construction Stage

14.109 There is an interaction between the Material Asset (Traffic and Transportation) and Population and Human Health predicted during the construction stage of the proposed development as a result of traffic generation. However, it is considered that this **will not result in any likely significant effects** as the works will be managed ad carried out in accordance with standard practices and environmental mitigation advanced.

Operation Stage

14.110 There is an interaction between the Material Assets (Traffic and Transportation) and Population and Human Health predicted during the operational stage of the proposed development as a result of traffic generation. The proposals will result in a narrowing of the carriageway so that existing traffic is more centralised and allow for the provision of a plaza area on the eastern side of Georges Square and enhance the pedestrian and cyclist experience in the area. The improved streetscape in the area, the proposed of the walkway along the Medieval Wall and the facilities along the River Boyne will enhance the existing character of the various areas and improve the experience for the users.

14.111 A Stage 1 Road Safety Audit has been undertaken in order to assess the impact of the proposed development on the human health and safety and the recommended mitigation measures have been reviewed and incorporated in the proposed development. Proper planning and traffic management should be employed to minimise congestion and ensure safety through the proposed scheme.

Air Quality & Climate

Construction Stage

14.112 The construction phases of the project have the potential to releases atmospheric pollutants into the surrounding environment as a result of construction related vehicle movements. Emissions from site services, such as energy consumption and waste management, can contribute to air pollution and climate change. Implementing energy-efficient systems and proper traffic management practices will help minimise these impacts. Mitigation measures detailed for the construction stages will however aid in reducing levels of air pollution.

Operation Stage

14.113 There is no significant impact predicted on local air quality concentrations at human exposure receptors or designated sites as a result of the operational stage of the proposed development. The current composition of traffic and traffic volumes are set to be reduce due to the provision of area wider Active Travel Schemes.

Noise & Vibration

Construction Stage

14.114 There is an interaction between noise / vibrations and traffic through generation of construction stage traffic. Overall predictions are that there will be no significant noise impact generated during construction stages due to traffic generation with appropriate mitigation.

Operation Stage

14.115 There is an interaction between noise / vibrations and traffic through generation of operational stage traffic. Proper mitigation measures should be employed to minimise disturbance to nearby residents and sensitive receptors. Overall predictions are that there will be no significant noise impact generated during the operational stages due to traffic generation with appropriate mitigation.

Difficulties in Compiling Information

14.116 No difficulties were encountered in compiling this chapter other than the impact that Covid-19 Travel restrictions played in relation to the collection of traffic data. Analysis of the traffic data available has been undertaken to ensure that the most accurate representation of the traffic behaviour in and around the area have been included in this assessment.

References

14.117 A number of reference document have assisted in the design development of the proposal and have been referred to in the preparation of this transport chapter, namely:

- Transport Infrastructure Ireland (TII) National Roads Authority (NRA) Traffic and Transport Assessment Guidelines May 2014;
- Environmental Protection Agency (2017) Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports (Draft August 2017);
- TII NRA Design Manual for Roads and Bridges (DMRB) TA 79/99 Traffic Capacity of Urban Roads;
- TII Publications PE-PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections May 2019;
- The Department of Transport, Tourism and Sport (DTTAS) and the Department of Environment, Community and Local Government (DoECLG) Design Manual for Urban Roads and Streets (DMURS) March 2013;
- Department of Transport, Traffic Management Guidelines.
- Smarter Travel: A Sustainable Transport Future, 2009 – 2020;
- TII Road Safety Audit GE-STY-01024 December 2017; and
- TII Road Safety Audit Guidelines GE-STY-01027 December 2017.

15. Material Assets (Site Services)

Introduction

15.1 This chapter describes and assesses the potential impacts of the proposal with respect to Material Assets (Site Services). Article 3(1) of amended Directive states:

> *'The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:*
>
> *d) **material assets**, cultural heritage and the landscape…* [**our emphasis**.]

15.2 The Environmental Protection Agency's (EPA) "*Guidelines on the Information to be Contained in Environmental Impact Assessment Reports"* (May 2022) advises that '*Material assets can now be taken to mean built services and infrastructure*'.

15.3 This Chapter deals with the 'Site Services' element of Material Assets. Other elements including 'Waste' and 'Traffic & Transportation' are assessed in Chapters 13 and 14, respectively, of this EIAR.

Methodology

15.4 This section describes the baseline/receiving environment with respect to Material Assets (Site Services) under the following headings:

- Surface Water Drainage
- Wastewater Drainage
- Water Supply
- Electricity
- Telecommunications
- Gas

15.5 The primary approach involves conducting a comprehensive desktop study. This study entails acquiring service maps from different utility providers to identify the precise positioning of utilities within the vicinity. The purpose is to assess their influence on the proposed developments throughout the construction and operational stages.

15.6 The service maps provided by the utility companies and local authorities gives information that is approximate and 'best knowledge' only. The information supplied cannot be relied upon as being accurate, either in location, pipe size and/or levels. Indeed the service maps are issued with disclaimers to this effect.

15.7 A Utility Mapping Surveying was procured and provided for the Westgate area so that site services could be mapped more accurately and information could become available

for other services for which maps are not typically issued. The mapping survey is presented in **Appendix 15.1**.

15.8 The utility mapping survey used a combination of ground penetrating radar (GPR) scanning and physical surveying of access covers at surface level to produce a comprehensive baseline site services survey. The following services were mapped:

- Wastewater;
- Water Supply;
- Surface Water;
- Electricity;
- Gas;
- Telecommunications;
- Lighting.

Consultation

15.9 Contact has been established with the various utility companies to request their service maps. In case any complications arise with the existing services due to the proposed development, consultation will be conducted with these companies during the construction stage to address and resolve any potential issues.

Existing/Receiving Environment (Baseline)

15.10 This section describes the baseline/receiving environment with respect to Material Assets (Site Services) under the following headings:

- Wastewater Drainage
- Water Supply
- Surface Water Drainage
- Electricity
- Gas
- Telecommunications
- Lighting

Wastewater

15.11 This sub-section reviews and provides an overview of the existing wastewater infrastructure, including any pipe sewer networks, foul pumping stations and

wastewater treatment plants, within and adjacent to the application site. The wastewater assets located within and/or adjacent to the application site are:

- Foul drains are present along all of the major roadways within the site area, including Fair Street, West Street, George's Street, Dominic Street, Father Connolly Way and St Patrickswell Lane.

- A large diameter foul sewer, estimated 750mm diameter, is laid along West Street, through 'The Abbey' and then along St Patrickswell Lane.

- The various foul networks within the site area generally fall as per the site topography from the northwest to south east direction. The foul sewers combine at a manhole at the junction of Dominic Street and Father Connolly Way, with the trunk outlet pipeline heading towards Wellington Quay.

- It is to be expected that individual small diameter domestic connections from buildings extend from the property boundary to the foul sewers in a perpendicular direction to the road/footpath.

- There are no wastewater pumping stations or wastewater treatment plants recorded within the site area.

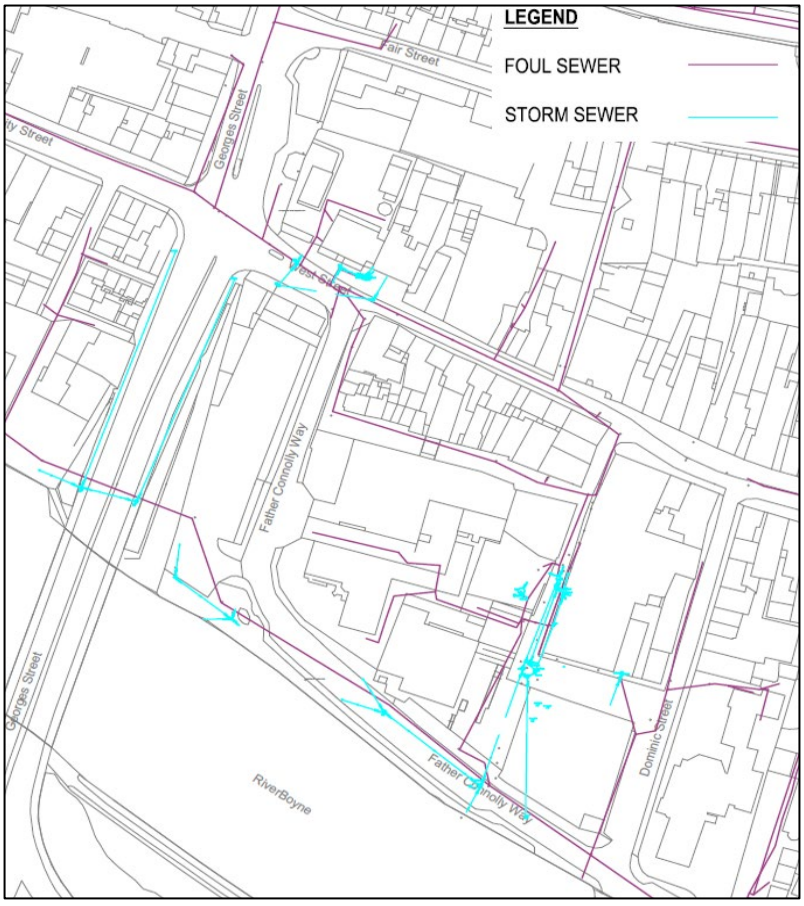

Figure 15.1: Map showing Existing Foul and Storm Sewer Network.

Water Supply

15.12 This sub-section reviews and provides an overview of the existing water infrastructure, including pipe networks, pumping stations and treatment plants within and adjacent to the application site. The water supply assets located within and/or adjacent to the application site are:

- Water supply pressure mains are present along all of the major roadways within the site area, including Fair Street, West Street, George's Street, Dominic Street, Father Connolly Way and St Patrickswell Lane.

- The main concentration of the watermains is within the major trunk roads i.e. George's Street, Fair Street and West Street.

- A single watermain is shown to be laid along Father Connolly Way in the northern footpath from the junction of West Street to the junction with Dominic Street.

- It is to be expected that individual small diameter tappings from buildings extend from the property boundary to the main distribution watermains in a perpendicular direction to the road/footpath.

- There are no water pumping stations or water treatment plants recorded within the site area.

Figure 15.2: Map showing Existing Water Supply Network

Surface Water

15.13 This section reviews and provides an overview of the existing surface water infrastructure, including pipe networks, pumping stations and surface water attenuation areas within the application site. The surface water assets located within and/or adjacent to the application site are (see also **Figure 15.1** above):

- There is a dedicated surface water pipeline that extends from St Patrickswell Lane and discharges to the River Boyne beside the car park at the junction of Father Connolly Way and Dominic Street. Prior to discharging to the river, this pipeline also is shown to pick up surface water drainage on Father Connolly Way.

- A surface water pipeline is present from the junction of George's Street and West Street. This pipeline traverses along George's Street in a southern direction and then turns ninety degrees west before the bridge. It would be expected that this pipeline also discharges to the River Boyne.

- There are limited surface water pipelines recorded along most roads e.g. West Street, Fair Street, Dominic Street and upper section of George's Street. It is

likely these areas operate on a combined system, where surface water discharges to the foul system.

- There are no surface water pumping stations or attenuation areas recorded within the site area. However, a flow control device was recorded in a surface water manhole located to the eastern side of the Garda station near St Patrickswell Lane. It is therefore likely that there is an attenuation area present nearby.

Electricity

15.14 This sub-section reviews and provides an overview of the existing ESB infrastructure, including underground and overhead infrastructure, and substations, within the application site. The ESB infrastructure located within and/or adjacent the application site are:

- Medium voltage and low voltage power supply cables, both overhead and underground, are present along all of the major roadways within the site area, including Fair Street, West Street, George's Street, Dominic Street, Father Connolly Way, Old Abbey Lane and St Patrickswell Lane.

- Underground power cables are shown to be laid through 'The Abbey' area from the junction with Father Connolly Way to St Patrickswell Lane.

- No ESB substations are recorded within the site area.

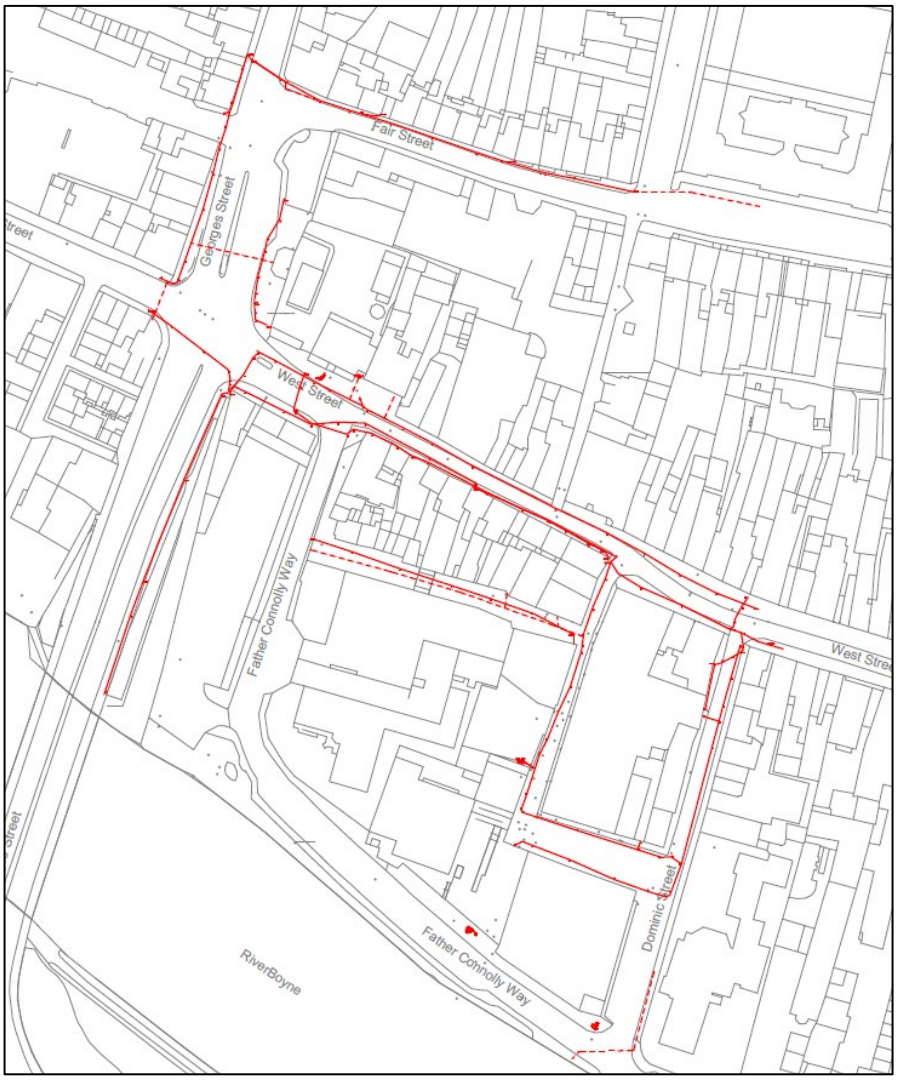

Figure 15.3: Map showing Existing Power Supply Network

Gas

15.15 This sub-section reviews the existing Gas Network Ireland infrastructure, including distribution and transmission infrastructure, within the application site. The following is a brief description of the Gas Network Ireland infrastructure located within and adjacent to the application site:

- No high pressure transmission mains are recorded within the site area.
- Medium pressure and low pressure distribution gas pipelines are present along all of the major roadways within the site area, including Fair Street, West Street, George's Street, Old Abbey Lane, Dominic Street, Father Connolly Way and St Patrickswell Lane.
- A gas main is shown to run parallel to, and in close proximity, to the medieval wall.
- Gas manholes are present within the car park located at the junction of Father Connolly Way and St Patrickswell Lane.

Figure 15.4: Map showing Existing Gas Supply Network

Telecommunications

15.16 This section reviews and provides an overview of the existing telecommunications infrastructure, including Eir and Virgin Media infrastructure, within the application site. The following is a brief description of the telecommunications infrastructure located within and/or adjacent the application site:

- Overhead and underground telecom are present along all of the major roadways within the site area, including Fair Street, West Street, George's Street, Dominic Street, Father Connolly Way and St Patrickswell Lane.

- Underground telecom infrastructure is shown to be laid through 'The Abbey' area from the junction with Father Connolly Way to St Patrickswell Lane.

- Fibre optic and virgin media infrastructure recorded along Dominic Street and section West Street. Infrastructure also recorded along George's Street at junction with West Street and Fair Street.

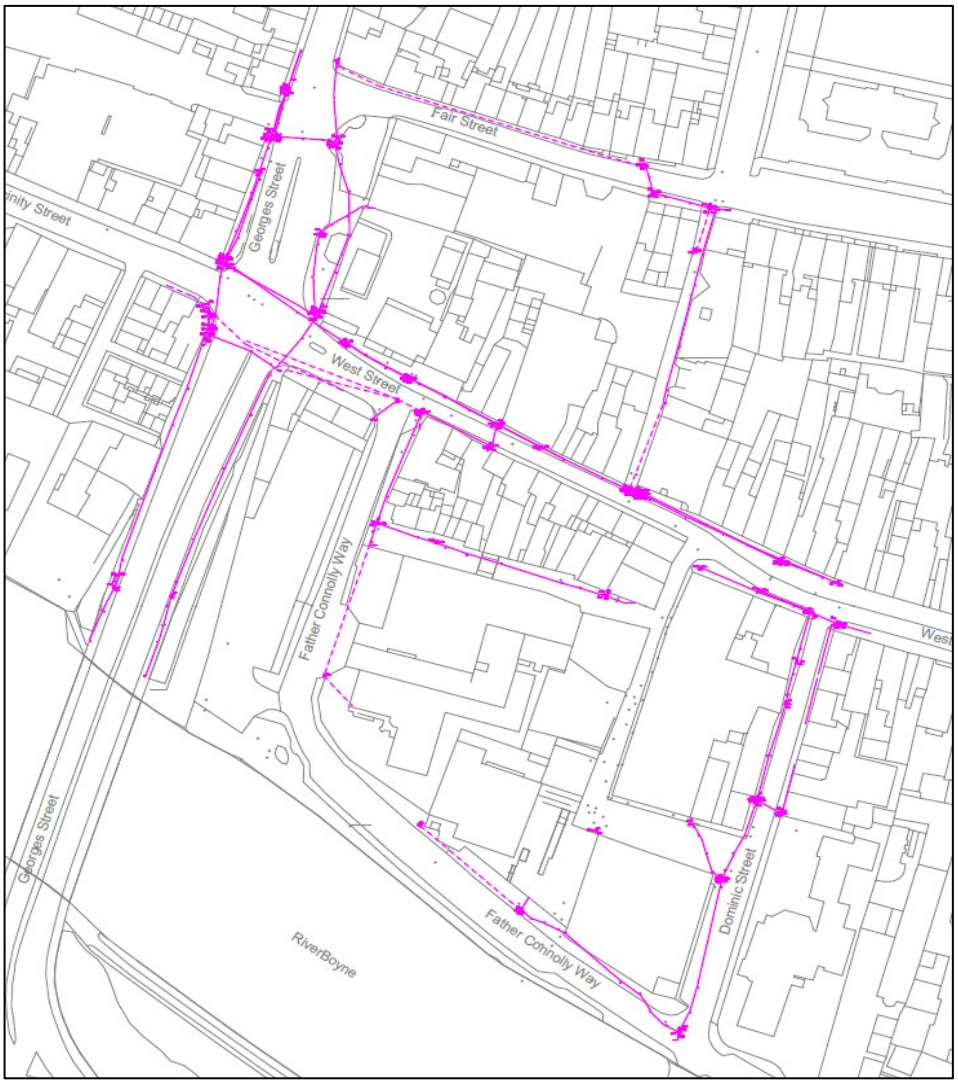

Figure 15.5: Map showing Existing Eircom Services

Lighting

15.17 This sub-section reviews and provides an overview of the existing lighting infrastructure, including street lighting and traffic lighting infrastructure, within the application site. The following is a brief description of the lighting infrastructure located within and/or adjacent to the application site:

- Underground cabling for supply to traffic lights is recorded along George's Street, particularly at the junctions with West Street and Fair Street where traffic signalling is present.

- Public street lighting cabling is recorded along both footpaths at Father Connolly Way in the vicinity of the Riverfront and also at the lower section of Dominic Street.

Characteristics of the Proposed Development

15.18 Please refer to Chapter **5** of this EIAR for a detailed description of the proposed project. The following components of the proposals are of note with respect to Site Services:

- Wastewater: all proposed connections will be integrated into the current wastewater network. Based on the proposed development, no significant impact is anticipated on the existing system.

- Water Supply: There is not much disturbance expected to the exiting water supply or infrastructure. Any new connections will be taken out from the existing supply network. Again, no significant impact is expected.

- Surface Water: The existing water supply and infrastructure are not anticipated to experience significant disruptions. New connections will be made from the current supply network, and it is also expected that there will be no significant impact as a result.

- Electricity: New connections will be established using the existing grid, and it is expected that the proposed development will not have a significant impact on the infrastructure.

- Gas: The proposed development is not expected to have a notable impact on the existing gas infrastructure.

- Telecommunications: The existing telecommunications infrastructure is not anticipated to be significantly affected by the proposed development.

- Lighting: The lighting design for the proposed project will adhere to suitable standards and connect to the existing grid. Apart from the removal and replacement of the current lighting fixtures with new ones, as outlined in the proposed development plan, there will be no significant impact on the existing infrastructure.

Assessment of Potential Effects

15.19 This section assesses the potential direct and indirect impacts, in the absence of mitigation measures, of the proposed project on the environment with respect to 'Material Assets - Site Services' for the both the construction and operational phases. The predicted impacts of a 'do nothing' scenario and a 'cumulative impacts' scenario are also considered.

Do Nothing' Scenario

15.20 If the proposed project does not progress and a "Do Nothing" scenario is adopted, it is expected that there will be no changes to the existing conditions regarding Surface Water drainage, wastewater drainage, Water Supply, and other utilities within and/or adjacent to the application site. Consequently, the current infrastructure and systems in place would remain unaffected, and there would be no modifications or upgrades implemented to address any potential issues or future demands. This status quo would extend to all relevant aspects and services associated with the subject site, ensuring their

continuity without any intervention or improvements. If a do-nothing approach is taken then unaffected infrastructure would be subject to general maintenance and wear.

Potential Impacts during Construction Phase

15.21 One of the main potential impacts of the scheme on site services is the requirement to connect new infrastructure, i.e. new power supply and new drainage, to the existing network to bring into service. This work will likely require approval from relevant authorities. During the construction phase of the proposed town regeneration project, there are potential impacts on various infrastructure components that need to be considered. These impacts are as follows:

Wastewater

15.22 The construction process may involve the need for temporary adjustments to the existing sewer system to connect the new development. This may require diverting or rerouting wastewater flows, which could temporarily affect the capacity and efficiency of the treatment facilities. Upgrades or expansions are usually necessary to accommodate the increased volume of wastewater, however, since there are no proposed dwellings the additional flows into the system will be minimal. Any new connections will temporarily affect the line.

Water Supply

15.23 Construction activities can disrupt the existing water supply system. Temporary interruptions in water service may occur as connections are made to new water connections. Adequate measures should be implemented to minimize the impact on residents and ensure continuous access to clean and reliable water during the construction period.

Surface Water

15.24 Excavation and construction work can alter the natural flow of surface water, impacting drainage systems and potentially increasing the risk of flooding. Proper management practices should be employed to control and redirect stormwater runoff during construction to mitigate any adverse effects on the existing surface water management systems. It is important to exercise caution and implement measures to minimize construction runoff into the existing surface water drainage system.

Electricity

15.25 Construction activities may require temporary disruptions or rerouting of electrical power supply. This can affect the reliability and availability of electricity to the surrounding areas during the construction phase. Adequate planning and coordination with utility providers are necessary to minimize the impact on the electrical grid and ensure a continuous power supply and safety during construction.

Gas

15.26 Similar to electricity, the construction process may involve temporary disruptions or adjustments to the gas supply network. This could result in temporary interruptions or rerouting of gas service to neighbouring areas. Proper coordination with gas utility providers is essential to minimize any inconveniences and ensure a safe and uninterrupted gas supply.

Telecommunications

15.27 Construction work can potentially interfere with existing telecommunications infrastructure, leading to temporary disruptions in services such as telephone, internet, and mobile connectivity. Adequate measures should be taken to ensure minimal downtime and swift restoration of telecommunications services to minimize the impact on residents and businesses.

Lighting

15.28 The installation of new street lighting systems during the construction phase may require temporary disruptions or adjustments to existing lighting infrastructure. Proper planning and scheduling should be employed to minimize any inconvenience caused by temporary lighting interruptions and ensure public safety during the construction period.

General

15.29 It is crucial for the project team to carefully assess and mitigate these potential impacts on the various infrastructure components to minimize disruptions and ensure the smooth integration of the new infrastructure into the existing network. Proper planning, coordination, and proactive measures can help mitigate these temporary inconveniences and ensure a successful implementation of the town regeneration project.

15.30 Given the nature of the works, all redevelopment areas will require the re-setting of access covers to new levels. Some access covers which are in poor condition may require to be replaced.

15.31 It is possible that existing services may require to be diverted, either temporarily or permanently, to facilitate the works. This may be required where the existing utilities are located within the footprint of foundations for overhead or other structures, such as the freestanding Corten steel structure within the confines of the Abbey and overhead Corten steel pavilion structure at the Riverfront adjacent Father Connolly Way. Another possibility is that services are laid at a very shallow depth and therefore cause an issue where levels are proposed to be reduced as part of the permanent works.

Potential Impacts during Operational Phase

15.32 No likely significant impacts on utilities and services are predicted during the operational stage of the proposed project. During the operational phase of the proposed town regeneration project, there are potential impacts on various infrastructure components that need to be considered. These impacts are as follows:

Wastewater

15.33 Generally the increased population and activities resulting from the town regeneration project may put additional strain on the wastewater system. The existing sewer system and treatment facilities must be capable of handling the higher volume of wastewater generated by the regenerated town. Adequate capacity and maintenance measures should be in place to ensure efficient wastewater management without causing backups or overflows. The proposed infrastructure will have a minimal impact on the network during the operational phase.

Water Supply

15.34 The water sources, storage facilities, and distribution networks should be capable of meeting the enhanced water requirements.

Surface Water

15.35 Proper stormwater management strategies, such as improved drainage infrastructure and sustainable practices, should be implemented to minimize the risk of flooding, erosion, and water pollution. Continuous monitoring and maintenance are crucial to preserve the integrity of the surface water management systems.

Electricity

15.36 The existing electrical grid must have sufficient capacity and resilience to meet the heightened power requirements. Upgrades, expansions, or integration of renewable energy sources may be necessary to ensure a reliable and sustainable electricity supply to the residents and businesses.

Gas

15.37 The existing gas supply network should be capable of accommodating this higher demand without compromising safety and efficiency. Monitoring gas supply, conducting regular maintenance, and addressing any necessary infrastructure upgrades are vital to ensure uninterrupted gas service.

Telecommunications

The existing network should be capable of providing reliable and high-speed connectivity to residents and businesses. Continuous monitoring, maintenance, and potential enhancements to the telecommunications infrastructure may be necessary to ensure seamless communication services.

Lighting

15.38 The installation and maintenance of street lighting systems in the regenerated town are essential for public safety and aesthetics. Proper functioning and regular upkeep of the lighting infrastructure are necessary to maintain adequate visibility and enhance the overall ambiance of the town.

General

15.39 It is crucial for the project team and relevant stakeholders to anticipate and address these potential impacts during the operational phase of the town regeneration project. Adequate planning, regular maintenance, and proactive measures will help ensure the efficient and sustainable operation of the infrastructure components and provide a high-quality living environment for the residents.

Potential Cumulative Impacts

Wastewater

15.40 Cumulative impacts may include temporary disruptions to the existing sewer system during construction activities, potentially affecting wastewater treatment facilities' capacity and efficiency. Excavation and construction work can lead to sediment runoff, which may impact water quality and the functionality of the wastewater management system. Further impacts may arise, during the operational phase, from increased wastewater generation due to possible future developments, putting additional strain

on the sewer system and treatment facilities. Proper management, regular maintenance, and potential upgrades are necessary to ensure the efficient treatment and disposal of wastewater, reducing cumulative impacts on the environment and public health.

Water Supply

15.41 Cumulative impacts may involve temporary disruptions to the water supply system as connections are made to new sources or storage facilities. Construction activities such as excavation can impact water quality through sediment runoff and potential contamination. Cumulative impacts may result from increased water demand in the regenerated town, necessitating proper management and infrastructure upgrades to ensure a sustainable water supply. Efficient water conservation practices and regular monitoring of water resources are essential to mitigate cumulative impacts on water availability and maintain water quality.

Surface Water

15.42 Cumulative impacts may include alterations to drainage patterns, increased stormwater runoff, and sediment discharge into water bodies. Proper erosion control measures, stormwater management practices, and sedimentation ponds should be implemented to minimise cumulative impacts on surface water quality and hydrological systems. Cumulative impacts may arise from ongoing changes in land use, increased impervious surfaces, and altered surface water flows due to the regenerated town. Sustainable drainage solutions, regular monitoring, and preservation of natural watercourses can mitigate cumulative impacts, reducing the risk of flooding and preserving water quality.

Electricity

15.43 Cumulative impacts may involve temporary disruptions to the electrical supply as connections are made to new infrastructure. Construction activities can also pose risks to electrical infrastructure integrity, potentially requiring repairs or upgrades. Other impacts may result from increased electricity demand due to population growth and additional infrastructure requirements later on. Proper capacity planning, integration of renewable energy sources, and grid resilience measures are necessary to minimize cumulative impacts on the electrical system and ensure reliable power supply.

Gas

15.44 Cumulative impacts may include temporary disruptions or adjustments to the gas supply network during construction activities. Proper coordination, monitoring, and timely restoration of gas service are essential to minimize impacts on gas availability. Other cumulative impacts may arise from increased gas demand due to any further upgrade projects in the town, requiring infrastructure upgrades and efficient management to meet the enhanced requirements. Monitoring gas supply, addressing potential infrastructure upgrades, and exploring alternative energy sources can minimize cumulative impacts on the gas distribution network.

Telecommunications

15.45 Cumulative impacts may involve temporary disruptions to existing telecommunications infrastructure during construction activities. Proper planning, coordination, and prompt restoration of services are necessary to minimize impacts on communication systems. Cumulative impacts may also result from increased data traffic and communication

demands. Continuous monitoring, capacity upgrades, and the deployment of advanced technologies are important to ensure reliable and efficient telecommunications services, reducing cumulative impacts on connectivity.

Lighting

15.46 Cumulative impacts may include temporary disruptions or adjustments to existing lighting infrastructure during construction activities. Proper planning, scheduling, and maintenance are necessary to minimize cumulative impacts on lighting services and public safety. Further impacts may arise from increased lighting requirements for any future projects in the town, necessitating efficient lighting design and energy management strategies.

Worst Case Scenario

15.48 In any town regeneration project, it is important to consider the worst-case effects that may arise if mitigation measures substantially fail. While these scenarios are unlikely, it is crucial to understand and address potential risks.

- Wastewater: If mitigation measures fail, there could be issues with wastewater management. This could lead to the contamination of water bodies, such as rivers or lakes, posing a threat to aquatic ecosystems and public health. It may result in the spread of waterborne diseases and damage to the environment.

- Water Supply: Failure in mitigating the effects on the water supply system could result in disruptions or shortages of clean water for residents. This could lead to inconvenience, health risks, and the need for alternative water sources or emergency measures, such as water rationing.

- Surface Water: Inadequate management of surface water, especially during heavy rainfall or flooding events, could lead to urban flooding. This may cause property damage, displacement of residents, and disruption of daily activities. Additionally, uncontrolled surface water runoff can lead to erosion, sedimentation, and degradation of natural habitats.

- Electricity: If mitigation measures fail, the town could experience power outages or unreliable electricity supply. This would impact various aspects of daily life, including businesses, hospitals, and households relying on electricity for essential services. It may lead to productivity losses, safety hazards, and inconvenience for the community.

- Gas: In the worst-case scenario, ineffective mitigation of gas-related infrastructure could result in leaks or explosions. This poses significant safety risks to residents, businesses, and the environment. It may cause injuries, property damage, and the need for evacuation or emergency response measures.

- Telecommunications: If mitigation measures for telecommunications infrastructure fail, it could result in disruptions to communication services. This would impact connectivity, emergency response systems, and the ability to access critical information. It could hinder daily operations, public safety, and communication during emergencies.

- Lighting: Inadequate mitigation measures for lighting infrastructure could lead to insufficient or inadequate lighting in public spaces. This may affect the safety and security of residents, particularly during night-time. Poor lighting conditions can increase the risk of accidents, criminal activities, and a sense of insecurity within the community.

- To minimize the likelihood of these worst-case effects, it is essential to prioritize robust planning, thorough risk assessments, and effective implementation of mitigation measures. Regular monitoring, maintenance, and prompt responses to any issues that arise are crucial to ensure the success and sustainability of the town regeneration project.

Avoidance, Remedial & Mitigation Measures

Mitigation Measures during Construction Phase

15.49 Standard industry practice for construction works will ensure the safety of the workers and maintain the integrity and operational functions of any service, above or underground.

15.50 Prior to construction, drainage networks, electrical cabling, gas pipelines, and telecommunications infrastructure will be recorded and incorporated into the detailed design of the scheme to avoid any clashes where possible.

15.51 Any service diversions required will be designed and constructed in accordance with the requirements and under the supervision of the relevant utility provider. Businesses and residents will be notified in advance of any service disruptions.

15.52 Contractors will be provided with service maps and the utility mapping survey prior to Construction. Services shall be traced on the ground with a cable avoidance tool (CAT) or similar by the Contractor. Where service locations are still not known or confirmed, the Contractor may be required to excavate trial pits to confirm locations and depths as necessary.

Wastewater:

- Implement sediment and erosion control measures to prevent construction-related sedimentation in nearby water bodies.

- Use temporary sediment barriers and sediment traps to contain and filter runoff from construction sites.

- Implement best management practices for construction activities near sewer lines to avoid damage and contamination.

- Implement proper storage and handling of construction materials to prevent accidental spills or leaks that could impact wastewater quality.

Water Supply:

- Implement measures to protect water sources from construction-related contamination, such as using sediment barriers around water intake areas.

- Schedule construction activities in a way that minimizes disruption to water supply infrastructure and ensures continuous service.

- Implement erosion control measures to prevent sedimentation in water supply reservoirs or catchment areas.

- Regularly inspect and maintain water supply infrastructure to address any damage or leaks during the construction process.

Electricity:

- Ensure that construction activities do not pose risks to existing electrical infrastructure, such as overhead power lines or substations.

- Follow proper safety protocols and guidelines to prevent accidents, such as ensuring that workers have appropriate training and personal protective equipment.

- Coordinate with electrical utility companies to safely carry out any necessary modifications or upgrades to the electrical grid.

- Minimize disruption to electrical services during construction by implementing temporary power supply solutions if required.

Gas:

- Identify and locate underground gas pipelines before construction activities commence to prevent accidental damage.

- Coordinate with gas utility companies to ensure safe work practices around gas infrastructure.

- Implement proper excavation techniques and use equipment with underground utility detection capabilities to avoid damaging gas pipelines.

- Maintain proper ventilation and monitoring during construction activities in confined spaces where gas pipelines are present.

Telecommunications:

- Coordinate with telecommunication service providers to ensure the protection of existing infrastructure during construction.

- Implement safe digging practices to avoid damaging underground telecommunication cables.

- Establish clear communication channels between the construction team and telecommunication service providers to address any issues or concerns promptly.

- If necessary, provide temporary telecommunication solutions during construction to minimize disruptions to the community.

Lighting:

- Implement temporary lighting solutions to ensure adequate visibility and safety in construction areas, especially during night-time work.

- Minimize light pollution during construction by using directional lighting and shielding fixtures to prevent unnecessary light spillage.

- Coordinate with local authorities and stakeholders to ensure compliance with lighting regulations and community preferences.

- Conduct regular inspections to ensure that lighting fixtures are properly installed, functioning correctly, and do not pose any safety hazards.

- These measures should be aligned with local regulations and industry best practice.

Mitigation Measures during Operational Phase

15.53 No mitigation measures are considered necessary during the operation stage.

Monitoring Measures

Construction Stage Monitoring Measures

15.54 During the construction phase, several monitoring measures will be implemented for the following aspects:

- Wastewater: Efforts will be made to closely monitor the wastewater management systems, ensuring that any potential impacts on the existing infrastructure are minimized. Regular monitoring of wastewater discharge and treatment processes will be conducted to maintain compliance with environmental regulations.

- Water Supply: Monitoring measures will be implemented to ensure the continuity and quality of the water supply during the construction phase. This may involve regular inspections of water sources, pipes, and connections to detect and address any issues promptly.

- Surface Water: Monitoring of surface water bodies, such as rivers, lakes, or ponds, will be carried out to assess any potential impacts from construction activities. Measures will be taken to prevent sediment runoff, erosion, and pollution of surface water, ensuring compliance with environmental standards. Minimal impact to the existing infrastructure to be made while resetting and replacing the existing drainage in line with the proposed development.

- Electricity: Monitoring measures will be put in place to oversee the electricity supply and usage during the construction phase. This may involve regular inspections of electrical infrastructure, connections, and equipment to ensure safety, efficiency, and compliance with electrical codes and regulations.

- Gas: Monitoring efforts will be undertaken to oversee the gas supply and infrastructure throughout the construction phase. This may include inspections of

gas connections, meters, and appliances to ensure proper functioning and compliance with safety regulations.

- Telecommunications: Monitoring measures will be implemented to assess the performance and reliability of telecommunications systems during construction. Regular checks of connectivity, network infrastructure, and signal quality will be conducted to address any issues promptly and maintain uninterrupted communication services.

- Lighting: Monitoring will be conducted to ensure the proper functioning of lighting systems throughout the construction phase. This may involve regular inspections of lighting fixtures, connections, and energy consumption to optimize efficiency, address any malfunctions, and adhere to lighting standards.

- Overall, comprehensive monitoring measures will be undertaken for wastewater, water supply, surface water, electricity, gas, telecommunications, and lighting to mitigate any potential impacts on existing infrastructure and ensure compliance with relevant regulations and standards.

Operational Phase Monitoring Measures

15.55 During the operational phase, various monitoring measures should be implemented to ensure the efficient and sustainable functioning of the following aspects:

- Wastewater: Continuous monitoring of wastewater management systems will be carried out to ensure proper treatment and disposal of wastewater. Regular inspections and sampling of wastewater discharge will be conducted to assess compliance with environmental regulations and maintain the quality of water bodies.

- Water Supply: Monitoring measures will be put in place to ensure the reliable and uninterrupted supply of water throughout the operational phase. Regular inspections of water sources, infrastructure, and distribution networks will be conducted to detect and address any leaks, pressure issues, or water quality concerns promptly. All measures to comply with Irish water standards.

- Surface Water: Ongoing monitoring of surface water bodies will be undertaken to assess the impact of the operational phase on their quality and ecological health. Regular sampling and analysis of surface water will be conducted to identify any potential pollution sources and implement appropriate mitigation measures.

- Electricity: Continuous monitoring will be carried out to ensure the reliable and efficient supply of electricity during the operational phase. Regular inspections of electrical infrastructure, meters, and energy consumption patterns will be conducted to optimize efficiency, identify potential faults, and ensure compliance with safety regulations.

- Gas: Monitoring efforts will be implemented to oversee the gas supply and usage throughout the operational phase. Regular inspections of gas infrastructure, equipment, and safety measures will be conducted to detect and address any potential leaks, malfunctions, or compliance issues.

- Telecommunications: Ongoing monitoring measures will be in place to ensure the seamless functioning of telecommunications systems. Regular checks of connectivity, network performance, and service quality will be conducted to address any issues promptly and ensure uninterrupted communication services.

- Lighting: Monitoring will be undertaken to ensure the efficient operation of lighting systems throughout the operational phase. Regular inspections of lighting fixtures, energy consumption, and lighting levels will be conducted to optimize efficiency, address any malfunctions, and ensure compliance with lighting standards.

Residual Impacts

15.56 After the application of mitigation measures as prescribed above, it is anticipated that residual impacts on site services will be slight.

Interactions

15.57 In the context of Material Assets - site services, the following interactions with various environmental factors should be considered:

- **Population & Human Health**: The EIAR takes into account the interactions between "Material Assets - Site Services" and "Population & Human Health" concerning the proposed project. During the construction stage, potential impacts may arise due to excavation work in areas where built services are present, including the risks of encountering live electricity lines or causing damage to live gas or water mains.

- **Biodiversity**: The EIAR takes into account the interactions between "Material Assets - Site Services" and "Biodiversity".Site services, particularly waste management and drainage systems, can affect local ecosystems and biodiversity. Ensuring appropriate waste disposal and treatment methods will help protect sensitive habitats and species especially near the woodland walk area.

- **Land, Soils, & Geology**: The EIAR takes into account the interactions between "Material Assets - Site Services" and "Land, Soils & Geology" regarding the proposed project. During the construction stage, potential impacts may occur due to activities such as the removal of topsoil and earthworks to facilitate the construction of roads and infrastructure service provision, storage systems, and trench excavations for site service installation.

- **Hydrology & Hydrogeology**: The EIAR takes into account the interactions between "Material Assets - Site Services" and "Hydrology & Hydrogeology" with regards to the proposed project. During the construction stage, potential impacts may arise due to the connection of services and the implementation of Sustainable Urban Drainage Systems (SUDS), which could affect the hydrology and hydrogeology of the area.

- **Air Quality & Climate**: The EIAR takes into account the interactions between "Material Assets - Site Services" and "Air Quality & Climate". Emissions from site

services, such as energy consumption and waste management, can contribute to air pollution and climate change. Implementing energy-efficient systems and proper waste management practices will help minimize these impacts.

- **Noise & Vibration**: Site services, such as waste collection and maintenance activities, can generate noise and vibrations. Proper scheduling and mitigation measures should be employed to minimize disturbance to nearby residents and sensitive receptors.

- **Landscape**: The EIAR takes into account the interactions between "Material Assets - Site Services" and "Landscape". Site services infrastructure such as proposed overhead power cables, underground services etc.. can have impacts on the landscape. Careful planning and design should be employed to minimize these effects and integrate the infrastructure into the surrounding environment.

- **Roads, Traffic & Transportation**: The EIAR considers the interactions between "Material Assets - Site Services" and "Roads, Traffic & Transportation". Site services can generate additional traffic, particularly during construction and maintenance activities. Proper planning and management should be employed to minimize congestion and ensure safe transportation.

- **Waste Management**: The EIAR considers the interactions between "Material Assets - Site Services" and "Waste Management". Proper waste management practices are crucial for minimizing environmental impacts and ensuring public health. The design and operation of waste management, especially during construction phase, facilities should adhere to relevant regulations and guidelines.

- **Archaeology**: The EIAR takes into account the interactions between "Material Assets - Site Services" and "Archaeology". Site services construction and maintenance activities can potentially impact archaeological resources. Proper planning, surveying, and mitigation measures should be implemented to preserve and protect these resources.

- **Architectural Heritage**: The EIAR takes into account the interactions between "Material Assets - Site Services" and "Architectural Heritage". Site services infrastructure should be designed and located in a manner that respects and preserves architectural heritage. Coordination with local authorities and heritage experts will help ensure the protection of historical and culturally significant structures.

Difficulties Encountered

15.58 There were no difficulties encountered in the preparation of this chapter.

References

- EPA Ireland. “EPA Maps.” Gis.epa.ie, 2010, gis.epa.ie/EPAMaps/.

- EPA. “Monitoring and Assessment Publications.” *Www.epa.ie*, www.epa.ie/publications/monitoring--assessment. Accessed 7 June 2023.

16. Cultural Heritage & Archaeology

16.1 IAC Archaeology (IAC) has prepared this chapter on behalf of LCC to assess the impact, if any, as a result of the proposed project, on the archaeological and cultural heritage resource within and in the vicinity of lands within the Westgate Vision Area of Droghed.a, Co. Louth (ITM 708472, 775280, Figure 16.1).

16.2 The assessment was undertaken by Faith Bailey and Jacqui Anderson of IAC Archaeology (IAC). Faith (MA, BA (Hons), MIAI, MCIfA) has over 19 years of experience in archaeological and cultural heritage consultancy and has been responsible for the production of EIAR and assessments for all aspects of development nationwide. Jacqui (MA, BA, MIAI) has seven years' experience in the commercial archaeological sector in Ireland and specialises in the production of archaeological assessments and EIAR across all sectors of development.

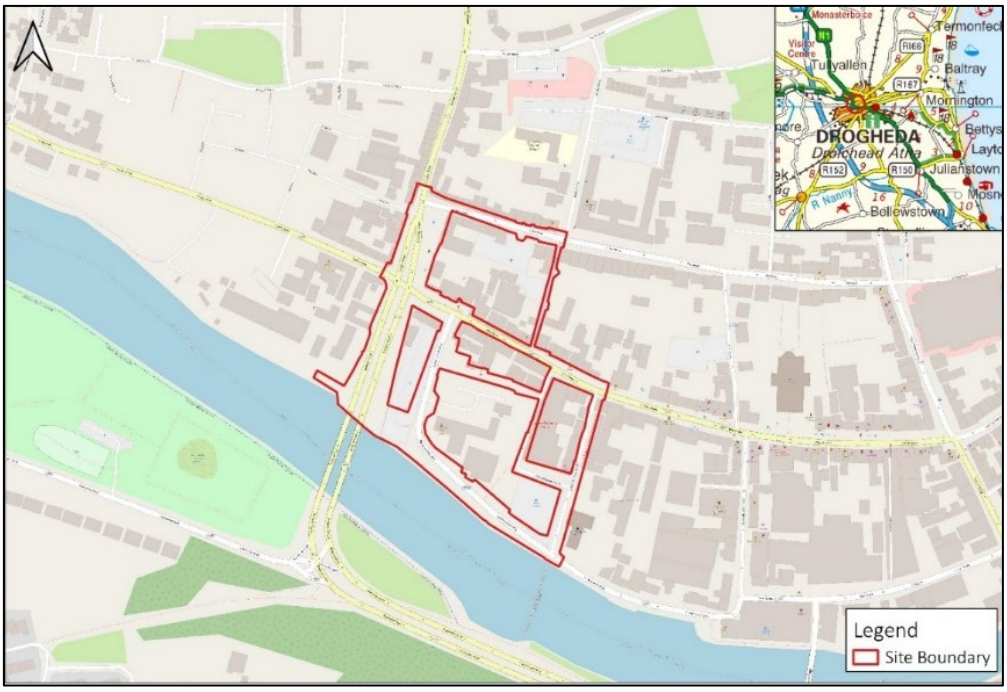

Figure 16.1: Site location

16.3 This study determines, as far as reasonably possible from existing records, the nature of the archaeological and cultural heritage resource in and within the study area of the proposed development using appropriate methods of study. The study area is defined as an area measuring 100m from the application site.

16.4 Desk-based assessment is defined as a programme of study of the historic environment within a specified area or site that addresses agreed research and/or conservation objectives. It consists of an analysis of existing written, graphic, photographic, and electronic information in order to identify the likely heritage assets, their interests and significance and the character of the study area, including appropriate consideration of the settings of heritage assets (Chartered Institute for Archaeologists (CifA) 2014).

16.5 This leads to the following:

- Determining the presence of known archaeological assets that may be affected by the proposed development;
- Assessment of the likelihood of finding previously unrecorded archaeological remains during the construction programme;
- Determining the impact upon the setting of known cultural heritage sites in the surrounding area; and
- Suggested mitigation measures based upon the results of the above research.

16.6 An impact assessment and a mitigation strategy has been prepared by IAC Archaeology. The impact assessment is undertaken to outline potential adverse impacts that the proposed development may have on the archaeological and cultural heritage resource, while the mitigation strategy is designed to avoid, reduce, or offset any such adverse impacts.

Definitions

16.7 In order to assess, distil and present the findings of this study, the following definitions apply:

16.8 'Cultural Heritage' where used generically, can be an over-arching term applied to describe any combination of archaeological, architectural, and cultural heritage features, where the term:

- 'Archaeological heritage' is applied to objects, monuments, buildings or landscapes of an (assumed) age typically older than AD 1700 (and recorded as archaeological sites within the Record of Monuments and Places).
- 'Cultural heritage', where used specifically, is applied to other (often less tangible) aspects of the landscape such as historical events, folklore memories and cultural associations.

Methodology

16.9 Research for this report was undertaken in two phases. The first phase comprised a desk-based survey of all available archaeological, historical and cartographic sources. The second phase involved a field inspection of the study area.

Paper Survey

- Record of Monuments and Places for County Louth;
- Sites and Monuments Record for County Louth;
- National Monuments in State Care Database;
- Preservation Orders List;

- Register of Historic Monuments;
- Topographical files of the National Museum of Ireland;
- Cartographic and written sources relating to the study area;
- Louth County Development Plan 2021–2027;
- Place name analysis;
- Aerial photographs;
- Excavations Bulletin (1970-2023)

16.10 **Record of Monuments and Places (RMP)** is a list of archaeological sites known to the National Monuments Section, which are afforded legal protection under Section 12 of the 1994 National Monuments Act and are published as a record.

16.11 **Sites and Monuments Record (SMR)** holds documentary evidence and field inspections of all known archaeological sites and monuments. Some information is also held about archaeological sites and monuments whose precise location is not known e.g. only a site type and townland are recorded. These are known to the National Monuments Section as 'un-located sites' and cannot be afforded legal protection due to lack of locational information. As a result, these are omitted from the Record of Monuments and Places. SMR sites are also listed on a website maintained by the Department of Housing, Local Government and Heritage (DoHLGH)– www.archaeology.ie.

16.12 **National Monuments in State Care Database** is a list of all the National Monuments in State guardianship or ownership. Each is assigned a National Monument number whether in guardianship or ownership and has a brief description of the remains of each Monument. The Minister for the Department of Housing, Local Government and Heritage (DoHLGH) may acquire national monuments by agreement or by compulsory order. The state or local authority may assume guardianship of any national monument (other than dwellings). The owners of national monuments (other than dwellings) may also appoint the Minister or the local authority as guardian of that monument if the state or local authority agrees. Once the site is in ownership or guardianship of the state, it may not be interfered with without the written consent of the Minister.

16.13 **Preservation Orders List** contains information on Preservation Orders and/or Temporary Preservation Orders, which have been assigned to a site or sites. Sites deemed to be in danger of injury or destruction can be allocated Preservation Orders under the 1930 Act. Preservation Orders make any interference with the site illegal. Temporary Preservation Orders can be attached under the 1954 Act. These perform the same function as a Preservation Order but have a time limit of six months, after which the situation must be reviewed. Work may only be undertaken on or in the vicinity of sites under Preservation Orders with the written consent, and at the discretion, of the Minister.

16.14 **The topographical files of the National Museum of Ireland** are the national archive of all known finds recorded by the National Museum. This archive relates primarily to artefacts but also includes references to monuments and unique records of previous

excavations. The find spots of artefacts are important sources of information on the discovery of sites of archaeological significance.

16.15 **Cartographic sources** are important in tracing land use development within the development area as well as providing important topographical information on areas of archaeological potential and the development of buildings. Cartographic analysis of all relevant maps has been made to identify any topographical anomalies or structures that no longer remain within the landscape.

16.16 **Documentary sources** were consulted to gain background information on the archaeological and cultural heritage landscape of the proposed development area. A full list of references is provided in Section 16.4.

16.17 **Development Plans** contain a catalogue of all the Protected Structures and archaeological sites within the county. The Louth County Development Plan (2021–2027) was reviewed to obtain information on cultural heritage sites in and within the immediate vicinity of the proposed development area.

16.18 **Place Names** are an important part in understanding both the archaeology and history of an area. Place names can be used for generations and in some cases have been found to have their root deep in the historical past.

16.19 **Aerial photographic coverage** is an important source of information regarding the precise location of sites and their extent. It also provides initial information on the terrain and its likely potential for archaeology. A number of sources were consulted including aerial photographs held by the Ordnance Survey and Google Earth.

16.20 **Excavations Bulletin** is a summary publication that has been produced every year since 1970. This summarises every archaeological excavation that has taken place in Ireland during that year up until 2010 and since 1987 has been edited by Isabel Bennett. This information is vital when examining the archaeological content of any area, which may not have been recorded under the SMR and RMP files. This information is also available online (www.excavations.ie) from 1970-2023.

Field Inspection

16.21 Field inspection is necessary to determine the extent and nature of archaeological and historical remains, and can also lead to the identification of previously unrecorded or suspected sites and portable finds through topographical observation and local information.

16.22 The archaeological field inspection entailed:

- Walking the proposed development and its immediate environs.
- Noting and recording the terrain type and land usage.
- Noting and recording the presence of features of archaeological or historical significance.
- Verifying the extent and condition of any recorded sites.

- Visually investigating any suspect landscape anomalies to determine the possibility of their being anthropogenic in origin.

Consultation

16.23 Following the initial research, a number of statutory and voluntary bodies were consulted to gain further insight into the cultural background of the baseline environment, receiving environment and study area, as follows:

- Department of Housing, Local Government and Heritage – the Heritage Service, National Monuments and Historic Properties Section: Record of Monuments and Places; Sites and Monuments Record; Monuments in State Care Database; Preservation Orders and Register of Historic Monuments;

- National Museum of Ireland, Irish Antiquities Division: topographical files of Ireland;

- Louth County Council: Planning Section; and

- Historical and Ordnance Survey Maps.

Guidance and Legislation

16.24 The following legislation, standards and guidelines were consulted as part of the assessment.

- National Monuments Act, 1930 to 2014;

- The Planning and Development Acts, 2000 (as amended);

- Heritage Act, 1995 (as amended);

- Draft Advice Notes on Current Practice (in the preparation of Environmental Impact Statements), 2015, EPA;

- Guidelines on the Information to be Contained in Environmental Impact Assessment Report 2022, EPA;

- Frameworks and Principles for the Protection of the Archaeological Heritage, 1999, (formerly) Department of Arts, Heritage, Gaeltacht, and Islands; and

- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 2000 and the Local Government (Planning and Development) Act 2000.

Existing/Definitions

16.25 The quality and type of an impact can be classed as one of the following (as per the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA 2022)):

- Negative Impact: A change which reduces the quality of the environment, for example a change that will detract from or permanently remove an archaeological or cultural heritage site from the landscape;

- Neutral Impact: A change which does not affect the quality of the environment; or

- Positive Impact: A change which improves the quality of the environment, for example a change that improves or enhances the setting of archaeological or cultural heritage site.

16.26 The below terms are used in relation to the archaeological and cultural heritage and relate to whether a site will be physically impacted upon or not:

- Direct Impact: Where an archaeological/cultural heritage feature or site is physically located within the footprint of the proposed development and entails the removal of part, or all, of the monument or feature; and

- Indirect Impact: Where a feature or site of archaeological or cultural heritage merit or its setting is located in close proximity to the footprint of a development.

Significance of Effects

16.27 Impact definitions (description of effects) are as per the most recent EPA guidelines (2022):

- Imperceptible: An effect capable of measurement but without noticeable consequences.

- Not significant: An effect which causes noticeable changes in the character of the environment but without noticeable consequences

- Slight Effects: An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.

- Moderate Effects: An effect that alters the character of the environment in a manner that is consistent with existing and emerging trends.

- Significant Effects: An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.

- Very Significant: An effect which, by its character, magnitude, duration or intensity significantly alters the majority of a sensitive aspect of the environment.

- Profound Effects: An effect which obliterates sensitive characteristics.

Receiving Environment (Baseline Scenario)

Archaeological and Historical Background

16.28 The application site is located within the townland of Moneymore, Drogheda Town, County Louth and is situated immediately north of the River Boyne. The application site is predominantly located within the zone of archaeological potential for the historic town of Drogheda (LH024-041), which is a recorded monument.

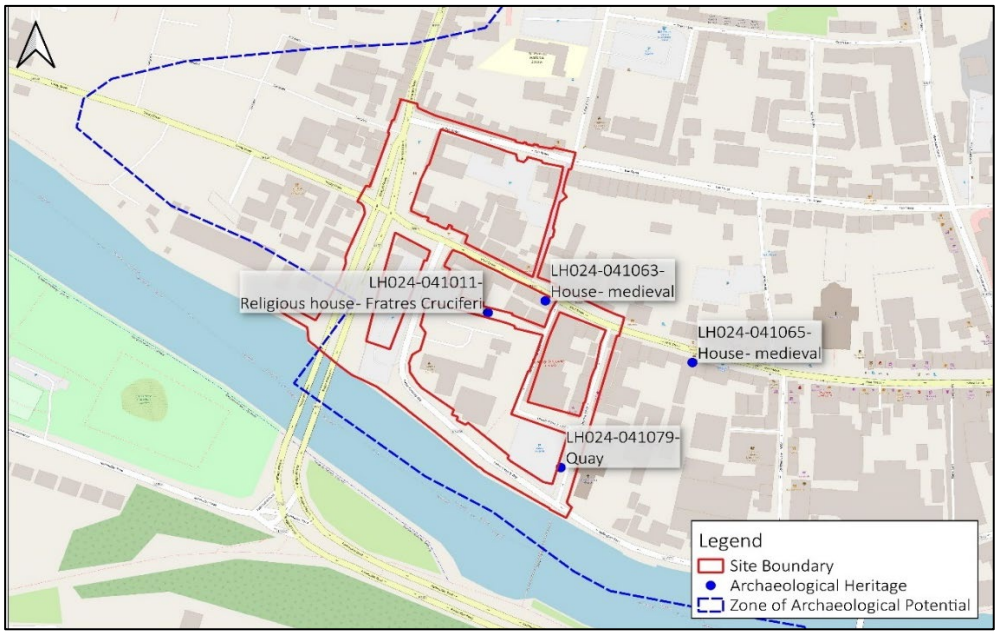

Figure 16.2: Recorded archaeological sites within the study area

16.29 As identified in Figure 16.2 and described in detail in Appendix 16.1, there are three specific recorded monuments within the application site, these being:

- The Old Abbey (St. Mary d'Urso). (LH024-041011);
- the line of the medieval town walls and the site of two gates (recorded in the RMP as town defences LH024-041014, Figure 16.3); and
- the site of a quay (LH024-041079).

Figure 16.3: Town defences of Drogheda (LH024-041014), showing the proposed development area (Google Earth 2022)

16.30 Town defences possess National Monument status under the National Policy on Town Defences (DoEHLG, 2008). As the Old Abbey (St. Mary d'Urso) is a medieval structure in the ownership of the local authority, this structure is also considered to be a National Monument.

16.31 There are two further recorded archaeological sites within the 100m study area of the proposed development area (see Figure 16.2), comprising two medieval houses (LH024-041063/5).

Prehistoric Period

Mesolithic Period (c. 8000–4000 BC)

16.32 Although recent evidence suggests the possibility of a human presence in the southwest of Ireland as early as the Upper Palaeolithic (Dowd and Carden 2016), it is believed that much of Ireland, including Counties Meath and Louth, would have been under extensive glaciation frequently throughout that period. Therefore, the Mesolithic period is the earliest time for which there is clear evidence of prehistoric activity in this part of Ireland.

16.33 During this period people hunted, fished and gathered food and appear to have had a mobile lifestyle. Such transient lifestyles leave little evidence in the archaeological record and the most common evidence of Mesolithic activity is the scatter of flint tools and the by-products of their manufacture, known as debitage.

16.34 While there is no evidence for Mesolithic activity within the immediate surrounding landscape, the River Boyne is known to have been exploited by Mesolithic groups-settlement has been identified in the wider region, such as within the *Brú na Bóinne* World Heritage Site, situated c. 5.7km to the west-southwest.

Neolithic Period (c. 4000–2500 BC)

16.35 The Neolithic period provides the first evidence of the emergence of farming societies in Ireland, triggering a change from mobile lifestyles to more sedentary and permanent settlement. This afforded the further development of agriculture, which altered the physical landscape. Forests were rapidly cleared and field boundaries constructed. Pottery was also being produced, possibly for the first time as well as a variety of other artefacts including polished stone axes, a variety of flint tools and saddle querns for grinding corn. People lived in rectangular houses that contained hearths as well as specially demarcated areas for activities such as food preparation.

16.36 An early Neolithic rectangular house and a large causewayed enclosure were excavated c. 1.9km to the southwest of the proposed development area (Licence No.: 20E0082). Early Neolithic pottery in the form of carinated bowls were recovered from a number of posthole fills (Piera 2021).

16.37 With the advent of the Neolithic period the emergence of the megalithic tomb tradition also occurred. There are four main types of megalithic tomb; court cairn, portal tomb, passage tomb and the wedge tombs of the Neolithic-Bronze Age transition. These tombs were large communal burial places but also acted as ritual centres for the living populations. One of the most renowned of these centres are the large Neolithic complexes at Newgrange, Knowth and Dowth, upstream of Drogheda in the Boyne River Valley. These are protected as part of the UNESCO World Heritage Site of *Brú na Bóinne*,

c. 5.7km to the west-southwest. Excavations at this site revealed complex phases of activity beginning in the Neolithic and continuing into the Bronze Age.

Bronze Age (c. 2500–800 BC)

16.38 The Bronze Age heralded further change within society both in terms of material culture and social practises as well as the nature of the construction and use of burial sites and monuments, with the production and use of metal marking the beginning of this period. The Boyne Valley continued to be a place of importance throughout this period. Many of the earlier tomb sites were reused and altered and further megalithic structures were created; however, it was during this time that the burial of the individual became more typical. Cremated or inhumed bodies were often placed in a cist, a small stone box set into the ground, or a stone lined grave. Burials were often made within cemeteries, which were either unenclosed or else marked in the landscape with the construction of an earthen barrow. Barrows of this period often vary in form and can include the ring-ditch, the embanked ring-ditch, the ring barrow, the bowl barrow and the bowl barrow lacking an external bank. In general, ring-ditches date to the Bronze Age, with the earlier examples being simpler in form and later examples incorporating entrances and a wider range of burials practices.

16.39 The most commonly identified Bronze Age site in Ireland is the burnt mound or *fulacht fia*. Although burnt mounds of shattered stone occur as a result of various activities that have been practiced from the Mesolithic to the present day, those noted in close proximity to a trough are generally interpreted as Bronze Age cooking/industrial sites. They generally consist of a low mound of burnt stone, commonly in horseshoe shape, and are found in low lying marshy areas or close to streams. Often these sites have been ploughed out and survive as a spread of heat shattered stones in charcoal-rich soil with no surface expression, in close proximity to a trough.

16.40 Excavations along the M1 have revealed a large amount of evidence for Bronze Age activity in this area. To the south of the River Boyne, the valley was intensely occupied over a distance of 1.5 - 2km. Two types of settlement were discovered during excavations with the first consisting of an unenclosed settlement at Kilsharvan and Rathmullan. Other similar sites were found at Lisdornan and Sheephouse, where habitation evidence consisted of several oval-circular buildings, drip gullies, Beaker period pits and at least two wells. The second type shows enclosed settlement in Rathmullan and Sheephouse. At Sheephouse, a site possibly dating to the early Bronze Age displayed a very well-built palisade fence defining a polygonal structure (Licence No.: 00E0810).

Iron Age (c. 800 BC–AD 500)

16.41 The Iron Age is traditionally distinguished from the rather rich remains of preceding Bronze Age and subsequent early medieval period by a relative paucity of evidence in Ireland; however, there is increasing evidence for Iron Age settlement and activity in recent years as a result of development-led excavations as well as projects such as LIARI (Late Iron Age and Roman Ireland). The River Boyne, which is located immediately south of the proposed development area, was mapped in the earliest cartography of the country during the Iron Age, named as 'Buvinda' (Stout 2002). The importance of the river and its valley cannot be underestimated, especially considering the tidal reach extended west of Drogheda, possibly as far as Rosnaree, at this time.

16.42 Evidence for interaction with Roman communities is suggested by the presence of artefacts of Roman origin recovered from inside the Newgrange tomb, including coins and items of personal adornment (ibid.). The principal evidence supporting Iron Age activity in the area comes from the Knowth excavations (Eogan 1986), where a cemetery containing up to 35 individuals was recorded around the base of Tomb 1. Grave goods, mainly items of personal adornment, were found with 11 of the burials. It is also possible that the summit of the main tomb at Knowth was utilised as a defended settlement at this time.

Early Medieval Period (AD 500–1100)

16.43 The surviving sources suggest that the early medieval period in Ireland was for the most part entirely rural in character. Byrne (1973) suggests that there were at least 150 Kings in Ireland at any one time in this period, each ruling over a *túath*. If the most recent estimates placing the population of early medieval Ireland at between a quarter and a half a million people are correct, then each King would have ruled over 1,700 and 3,300 subjects (Stout 2017).

16.44 The proposed development area lies within the early medieval kingdom of *Brega*. The *Ciannachta* were the most prominent of the subject peoples of *Brega* at this time (Bolger 1997). Brega was controlled for most of the early medieval period by the *Síl nÁeda Sláine*, who claimed to be part of the *Uí Néill*. Various branches of this dynasty controlled Brega down to the late 10th century. The site of Knowth (*Cnogba*), upstream in the Boyne Valley, was an important political site during this period. The mound of the passage tomb itself was utilised to form a highly defensive enclosure, and several souterrains were also excavated into the mound.

16.45 The most common indicator of settlement in this period is the ringfort of which several hundred are recorded in the area that once comprised *Brega*. Ringforts are roughly circular earthen settlement enclosures and can be divided into three broad categories defined by their number of bank and ditch features - univallate (one), bivallate (two) or multivallate (as many as four). When the radiocarbon and dendrochronological dates from ringfort excavations are compared (Stout 1997, 22-31), not only is the ringfort clearly an early medieval phenomenon, but a strong case emerges for dating the phase of ringfort construction to a period between the 7th and 9th centuries AD. The most common structures found within ringforts, usually through excavation, are the remains of buildings, generally houses, either circular or rectangular. Often sites recorded as enclosures represent early medieval farmsteads, which are too denuded to be classified as ringforts or similar sites, which do not fall into the shape or size ranges generally associated with ringforts. While there are no recorded ringforts or enclosures within the study area of the proposed development area, there are a number recorded in the wider region.

16.46 There is no doubt that it was the spread of Christianity and the establishment of the Church that had the greatest impact on the landscape and societies of Ireland during this period. The early medieval period also saw the construction of a large number of ecclesiastical sites throughout Ireland during the centuries following the 5th century AD. These early churches tended to be constructed of wood or post-and-wattle (O'Sullivan et al. 2014). Later simple stone-built churches were constructed, a great number of which are still visible throughout the countryside today.

16.47 The Vikings are reputed to have established the town of Drogheda in AD 911 (Harbison 1992, 234). Although there is, as yet, no direct evidence to support this, the annals refer to Viking fleets on the Boyne in the 9th century. Its name is derived from *Droichead Atha* (ford of the bridge), which was the name originally applied to the settlement of Oldbridge, c. 4km to the west of the town.

Medieval Period (c. AD 1100–1600)

16.48 Norman involvement in Ireland began in 1169, when Richard de Clare and his followers landed in Wexford to support Diarmait MacMurchadha, deposed King of Leinster, in his bid to regain the Kingdom of Leinster. Two years later de Clare (Strongbow) inherited this kingdom through marriage to Diarmuid's daughter Aoife. By the end of the 12th century the Normans had succeeded in overthrowing the previous ruling elites in much of the country. Large land grants given by the King to his followers meaning that great swathes of land were parcelled out among the Norman elites in process known as sub-infeudation. This process saw the evolution and consolidation of a network of territorial and administrative boundaries including baronies, parishes, manors and townlands. It was largely based on and significantly influenced by pre-existing borders and settlement patterns.

16.49 The town of Drogheda was founded by the Norman, Hugh de Lacy, sometime after the construction of his motte castle at Mill Mount and bridge across the River Boyne in AD 1186. The town developed on both sides of the River Boyne, which formed the boundary between the dioceses of Armagh and Meath. As a result, two separate parishes had to be formed and this division gave rise to two independent town corporations, which were not merged until much later in AD 1412.

16.50 The town (LH024-041) today, comprises one of the most complete Anglo-Norman walled towns in Ireland and enclosed 113 acres, making it one of the largest walled towns in Ireland (Bradley 1997, 10). Sections of the walls (LH024-041104) are visible throughout the town including two surviving gates: St Laurence's gate (LH024-041005) and the Butter Gate (LH024-041007). Drogheda also possesses one of the most extensive series of murage grants for any Irish town with at least 13 grants spanning the years between 1234 and 1424. The town walls no doubt provided protection for the residents but they were also a vehicle through which taxes could be levied on travellers and trades people. The town defences (LH024-041014) are considered to be of National Monument status (National Policy on Town Defences, DoEHLG, 2008).

16.51 As detailed above, the town of Drogheda formed as two separate towns, north and south of the river, each walled (Thomas 1992). The earliest town defences north of the river, comprised a ditch or fosse, which is located within or immediately adjacent to the proposed development area, along the alignment of Patrickswell Lane. This has been confirmed by the results of archaeological excavation, which identified a substantial ditch in this area (Bennett 1989:070). It is suggested that the enclosed space to the north of the river was expanded, c. 1215 to incorporate the western and northern suburbs, which would have sprung up around the religious foundations outside the original town defences (ibid.). This included the Old Abbey (St. Mary d'Urso) (LH024-041011) within the proposed development area. There were originally six gateways in the northern town wall, as well between 7 and 10 towers. The West Gate was originally located at the western end of Narrow West Street, within the proposed development area. Bradley

suggests that this once stood as a twin bastioned structure, though it was demolished by 1808 (SMR file). Fair Gate formerly stood at the western end of what is now Fair Street, within the proposed development area. It most likely took the form of a rectangular gatehouse. Neither the Fair Gate or the West Gate survive above ground.

16.52 The line of the Town Wall (recorded as town defences LH024-041014), traverses the proposed development area, in areas on Fair Street, Narrow West Street, Father Connolly Way and Dominic Street (Figure 16.3). On Dominic Street, previous archaeological monitoring has identified the remains of the town wall c. 0.6m below ground level. The wall was c. 2m in width, appeared to be orientated east-west and was truncated by a modern concrete drainage pipe. A second wall was recorded to the south of the town wall and it was suggested that this wall was contemporary with the town wall and may represent a tower extending from the town wall into the river. The walls were preserved in situ (Licence No.: 18E0261, Bennett 2018:779).

16.53 The town wall for Drogheda is described in detail in the 2006 document *Conservation Plan – Town Wall and other Defences of Drogheda.* With regards to a section of upstanding town wall within the proposed development area (to the west of Father Connolly Way), the following statement is made: *a condition survey (is required) to identify remedial works necessary to repair and maintain the wall in good condition*. The plan also states the following: *The largest extant section of the medieval defences is at the Bridge of Peace. From the water's edge north to Westgate House there is a 70m stretch of surviving wall, currently located in Murdock's Yard car park that stands 2.8m above present ground level (pg 28).*

16.54 Throughout the medieval period, Drogheda and the surrounding areas saw the construction of numerous churches and abbeys. The Augustinians founded an abbey in 1206, while the Magdalen Tower is the only remnant of the Dominican church founded by Luke Netterville, Archbishop of Armagh, in 1224.

16.55 The Old Abbey (St. Mary d'Urso) (LH024-041011) was founded within the proposed development area, c. AD 1206-14. It was located outside the western gate of the medieval town walls of Drogheda, which were extended at a later date to include the suburbs to the west and north (Thomas 1992). The extant remains of the abbey comprise parts of the nave, the central bell tower, the western gable of the northern aisle and the chancel (SMR file). The abbey has been subject to a number of archaeological investigations in the last three decades. Archaeological excavations at the site in 1989, revealed a large ditch or fosse, following the line of Patrickswell Lane, and extending eastwards out of the excavated area. This fosse pre-dated the foundation of the abbey. Excavations to the south of the church established that a quadrangle of cloistral buildings were formerly present in this area. The southern and western ranges of these structures were exposed fully, while the east range was poorly represented. The structures were constructed of roughly-coursed limestone rubble, and while no dating material was recovered but the structures were estimated to date to the later medieval period (Bennett 1989:070). In addition, several burials have been identified in the vicinity of the abbey. In particular to the north of the church (Licence No.: 92E0197, Bennett 1992:137, 1993:155) - these burials were preserved in situ.

Post-Medieval Period (AD 1600–1800)

16.56 The 17th century witnessed the concentrated and systematic reduction of all of Ireland to English authority, largely through conflicts and the forced settlements known as 'The Plantations'. In 1641 a war between the King and Parliament was sparked off by the rebellion of the Catholics in Ulster and resulted in 11 years of conflict and turmoil. In 1649, Oliver Cromwell and army landed in Ireland in order to return the colony of Ireland to English rule. Drogheda was one of the major scenes of engagements of this war. It was important for Cromwell to acquire control of the port towns along the eastern coast in order to maintain a constant stream of supplies for his troops. The Siege of Drogheda began along the southern limits of the town, which was still fully enclosed by the medieval walls at this time. The walls were breached close to the Duleek Gate and the soldiers flooded the town. The area in which the breach occurred, is visible today as a patched stretch of surviving wall. After Drogheda fell to Cromwell's Army in 1649, 2000 inhabitants were killed, while many others were forcibly transported to the West Indies. Shortly after these events, Ireland was essentially reincorporated as a British colony and Catholicism outlawed.

16.57 As part of the process of achieving colonial dominion a number of surveys and mapping programmes were completed throughout the post-medieval period. Simington's Civil Survey of 1654–56, was an inquisition that visited each barony (land division) and took depositions from landholders based on parish and townland, with written descriptions of their boundaries to facilitate the 'transfer' of lands. Subsequent to the Civil Survey, a project known as the Down Survey 1656-58, used the collected cadastral information to map all forfeited lands. This survey was overseen by the surgeon-general of the English army, William Petty and a number of former soldiers. It was not just a project of mapping but of social engineering that was underpinned by a massive 'transfer' in landownership from Irish Catholics to English Protestants. Despite the obvious negative effects of colonial map drafting this survey is the first ever detailed land survey on a national scale anywhere in the world and gives great insight in Ireland at this time.

16.58 The Battle of the Boyne between King William III and his father-in-law, King James II, was fought on 1st July 1690 (11th July according to our modern calendar), c. 4.2km west-northwest of the proposed development area. Both kings commanded their armies in person. William had 36,000 men and James had 25,000 - the largest number of troops ever deployed on an Irish battlefield. At stake was the British throne, French dominance in Europe and religious power in Ireland. William's camp was located on the northern side of the River Boyne, whilst James's was on the southern side.

16.59 William's battle plan was to trap the Jacobite army in a pincer movement. He sent 10,000 men towards Slane, which drew the bulk of the Jacobites upstream in response. With 1,300 Jacobites posted in Drogheda, only 6,000 were left at Oldbridge to confront 26,000 Williamites (battleoftheboyne.ie). At the time of the battle there was no bridge across the Boyne at Oldbridge, but there was a small village at approximately this point. All the fighting took place on the southern side of the river as the vastly outnumbered Jacobite forces defended their position against the advancing Williamites. William himself crossed at Drybridge with 3,500 mounted troops.

16.60 King James' principal camp, including his own headquarters, was on the elevated ground to the east of Oldbridge, on the hill of Donore, which is crowned by a ruined church

(ME020-011; c. 3.1km southwest of the development area). There is a tradition that the Williamite army used the narrow valley and route way to the west to as a means of out flanking the Jacobite army's eastern side. They crossed the river via the exposed sandbars / fords at Drybridge and advanced up the valley to attack the Donore Hill stronghold. The battlefield is signposted commencing at Oldbridge, where c. 1,500 soldiers were killed (ibid.).

Summary Of Previous Archaeological Fieldwork

16.61 A review of the Excavations Bulletin (1970-2023) revealed that a number of significant archaeological investigations have taken place to date both within the proposed development area and its immediate vicinity. These are detailed below.

16.62 The site of the Old Abbey (St. Mary d'Urso) (LH024-041011) was subject to archaeological investigation prior to the construction of the Garda Station adjacent to the proposed development area, in 1989. Prior to archaeological works three sections of upstanding medieval wall were identified. These comprised a wall, which ran south from the southern wall of the church, a 7.5m section c. 230m south of the church, and third smaller section of wall c. 11m to the east. Taken together, these fragmentary structural remains indicated that there may originally been a quadrangle of buildings to the south side of the church (Bennett 1989:070).

16.63 Two areas were subject to archaeological excavations. In Area 1, in the northeast of the investigated area, a substantial fosse or ditch was identified. The fosse appeared to extend outside the excavated area to the east, but followed a similar orientation as Patrickswell Lane. This fosse pre-dated the foundation of the abbey. Archaeological deposits dating to c. 12th-13th century overlaid limestone bedrock and glacial till, which contained frequent sherds of medieval pottery. Two burials within shallow graves were identified cut into this layer. Overlaying this deposit, was a 'archaeologically-rich monastic garden soil' (ibid.). Following this phase, which may have ended with the Dissolution of the Monasteries in the 16th century, a terrace of houses was built in this area, to the rear of which, lime pits were discovered. These structures survived as basement walls only, with clay floors and corner fireplaces evident. A subsequent phase of development, saw the demolition of the terrace and the construction of large town houses on Old Abbey Lane and Patrickswell Lane, which were occupied until the 1960s.

16.64 Area 2 aimed to investigate the quadrangle to the south of the church. This confirmed that cloistral structures were once present to the south of the church. The southern and western ranges were exposed fully, while the east range was poorly represented in evidence. The structures were constructed of roughly-coursed limestone rubble. No dating material was recovered but the structures were estimated to date to the later medieval period. Two internal walls of the southern range were also identified.

16.65 Further works were carried out the Drogheda Garda Station immediately adjacent to the proposed development area in 2019, under Ministerial Consent (Licence No.: E005089). A limited programme of archaeological testing and metal detection was carried out and focused on the perimeter to assess the foundations of the existing boundary walls. Only Trench 1 identified possible undisturbed archaeological deposits, outside of the area excavated in 1989 (described above), comprising medieval or post-medieval stratigraphy. These deposits were preserved in situ, given that the proposed

development was proposed to be construction on piles supporting ground beams and a raft foundation (Bennett 2019:536). Additional archaeological testing was carried out to facilitate a new security perimeter and access gates (Licence No.: E005090). The test trenches identified made ground to a depth of c. 2m, below which undisturbed deposits were encountered but not investigated given that the formation level of the development was not to exceed 1m in depth (Bennett 2019:592).

16.66 Archaeological monitoring was carried out at Drogheda Courthouse on Wellington Quay, immediately adjacent to the proposed development area and also under Ministerial Consent (Licence No.: C0006 E004644, R00400). The majority of groundworks associated with the development did not extend deep enough to impact the medieval deposits within the proposed development area, identified by previous archaeological testing (Bennett 2006:1343). Pile excavation was the exception, with the arisings subject to inspection and metal detection. A number of medieval finds were recovered, including leather off-cuts, a bone dice and medieval pottery (Bennett 2017:104).

16.67 In 1994 archaeological testing was carried out as part of works associated with the Drogheda Main Drainage Scheme (Licence 94E0031, Bennett 1994:174). With regards to the section to town wall adjacent to the Peace Bridge (within the proposed development area), a test pit was excavated on the outer or western face of the wall. This revealed that the wall is faced to a depth of at least 3m and therefore survives intact almost to its full height of 5.5m – 6m. Nearby in Murdock's Yard a heavy masonry structure at least 1.6m wide, exposed at a depth of 0.8m, may have also formed a portion of the town wall, which ran along the riverbank in the western part of the town.

16.68 As part of the same works, a borehole was also carried out in the vicinity of Patrickswell Lane, 110m inside the present line of town wall and 12m from the River Boyne. This indicated probable archaeological deposits to a depth of 4.53m. These deposits may represent a continuation of the early-phase town ditch recorded during excavations at the Old Abbey (St. Mary d'Urso), 80m to the north (Bennett 1989:070).

16.69 In 1996 further testing took place at the site of the town walls as part of the main drainage scheme. A small area was opened up on either side of the town wall, revealing the wall was built on a foundation of loose boulders and is almost 2m wide at the base. Its original height was estimated to be over 7m (22ft) here, and it was found to have a batter at the base on the outside. Two phases of construction were noted, as was evident from the existence of two wall-walks. Arrow-slits are currently evident near the top of the wall but another was found below present ground level. The original ground level was thought to be at least 1.5m below the current ground level (Licence 96E0160, Bennett 1996:273).

16.70 Archaeological monitoring on Old Abbey Lane under licence 05E0230, recovered a number of unstratified medieval pottery sherds and post-medieval ceramics (Bennett 2005:1056).

16.71 Archaeological monitoring followed excavation under licence 92E0197 was carried out at a site north of the church of St. Mary d'Urso, immediately adjacent to the proposed development area. Extensive human remains were discovered, including several deposits of disarticulated bone and 14 intact burials. These burials were preserved in situ, being located at a sufficient depth to avoid impact by the development. In addition,

a stone wall was identified, which ran south-north from the church tower (Bennett 1992:137, 1993:155).

16.72 Archaeological testing was carried out to determine the date of a wall on Old Abbey Lane, from which it was proposed to remove the upper courses to facilitate an extension to a business premises (Licence No.: 02E0440). A single trench was excavated at the base of the wall, which established that the wall was 18th/19th century in date, with red-brick and mortar construction (Bennett 2002:1319).

16.73 Archaeological monitoring associated with works to a premises on Patrickswell Lane, identified a cobbled surface and post-medieval deposits of loam. The rear wall of two structures, which once fronted on to Abbey Lane was exposed and it was established that the cobbled surface was likely contemporary with these houses. All finds recovered were of 18th and 19th century date (Bennett 1996:275).

16.74 A programme of monitoring of the demolition of vacant properties and archaeological test trenching was carried out under licence 05E1069 to the immediate north of Old Abbey Lane and the abbey structure. A total of four trenches were excavated within the site, which contained the remains of the west gable of the north aisle of the abbey. Trench 1 exposed the remains of a medieval stone wall, which ran towards Narrow West Street and lay below post-medieval reclamation deposits. The remains of 18th/19th century building foundations overlaid these reclamation deposits. Trench 2 revealed the remains of the northern wall of the north aisle of the abbey, which was recorded to a depth of 1.4m. Trench 2 investigations were limited to this depth due to the exposure of four burials. These burials were dug into the 17th century reclamation deposits. Trench 3 revealed a similar stratigraphy, with the northern wall of the north aisle present here too, to a depth of 1.85m. Excavation was halted at this depth due to the identification of two burials, one within the 17th century deposits and a second within an earlier layer that contained medieval pottery. A second wall was identified to the north of the abbey, orientated east-west. Trench 4 also contained the remains of the northern wall of the north aisle of the abbey, and was excavated to a depth of 1.2m, at which point two human burials were encountered, both dug into the 17th century reclamation deposits (Bennett 2006:1346).

16.75 Archaeological monitoring was carried out at a standing building to the north of Old Abbey Lane (Licence No.: 02E1726). It had been established by previous works that the 18th/19th century building incorporated medieval fabric of the Old Abbey (St. Mary d'Urso) (LH024-041011). The archaeological monitoring focused on the interior of the building, with the removal of the modern concrete floor. The concrete overlaid rubble and mortar, below which solid earth was encountered. No features of medieval date were noted; however, an area of post-medieval cobbling was evident. A stone retrieved from the doorway may represent a reused medieval door or window jamb. A large number of post-medieval pottery was recovered, as well as a small quantity of medieval pottery, tile and slate fragments. The development did not require any further depth of excavations and any potential archaeological deposits below the solid earth layer remain in situ (Bennett 2003:1245).

16.76 Archaeological test trenching was carried out at No. 50 West Street, immediately adjacent to the proposed development area. Two trenches were excavated, one of

which revealed a wall foundation on unclear date, which had been partially removed by sewer works. Nothing further of archaeological potential was noted (Licence No.: 03E1595, Bennett 2003:1247).

16.77 Archaeological testing was carried out on prior to a residential development on Wellington's Quay, c. 38m east of the proposed development area. Two trenches were excavated and established that much of the site was formed by made-ground. 'A blackened stone surface' was suggested to possibly represent the foundations of a building (Licence No.: 98E0096, Bennett 1998:440).

16.78 Archaeological testing was carried out at 82/83 West Street immediately north of the proposed development area (Licence No.: 13E0233). Two trenches were excavated, which did not reveal any features or deposits of archaeological significance (Bennett 2013:406).

16.79 Archaeological monitoring at 71 Narrow West Street, immediately north of the proposed development area, but nothing of archaeological potential was identified (Licence No.: 02E0256, Bennett 2002:1318).

16.80 A programme of archaeological testing was undertaken at Barlow House, to the immediate north of the proposed development area (Licence No.: 00E0010 and ext.). A test trench in the proposed location of the lift shaft revealed that post-medieval deposits extend to a depth of 3.1m below floor level. A medieval garden soil deposit was identified between the foundations of Barlow House and the adjacent Gleeson's Public House, in an area c. 1m in width. Excavation by hand followed the testing, in the areas where medieval deposits were likely to be impacted. In the area of the proposed lift shaft, the medieval garden soils were excavated to a depth of 5m, with no finds recovered. Archaeological monitoring was carried out of the ground works for the construction of the proposed machine room, but did not reveal anything pre-dating the post-medieval period (Bennett 2000:0662).

16.81 Archaeological test trenching was carried out in advance of development at Narrow West Street, immediately north of the proposed development area, under licence 98E0611. Trench 1 was excavated in the southwest corner of a vaulted cellar, which revealed a brick floor, overlaying a brown loam containing 19th century sherds of pottery. This in turn overlaid a loam layer, which contained a large quantity of shell and 15th/16th century pottery. It is into this layer that the cellar wall had been cut. Trench 2 was excavated in the northeast of the structure and revealed that bedrock had been excavated to facilitate the construction of the cellar wall in the 19th century. Trench 3 was excavated to the rear of the structure, in a yard area, and revealed a cobbled surface below the modern concrete. The excavation results concluded that the cellar likely ran southwards to connect to existing cellars (Bennett 1998:442).

16.82 A programme of archaeological testing was carried out at the site of the 18th century Corn Exchange, which later was occupied by the 19th century courthouse, on Fair Street, immediately adjacent to the proposed development area. Three trenches were excavated, which confirmed that the site had been extensively disturbed during the demolition of the courthouse. A number of unstratified finds of local late medieval pottery were recovered (Licence No.: 95E0144, Bennett 1995:198).

16.83 A programme of archaeological testing was carried out off Scholes Lane, immediately adjacent to the proposed development area. The line of the town ditch was suspected to traverse the western side of the site, but no evidence was discovered during testing. On the eastern end of the site, evidence that up to 3m of rock had been quarried out in medieval times was found. Much of this area had been filled in by 18th/19th century material; however, areas of medieval (13th/14th century) material remained extant in places. A pit or ditch was uncovered to the rear of 78 West Street and a cobbled surface was identified to the rear of 80 West Street (Licence No.: 09E0335, Bennett 2009:571).

16.84 Works associated within Drogheda Main Drainage and Waste Water Disposal Scheme involved archaeological excavation along Patrickswell Lane and Dominic Street (Licence No.: 96E0160). On Patrickswell Lane, an 18th/19th century brick kiln was suggested. Medieval deposits were also identified, which contained leather offcuts, medieval pottery and a finely decorated scabbard. The preservation of large amounts of organic material appeared to indicate that this area was once a marshland. On Dominic Street, a medieval river wall was exposed running east-west, at the southern end of the street (Bennett 1997:382), c. 10m north of the river.

16.85 Archaeological monitoring of groundworks associated with the upgrade of storm overflow works at Patrickswell Lane and Dominic Street was carried out under licence 18E0261. At the southern end of Dominic Street, a section of the medieval town wall was identified. The wall was c. 2m in width and survived at a depth of 0.6m below current ground level. It appeared to be orientated east-west and was truncated by a modern concrete drainage pipe. A second wall was recorded to the south of the town wall and it was suggested that this wall was contemporary with the town wall and may represent a tower extending from the town wall into the river. The walls were preserved in situ (Bennett 2018:779).

16.86 Archaeological testing was carried out at 47 Fair Street, immediately adjacent to the proposed development area. A single test trench was excavated to the rear of the building, to a depth of 1.9m. Nothing of archaeological significance was identified (Licence No.: 01E0136, Bennett 2001:843).

16.87 Archaeological testing at Mill Lane, c. 24m west of the proposed development area under licence 20E0050, did not identify any features or deposits of archaeological significance (Bennett 2022:441).

16.88 Archaeological test-trenching was undertaken at 85 West Street in 1996, c. 37m east-northeast of the proposed development area. Nothing of archaeological potential was noted (Licence No.: 96E0114, Bennett 1996:279).

16.89 Archaeological testing was undertaken at 3 Wellington Quay, c. 45m to the east of the proposed development area under licence 05E0192. The site was confirmed to have been within the River Boyne's channel prior reclamation in the post-medieval period. Nothing of archaeological potential was identified (Bennett 2005:1063).

16.90 Archaeological testing was carried out at 97 Georges Street, c. 47m north of the proposed development area. The garden to the rear of the building, lies immediately adjacent to the exterior of the Town Wall. A post-medieval cobbled surface abutted the

town wall overlaying subsoil. No archaeological deposits pre-dating the post-medieval period were exposed (Licence No.: 01E0558, Bennett 2001:844).

Cartographic Analysis

Down Survey, 'Barony of Ferrard in County of Lowth', c. 1654-6

16.91 The Down Survey maps were compiled in the mid-17th century and represent the first systematic mapping of a large area on such a scale attempted anywhere. The primary purpose of these maps was to record the boundaries of each townland and to calculate their areas with great precision. These maps also provide other details and illustrate prominent structures such as churches, castles, houses and fortifications along with road networks and river courses.

16.92 The Down Survey Map of 'Ferrard in County Lowth' shows of basic schematic of the town of Drogheda which is surrounded by its defensive town wall and a central bridge across the River Boyne (Figure 16.4). Internal features to the southern side of the River Boyne include the windmill of Millmount and castle or church structure which may represent the parish church of Drogheda St. Pauls.

16.93 While to the north side of the River Boyne in the western half of the walled town, in the general area of the proposed development, the rectangular layout of the religious foundation; either the Old Abbey (St. Mary d'Urso) or St. Peters is illustrated. A house is also shown close to the north bank of the River Boyne along the southern limit of this proposed development area. This map also illustrates other structures outside and to the east of the proposed development area which are also inside the town walls. A number of towers or gateways are depicted along the town wall, though no roadways exiting the town are depicted.

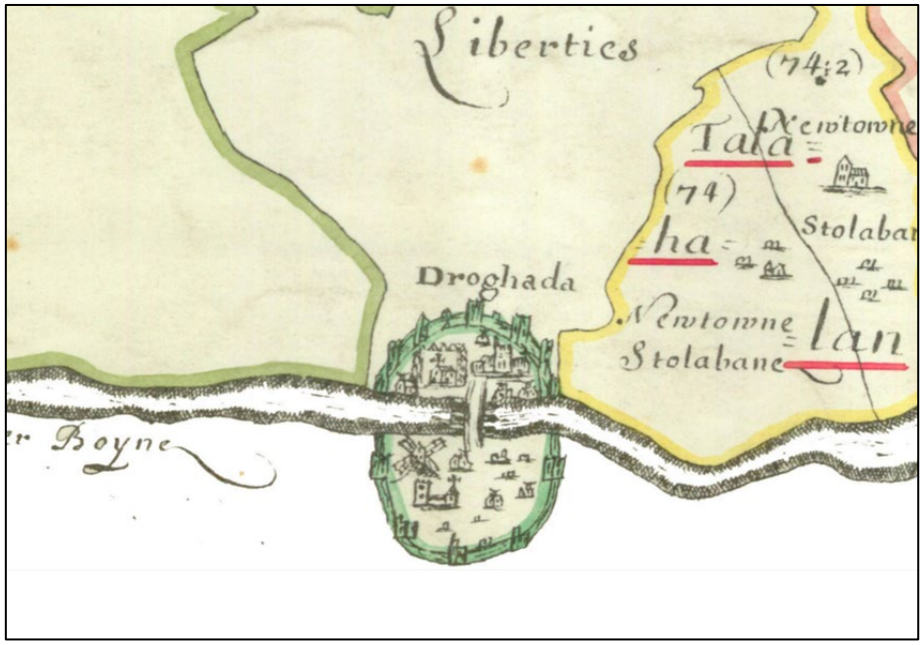

Figure 16.4: Extract from the Down Survey Map of Drogheda, 1655-6

Robert Newcommen's Map of Drogheda, 1657

16.94 This map provides the first detail of the internal layout of the walled town of Drogheda with internal streets flanked by houses along with the locations of religious foundations (Figure 16.5). The location of the West Gate is shown to the western end of West Street (and within the proposed development area), which features houses along both of its sides through the northern half of the town. Fair Gate is shown to the northwest although the roads leading to this gate are not densely flanked by houses. Two laneways are shown leading southwards down to defensive towers that overlook the River Boyne. To the west side of the westernmost laneway church structure, which represents the Old Abbey (St. Mary d'Urso), is shown.

16.95 Houses are shown to only flank the northern ends of both laneways close to West Street. A single house is depicted to the south between these laneways. Outside of the town's defences, what appears to be the principal roadway, leads westwards from the West Gate. Another possible routeway leads northwards from the north bank of the River Boyne to the exterior of the town wall and links up with a laneway exiting the Fair Gate before continuing to head in a northerly direction.

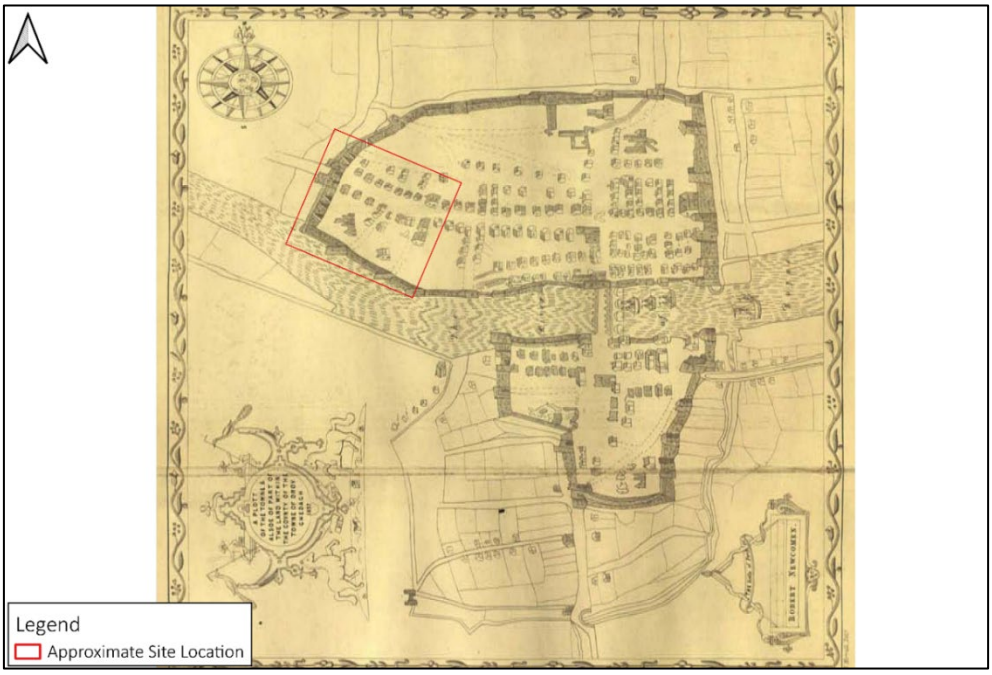

Figure 16.5: Extract from Newcommen's Map of Drogheda, 1657, showing the approximate location of the proposed development area

Ravell's Map of Drogheda, 1749

16.96 This mid-18th century map of Drogheda provides very detailed information on the internal layout of Drogheda and the town walls; however, the town walls along the river banks are no longer illustrated (Figure 16.6).

16.97 The street layout on this map generally reflects the modern street pattern. All the principal streets are named along with several laneways, these include West Street along with 'Fair Street or Horse Lane' to the north, which lead to the West Gate and the Fair Gate respectively. Hachured blocks representing terraced houses are illustrated along the streets. This map also illustrates the locations of several geometric gardens, which

are shown as located both to the rear areas of the residential terraces as in the case of 'Alderman Ogles Garden' to the north of Fair Street. But also, where these gardens are located directly fronting onto the streets; 'Alderman Pattens Garden' fronts onto Stockwell Lane to the south of the prosed development area. And 'Nan Bartons Garden/Nam Bartow Garden' fronts onto West Street immediately beside the West Gate. An area called 'The Green' is shown to the south of West Street.

16.98 Outside the town walls, expansion of the town has occurred to the west of Drogheda by the mid-18th century in the form of terraced houses along 'The Road to Slane' and 'The Road to the North'. An area called 'Chapel Yard' along the Road to the North flanks a singular building and suggests that this building may be an active chapel, which has since been removed.

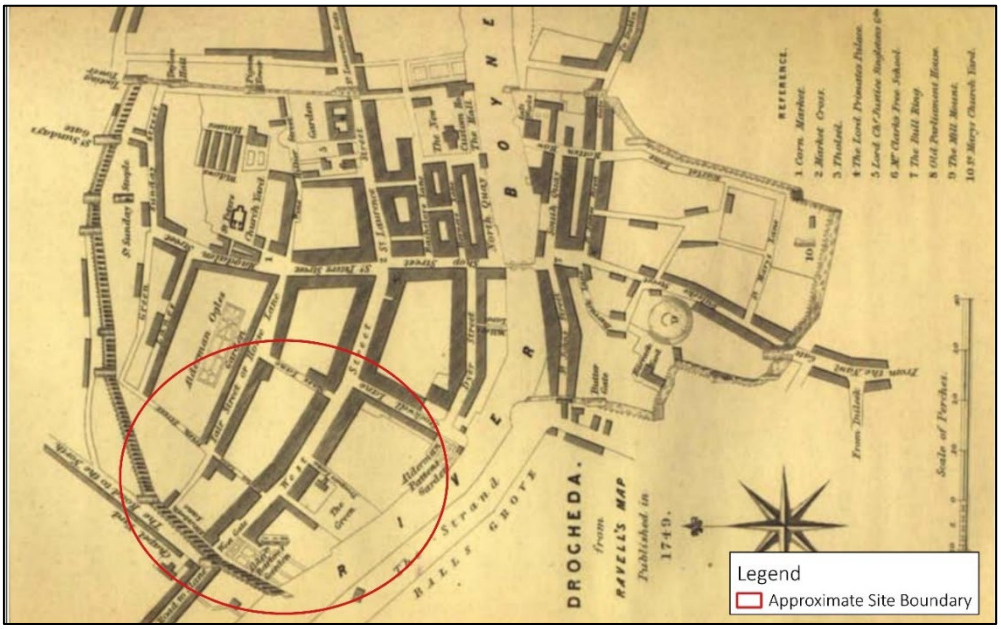

Figure 16.6: Ravell's Map of Drogheda, 1749, showing the approximate location of the proposed development area

Matthew Wren 'A Topographical Map of the County of Louth' 1766.

16.99 This map is at a much smaller scale and as a result, it does not provide great detail to the internal layout of the town of Drogheda and to the area of the proposed development (Figure 16.7). There is some detail provided to the surrounding hinterland of the town. This map does provide details to the expansion of the town of Drogheda to the north and to the west outside the town walls.

16.100 The majority of the course of the town walls are shown as still extant and the general course of West Street is decipherable. The church which was located directly west of the West Gate is shown within an enclosed plot. While the area immediately inside the West Gate (to the south of West Street) is shown as an open area.

Taylor and Skinner's Map of County Louth, 1778

16.101 This mapping placed emphasis on the road network, and this is reflected in the layout of this map with the illustrated street pattern generally reflecting the modern road layout that is present today (Figure 16.8). This map does provide detail on the course of the

upstanding town walls and records the further expansion of the urban area of Drogheda along the roadways to the northwest and north.

Figure 16.7: **Extract from Wren's map of Louth, 1766, showing the approximate location of the proposed development area**

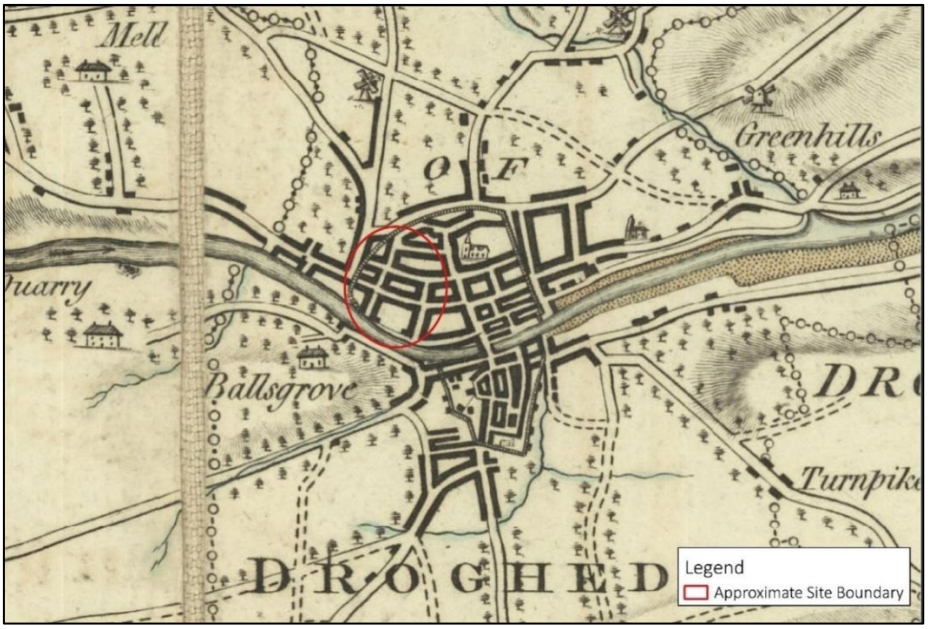

Figure 16.8: **Extract from Taylor and Skinner's Map of County Louth, 1778, showing the approx. location of the proposed development area.**

First Edition Ordnance Survey Map, scale 1:10560, 1835

16.102 By the time of this map, the town walls are no longer marked in their entirety and the West Gate and Fair Gate are no longer extant (Figure 16.9). Terraces of houses now flank all the streets and laneways with the urban development now also occupying the both the former garden areas and open spaces of these terraces which were shown on earlier maps.

16.103 Industrial activity is also recorded on these maps with a Salt Works located to the south of a remaining open area that would later become the location of Father Connolly Way. Administrative duties possibly linked with industrial activity are present to the southern eastern corner of the proposed development as a large symmetrical building is labelled as 'Linen Hall'. The former church that was located to the west of the West Gate is now labelled as an Infirmary. No details of street furniture or streetside details are provided on this map.

Figure 16.9: Extract from the first edition OS map of 1835, showing the proposed development area

Ordnance Survey Map, scale 1:1050, 1870

16.104 This OS mapping shows a large amount of detail of the streetscape of Drogheda and labels many of the town's buildings according to their function (Figure 16.10). The degree of detail that is provided by this map even includes the stepped approaches and entrances to the street front houses. Overall, the street pattern is identical to the modern layout with the only exceptions representing the modern additions of the Father Connolly Way Road (which crosses the areas of former river banks gardens and an enclosed yard area) and the Georges Street (which crosses the River Boyne over a new bridge). The route of Father Connolly Way also crosses the site of a salt works, which features a water tank to the north.

Figure 16.10: Extract from historic OS map of 1870, showing proposed development area

16.105 The industrial and merchant sections of the town remain in the same areas as depicted on earlier maps with the south-eastern portion of the proposed development area, skirting areas of the Linen Hall, a 'Linen Manufactory and Callender Works', a smithy, a timber yard that features an engine house and a second salt works. A Constabulary Barracks is located to the north side of West Street (close to the site of the West Gate) while the infirmary still remains extant to the west. To the northern section of the proposed development, a portion of this proposed development off School's Lane crosses a modern carpark area to the west. This area is shown on this map as the site of 'Callender Works' which again signifies that there was an important textile processing industry within this north-western area of the town of Drogheda.

16.106 Only two features are present within the streetscape of the proposed development; the location of a water pump which is mounted on a rectangular platform to the north side of the Linen Hall at Linenhall Street. The second feature is the location of a ruined structure that is shown as present on the middle section of Old Abbey Lane. This ruin represents the Old Abbey (St. Mary d'Urso) (LH024-041011) and is labelled as 'Abbey in Ruins'. Historic footpaths are shown along streets within the proposed development area.

16.107 The former location of the West Gate is labelled in this map although the site of Fair Gate, to the north, is not marked. The only section of the town wall that is depicted on this map within the area of proposed development, is shown to the south in an area which is now beside the modern road of Georges Street. A garden area is depicted directly west of this location.

Ordnance Survey Map, scale 1:2500, 1907-09

16.108 The main notable difference that is illustrated by this map is further urban developments along the streets (Figure 16.11). A section of the Town Wall is labelled at the eastern extent of the modern Georges Street. The former location of the southernmost Salt Works, which was located on the north bank of the River Boyne, is now the site of a Timber Yard; however, the tank is still retained (now the location of Father Connolly Way). Other noter notable developments include a building now on the site of the 'Callender Works' that was off School's Lane. This map also records the location of the West Gate.

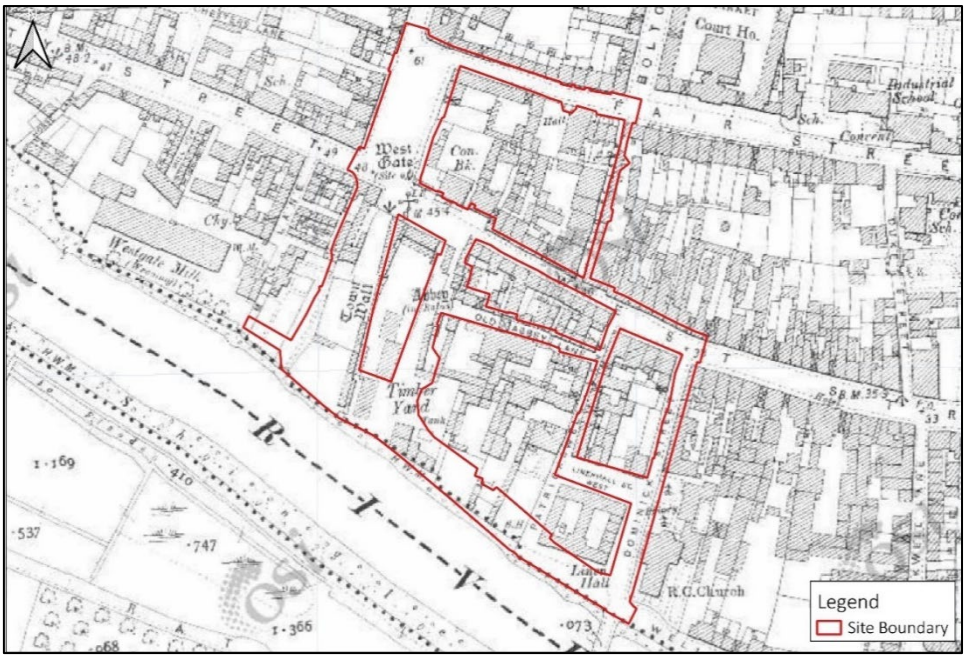

Figure 16.11: Extract from historic OS map of 1907-09, showing the proposed development area

Third edition Ordnance Survey, scale 1:10560, 1948

16.109 This early to mid-20th century mapping does not include the same level of detail as the earlier OS maps; however, it often shows changes to the landscape. Terraces and large blocks of buildings are hachured as one, yet the map does provide some detailing on the continued urban development to the areas around and inside of the proposed development area. This mainly includes additions and extensions to existing outbuildings.

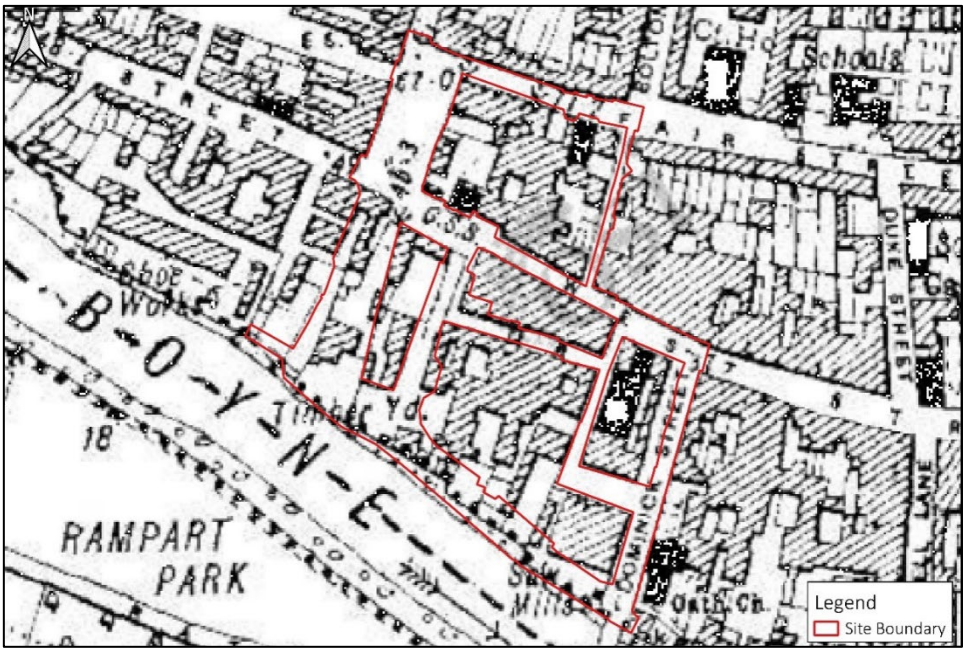

Figure 16.12: **Figure 16.12 Extract from historic OS map of 1948, showing the proposed development area**

Louth County Development Plan (2021-2027)

16.110 The Louth County Development Plan (LCDP) 2021-2027 recognises the statutory protection afforded to all Record of Monuments and Places (RMP) sites under the National Monuments Legislation (1930–2014) (pg. 9-3). The LCDP lists a number of aims and objectives in relation to archaeological heritage and the preservation of medieval town walls (Appendix 16.2).

16.111 The proposed development area is located partially within the zone of archaeological potential for the historic town of Drogheda (LH024-041), which is a recorded monument and listed as Zone of Archaeological Potential 1 within Appendix 9 of the LCDP. There are three further individual monuments located within the application site, which comprise the Old Abbey (St. Mary d'Urso) (LH024-041011), the line of the medieval town wall and the site of two gates (recorded as town defences LH024-041014) (Appendix 16.1).

16.112 The town defences are illustrated within Appendix 10, Map 1.3 of the LCDP. Both monuments possess National Monument status. A quay (LH024-041079) is also recorded within the development area.

Table 16.1: **Recorded archaeological sites within the 100m study area**

RMP No.	Location	Classification	Distance from Development
LH024-041	Drogheda	Historic Town	Within Zone of Archaeological Potential
LH024-041014 & National Monument	Drogheda	Town Defences	Within proposed development area

RMP No.	Location	Classification	Distance from Development
LH024-041011 & National Monument	Moneymore	Religious house - Augustinian friars	Within proposed development area
LH024-041079	Moneymore	Quay	Within the proposed development area
LH024-041063	Moneymore	House - medieval	Immediately adjacent to the proposed development area
LH024-041065	Moneymore	House - medieval	c. 57m east

Conservation Plan Town walls and other defences of Drogheda

16.113 Page 45 of the Conservation Plan states the following with regards to the section of upstanding town wall within the proposed development area and close to Father Connolly Way:

> *Any redevelopment of this site would have to respect the extant portion of town wall, ensuring that the immediate setting of the wall was not negatively impacted upon. It is important that the opportunity to create an accessible public space and present the town wall be taken at this site, preferably on both sides of the wall, subject to consideration of such issues as practicality, safety and access. This might be achieved by managing the areas of public access, so that they are closed off after-hours to prevent anti-social behaviour. Access to both sides of the wall might be opened up from Mill Lane (near Donaghy's Mill), passing underneath the Bridge of Peace.*
>
> Appendix 1 of the Conservation Plan describes the section of the town wall as follows: *This section of wall slopes uphill away from the Boyne River bank beside the Bridge of Peace. The ground is much built up both sides of the wall however the line of the wall-walk and the defensive loops are very visible. The wall suffers from open joints, missing stones, poor brick and blockwork repairs, atmospheric pollution, extensive graffiti and substantial plant life including a large tree. Attempts have been made previously to cap the wall in places with brick and tile and stone masonry copings but other areas have no coping. A suitable, consistent hard coping treatment is recommended for this section of the wall. The lack of coping to the skyward surface of the wall is allowing water ingress to occur which is detrimental to the wall condition over the long term as it washes out pointing and encourages plant life which can cause structural instability in the wall. The patchy inconsistent repairs and extensive graffiti detract from the understanding and visual appreciation of this highly visible section of town wall.*

Topographical Files

16.114 Information on artefact finds from the study area in County Louth has been recorded by the National Museum of Ireland since the late 18th century. Location information relating to these finds is important in establishing prehistoric and historic activity in the study area.

16.115 A number of artefacts are recorded in the topographical files of the National Museum of Ireland for the study area of the proposed development area, the majority of which are medieval in date (Table 16.2). It is likely that these finds relate to the medieval Old Abbey (St. Mary d'Urso) (LH024-041011) and associated medieval buildings. In the wider Drogheda area, a large number of medieval finds have been recovered as the town was densely populated at this time.

Table 16.2: Stray finds within the vicinity of the proposed development area

NMI Ref.	Location	Find Type	Distance from Development
1977:1253-1255 A-H; 1980:22; 1979:91,2	Moneymore	1977:1253-1255 A-H) Two Medieval Tiles, 6 Medieval Potsherds; (1980:22) Medieval Roof Ridge Tile Fragment; (1979:91,2) 26 Medieval Potsherds, 15 Potsherds, Post Medieval	Precise location unclear
1954:74-82	Moneymore	Portions of Two Medieval Tiles; Seven Medieval Potsherds	Precise location unclear
IA/186/1985	Moneymore	Medieval Tiles	Precise location unclear, possibly to the east of the proposed development area, along Wellington Quay

Aerial Photographic Analysis

16.116 Inspection of the aerial photographic coverage and satellite imagery of the proposed development area held by the Ordnance Survey (1995–2013), Google Earth (2005–2021) and Bing Maps (2022) revealed that the proposed development area is formed by established roadways within the town of Drogheda, County Louth.

16.117 The standing remains of the Old Abbey (St. Mary d'Urso) (LH024-041011) are visible on a partially pedestrianised route know as 'Old Abbey Lane'. No previously unknown features of archaeological potential were noted in the aerial imagery given the urban nature of the study area.

Cultural Heritage

16.118 The term 'cultural heritage' can be used as an over-arching term that can be applied to both archaeology and architecture. It also refers to more ephemeral aspects of the environment, which are often recorded in folk law or tradition or possibly date to a more recent period. The archaeological features discussed above also constitute cultural heritage features.

16.119 A group of religious structures stand on the eastern side of Dominic Street, adjacent to the proposed development area. This comprises a Roman Catholic Church known as 'Saint Mary Magdalen's Church' and a convent building to the north, 'Saint Mary Magdalen's Dominican Convent'. The church was recently closed by the Dominican Order and purchased by Louth County Council. It is hoped the structure will continue to serve the community in a new role. Both the church and the convent are recorded as Protected Structures and listed in the National Inventory of Architectural Heritage (NIAH) (RPS DB-043- DB-044, NIAH 13621014/13621016).

16.120 Barlow House on the northern side of Narrow West Street and immediately adjacent to the proposed development area, dates to 1738. Not only is it of considerable architectural significance as a Georgian townhouse, it also served as a RIC Barracks in the Victorian Era and later a Garda Station following Independence. It now acts as an important cultural hub in the town of Drogheda, as part of the Droichead Arts Centre. The structure itself is both recorded as a Protected Structure and listed in the National Inventory of Architectural Heritage (NIAH) (RPS DB-232, NIAH 13618010).

16.121 An art installation known as the 'Shafts of Light', which was erected by the Drogheda Borough Council, is located immediately adjacent to Father Connolly Way, on the banks of the River Boyne, within the proposed development area. The artwork was created by a Drogheda-born artist, Ronan Halpin, and erected in in 2002. The work draws inspiration from the passage tomb tradition, in particular solar alignments- an important element of the archaeological heritage associated with the River Boyne and its associated passage tomb tradition (now the UNESCO World Heritage Site of *Brú na Boinne*).

Placename Analysis

16.122 Topographic names are an invaluable source of information on topography, land ownership and land use within the landscape. They may also provide information on history; archaeological monuments and folklore of an area. A place name may refer to a long-forgotten site and may indicate the possibility that the remains of certain sites may still survive below the ground surface. The Ordnance Survey surveyors wrote down townland names in the 1830's and 1840's, when the entire country was mapped for the first time. Some of the townland names in the study area are of Irish origin and through time have been anglicised. The main references used for the place name analysis are Irish Local Names Explained by P.W Joyce (1870) and Logainm.ie. A description and possible explanation of each placename in the environs of the proposed development are provided in the below table.

Table 16.3: Placename Analysis

Placename	Derivation	Possible Meaning
Westgate	*Geata Shraid na gCappall*	Gate of horses street
Old Abbey Lane	*Lána na Seanmhainistreach*	Old Abbey Lane
Moneymore	*An Mhónaidh Mhór*	The great bogland
Mell	-	Possibly the family name Bell corrupted over time

Yellowbatter	*An Bóthar Buí*	Possibly a combination of the English word 'Yellow' and the Irish word *'Bóthar'* together meaning the Yellow Road.
Drogheda	*Droichead Átha*	The bridge of the ford
Louth	*Lú*	Possibly named after the pre-Christian deity *Lú*

Field Inspection

16.123 The field inspection sought to assess the proposed development area, its previous and current land use, the topography and any additional information relevant to the report. During the course of the field investigation the proposed development area and its surrounding environs were inspected (Figure 16.1).

16.124 The proposed development area is located within the existing street structure of Drogheda. The eastern extent of the proposed development area comprises Dominic Street. Dominic Street is surfaced by tarmac. At the southern extent of the street, the 'Saint Mary Magdalen's Church' and a convent building 'Saint Mary Magdalen's Dominican Convent' are present, fronting on to the street from the east. The church is enclosed by a plinth wall and railing (Plate 16.1). Linenhall Street extends westwards from Dominic Street and meets Patrickswell Lane, which turns north. Patrickswell Lane is a narrow street. The northern half of the lane is paved in modern granite setts and the southern half of the lane is surfaced by tarmac (Plate 16.2).

16.125 Old Abbey Lane extends westwards from Patrickswell Lane. Old Abbey Lane contains the upstanding remains of the Old Abbey (St. Mary d'Urso) (LH024-041011). The upstanding remains comprise part of the nave, chancel, the west gable of the north aisle (Plate 16.3) and the central bell-tower (Plate 16.4). A narrow pedestrian laneway links Old Abbey Lane to West Street to the north (Plate 16.5).

16.126 West Street extends east-west within the proposed development area. It is primarily occupied by residential and commercial structures. The street is paved in granite setts with modern bollards delineating the pedestrian footpaths on either side of the road (Plate 16.6). Scholes Lane extends north from West Street. It is a narrow pedestrianised lane, paved in modern setts (Plate 16.7). The northern portion of the laneway contains a metal railing positioned centrally, which suggests that the northern half of the lane may have originally had steps.

16.127 Fair Street runs parallel to West Street and is linked to the latter by Scholes Lane. Fair Street is primarily a residential street. The street is dominated by an industrial warehouse, which survives at the western end of the street (Plate 16.8). George Street, runs north-south, at the western end of Fair Street and West Street. This wide street accommodates a dual carriage way and crosses the River Boyne over the Bridge of Peace (Plate 16.9). The northern portion of George's Street is lined with residential and commercial premises (Plate 16.10).

16.128 Father Connolly Way extends south from West Street and turns eastwards along the banks of the River Boyne. The northern section of the road is paved in granite setts, while

the southern part is surfaced in tarmac (Plate 16.11). To the immediate west of the north-south portion of this road, lies a car park, which is bounded by the remains of the heavily overgrown medieval town wall (Plate 16.12). An art installation known as the 'Shafts of Light', which was erected by the Drogheda Borough Council, is located immediately adjacent to Father Connolly Way, on the banks of the River Boyne and within the proposed development area (Plates 16.13).

16.129 No previously unrecorded sites of archaeological potential were noted during the course of the inspection.

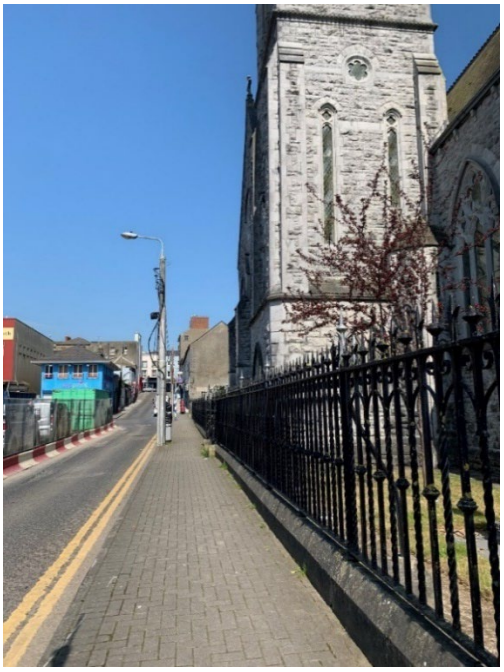

Plate 16.1: Dominic Street, facing north

Plate 16.2: Patrickswell Lane, facing south

Plate 16.3: The west gable of the north aisle, facing northwest

Plate 16.4: The central bell tower, facing west

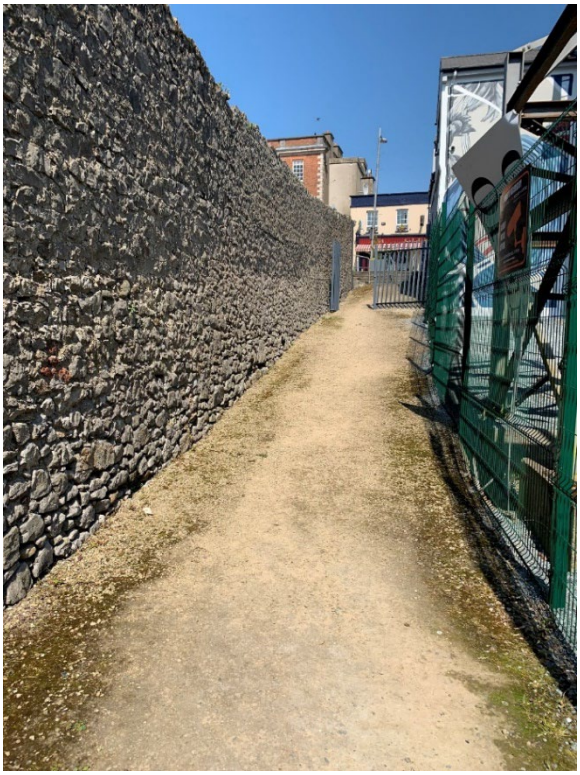

Plate 16.5: Lane from Old Abbey Lane to West Street, facing north

Plate 16.6: West Street, facing east

Plate 16.7: Scholes Lane, facing south

Plate 16.8: Industrial warehouse on Fair Street, facing southwest

Plate 16.9: Bridge of Peace, facing southwest

Plate 16.10: George's Street, facing north-northwest

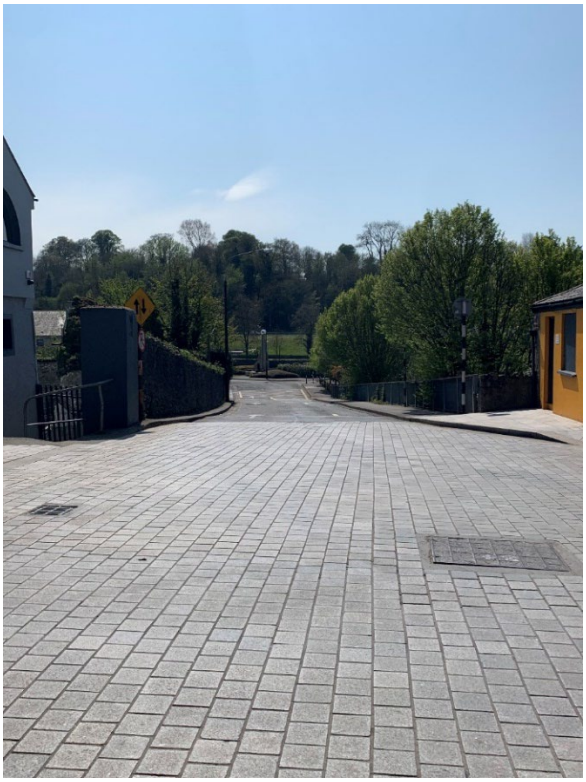

Plate 16.11: Father Conolly Way, facing south

Plate 16.12: Remains of medieval town wall, facing northwest

Plate 16.13: 'Shafts of Light', facing west

Conclusions

16.130 The application site is located within the townland of Moneymore, Drogheda Town, County Louth, immediately north of the River Boyne. The application site is predominantly located within the zone of archaeological potential for the historic town of Drogheda (LH024-041), which is a recorded monument. There are three individual recorded monuments within the proposed development area. These comprise the Old Abbey (St. Mary d'Urso) (LH024-041011) and the path of the medieval town wall and the site of two gates (recorded as town defences LH024-041014), which are both National Monuments and a site of a quay (LH024-041079). The medieval town walls have been subject to a conservation plan, published in 2006.

16.131 There are two further recorded archaeological sites within the 100m study area of the proposed development area. In addition, a number of cultural heritage assets have been identified, including a sculpture within the proposed development area, on the banks of the River Boyne. 'Shafts of Light' draws inspiration from the solar alignments seen with some passage tombs, in particular those in the Boyne Valley.

16.132 A large number of previous archaeological investigations have taken place within the proposed development area and its immediate environs. In particular, medieval archaeological features have been identified by such works, associated with the recorded the Old Abbey (St. Mary d'Urso) (LH024-041011) and the town wall (LH024-041014). The potential for medieval archaeological remains is also suggested by the number of stray finds of medieval date from the area, recorded in the National Museum of Ireland's Topographical Files.

16.133 The historic mapping shows that the proposed development area was once located within the medieval town walls of Drogheda. Over time, the area has been intensely developed, which included industrial works, over the course of the post-medieval period. While the Old Abbey (St. Mary d'Urso) (LH024-041011) and the town wall (LH024-041014) slowly degraded over time, the locations of the archaeological features were recorded in historic mapping. The town wall appears to have substantially survived until the 18th century. The remains of the Old Abbey (St. Mary d'Urso) (LH024-041011) are also visible in the aerial imagery, now located within a pedestrianised laneway known as 'Old Abbey Lane'.

16.134 A field inspection was carried out within the proposed development area and confirmed that the upstanding remains of the Old Abbey (St. Mary d'Urso) (LH024-041011) are present, along with a section of the medieval town wall that bounds a car park to the west of Father Connolly Way. This wall is heavily overgrown with vegetation.

Characteristics of the Proposed Development

16.135 Please refer to Chapter **5** of this EIAR for a detailed description of the proposed ~~project~~.

Potential Impacts

'Do Nothing' Scenario

16.136 If the proposed development were not to proceed, it is probable that the medieval fabric of the abbey and town walls would continue to degrade and diminish, making conservation and repair in the future more difficult.

Construction

16.137 At the Old Abbey (St. Mary d'Urso) (LH024-041011), it is proposed to conserve and repair the upstanding walls associated with the abbey and erect a new roof, covering the area to the east of the medieval tower. The new roof will not be attached to the medieval masonry, comprising a free-standing corten steel canopy. Prior to the application of mitigation, it is possible that the proposed repair works and construction of the canopy may have a direct, very significant negative impact on the medieval fabric of the abbey.

16.138 New paving will also be required throughout this area and as such, ground disturbances associated with the development may have a direct, negative and very significant impact on any buried archaeological remains along the path of Old Abbey Lane.

16.139 It is also proposed to conserve and repair the c. 70m section of medieval town wall to the east of the Bridge of Peace and construct an adjacent footpath and wooden walk way to the west of the wall, along with a water feature channel and a rainwater retention pond. The car park to the east of the wall will retain its current function. The town wall (both upstanding and buried remains) is a National Monument. Prior to the application of mitigation it is possible that the proposed repair works and construction of the footpath, water feature channel and retention pond may have a direct, very significant negative impact on the medieval fabric of the wall and any adjacent buried archaeological remains.

16.140 Overall, ground disturbances associated with the proposed scheme will be relatively low impact, as the proposed public realm regeneration scheme will comprise the installation

of new surfaces, footpaths and road markings. As part of the scheme, new trees and signage is proposed, which will require excavations that may affect buried archaeological remains below the modern road/tarmac surface. Impacts have the potential to be direct, negative and moderate, significant or very significant, dependant on the nature, extent and significance of any such remains that are present.

16.141 The proposals also seek to mark/delineate the path of the buried town wall along the northern side of the River Boyne and Father Connolly Way. This will be done with a stretch of corten steel plate enclosed within the pavement. This is a surface treatment and no direct negative impacts are predicted on the buried remains of the wall. Previous archaeological investigations have identified that the wall is buried at least 0.6m below the current ground level.

16.142 The Shafts of Light Sculpture will be retained within the scheme at its current location and will not be impacted by construction activities associated with the proposed development.

Operation

16.143 During the operation of the proposed development there will be a direct significant positive impact on the site of the Old Abbey (St. Mary d'Urso) (LH024-041011), due to the fact that the medieval fabric will be conserved and repaired (as per the mitigation below) and the National Monument will be fully accessible to the public. The presence of the free-standing canopy will result in a slight indirect negative impact on the setting of the ruins but this is offset by the conservation of the structure and its active function within a new public realm area.

16.144 During the operation of the proposed development there will be a direct very significant positive impact on the c. 70m section of the medieval town walls, due to the fact that the medieval fabric will be conserved and repaired (as per the mitigation below); this section of the National Monument will be fully accessible to the public and the path of the town wall will be inscribed in the landscape along the northern bank of the River Boyne.

16.145 During the operation of the proposed development there will be a direct significant positive impact on the Shafts of Light Sculpture, due to the improvement to its setting arising from the establishment of the public realm scheme.

16.146 Proposals seek to celebrate and bring the existing heritage into greater use and enhance appreciate and understanding of them.

Potential Cumulative Impacts

16.147 No cumulative impacts (from surrounding permitted or proposed developments) are predicted upon the archaeological or cultural heritage resource during the construction or operational phase any buried archaeological remains will be preserved by record.

Avoidance, Remedial, and Mitigation Measures

Construction

16.148 Prior to the commencement of works, a detailed measured photogrammetry survey will be carried out of the upstanding medieval fabric associated with the abbey. This will

provide an accurate and measured record of all the existing built remains on site. All repair and conservation work to the Old Abbey (St. Mary d'Urso) (LH024-041011) will require a detailed methodology to be produced in advance of the development proceeding. This will be produced by a Grade 1 Conservation Architect. The method statement and works detailed within, will require approval under Ministerial Consent as the structure is a National Monument. The method statement will also clearly state how the free-standing roof canopy will not affect the existing built fabric and include measures to protect the upstanding remains from inadvertent impacts during construction.

16.149 In addition, all ground disturbances relating to the resurfacing of Old Abbey Lane will be subject to archaeological monitoring. This will be carried out under Ministerial Consent, by a licence eligible archaeologist.

16.150 Prior to the commencement of works a detailed measured photogrammetry survey will be carried out of the upstanding town walls. This will provide an accurate and measured record of all the existing built remains. All repair and conservation work to the wall will require a detailed methodology to be produced in advance of the development proceeding. This will be produced by a Grade 1 Conservation Architect. The method statement and works detailed within, will require approval under Ministerial Consent as the structure is a National Monument. This may also require removal of vegetation by a suitably qualified contractor.

16.151 In addition, all ground disturbances (expected to be minimal) relating to the laying of the new footpath to the west of the wall and the insertion of a water feature channel and rainwater retention pond will be subject to archaeological monitoring. This will be carried out under Ministerial Consent, by a licence eligible archaeologist.

16.152 All excavations within the public realm area (with the exception of re-surfacing) will be subject to archaeological monitoring under licence, as issued by the National Monuments Service of the DoHLGH. If archaeological remains are identified, further mitigation may be required, such as preservation in situ or by record. Any further mitigation will require agreement from the DoHLGH.

Operation

16.153 In order to ensure the ongoing conservation of the remains of the Old Abbey (St. Mary d'Urso) (LH024-041011), during its operation within the public realm area, a Conservation Management Plan will be produced by a Conservation Architect and archaeologist in order to ensure that the protection of the medieval fabric and archaeology is managed throughout the use of the public realm scheme.

16.154 In order to ensure the ongoing conservation of the c. 70m section of the medieval town walls, during its operation within the public realm area, a Conservation Management Plan will be produced by a Conservation Architect and archaeologist in order to ensure that the protection of the medieval fabric and archaeology is managed throughout the use of the public realm scheme. This will represent an update to the existing 2006 Conservation Plan for the walls in Drogheda.

Monitoring & Reinstatement

16.155 The mitigation measures detailed above would also function as a monitoring system during construction to allow the further assessment of the scale of the predicted impacts and the effectiveness of the recommended mitigation measures. Reinstatement is not applicable.

Residual Impacts

16.156 If the above mitigation measures are applied successfully, there will be no predicted significant negative residual impacts on the archaeological and cultural heritage of the proposed development area.

16.157 There will be residual significant positive impacts on the site of the abbey and the town walls due to the fact that the monuments will form part of publicly accessible townscape.

Worst Case Scenario

16.158 Under a worst-case scenario, the proposed development would disturb previously unidentified and unrecorded deposits and artefacts without appropriate excavation and recording being undertaken, as well as disturbing and damaging the medieval stone fabric associated with the abbey and town walls.

Interactions

16.159 There is a direct interaction between this assessment and Chapter 17 Architectural Heritage. Chapter 17 has been reviewed as part of this assessment to ensure all aspect of the historic environment have been assessed and also to prevent replication of information.

Difficulties in Compiling Information

16.160 No difficulties were encountered in compiling this chapter.

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- CARTOGRAPHIC SOURCES
- Down Survey, Barony of Ferrard in County of Lowth, c. 1654-6
- Newcommen's Map of Drogheda, 1657
- Ravell's Map of Drogheda, 1749
- Wren's Map of County Louth, 1766
- Taylor and Skinner's Map of County Louth, 1778
- Ordnance Survey Maps of County Louth, 1835-1912

ELECTRONIC SOURCES

- www.excavations.ie – Summary of archaeological excavation from 1970-2022.
- www.archaeology.ie – DoHLGH website listing all SMR/RMP sites.
- www.heritagemaps.ie – The Heritage Council web-based spatial data viewer, which focuses on the built, cultural and natural heritage.
- www.googleearth.com – Satellite imagery of the proposed development area.
- www.bing.com– Satellite imagery of the proposed development area.
- www.booksulster.com/library/plnm/placenamesC.php - Contains the text from Irish Local Names Explained by P.W Joyce (1870).
- www.logainm.ie –Placenames Database of Ireland launched by Fiontar agus Scoil na Gaelige and the DoHLGH.

- www.battleoftheboyne.ie - Website detailing the movements and results of the Battle of the Boyne and surrounding environs.
- www.unesco.com – Website detailing boundaries of the Brú na Bóinne World Heritage Site.

17. Architectural Heritage

Introduction

17.1 Mesh Architects has prepared this chapter on behalf of LCC to assess the impact, if any, as a result of the proposed project, on the architectural and townscape heritage that exists within, and in the vicinity of, the application site which is located on lands within the Westgate Vision Area of Drogheda, Co. Louth (ITM 708472, 775280, see **Figure 17.1**).

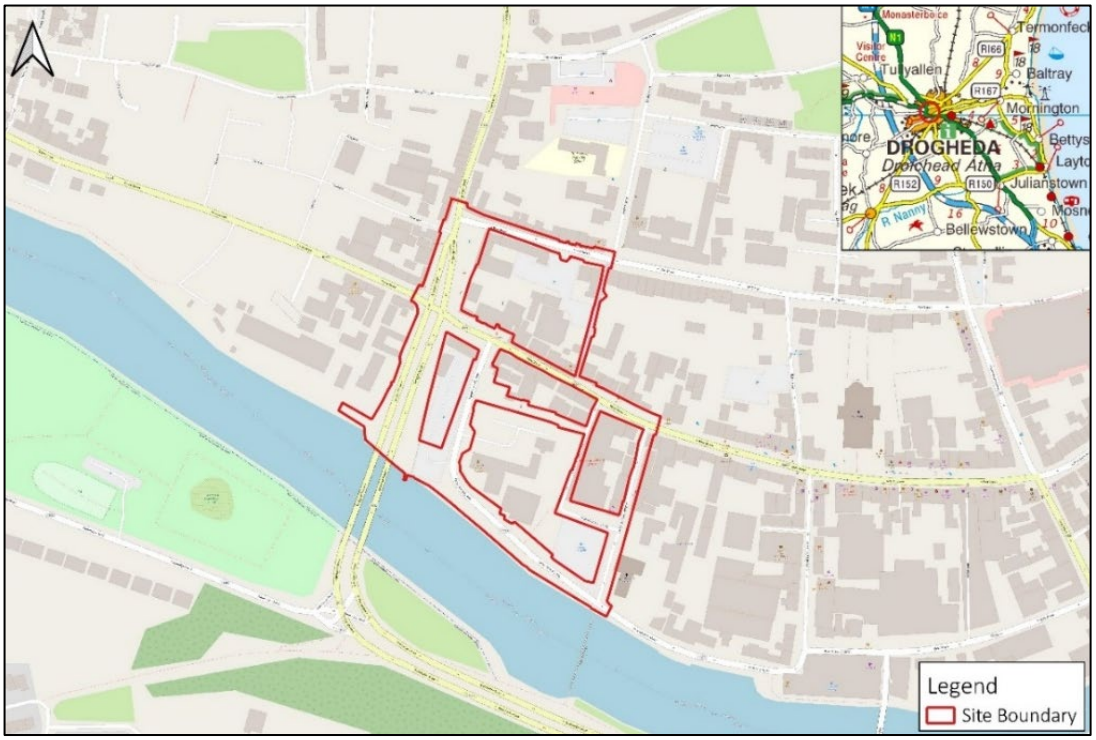


Figure 17.1: Extent and Location of the Application

17.2 This study has sought to determine, as far as possible from visiting the site in person, examining the existing built heritage in the area, and studying the available records and surveys, the nature and significance of the architectural heritage in the area.

17.3 The area of study is defined as all physical structures within the redline boundary of the application site , and all architectural and landscape features and structures visible from the public roads and lanes that are the subject of the proposed development. The historic townscape of the Westgate area is the historic context in which these structures exist and are understood.

17.4 The following outcomes are sought:

- Understanding the background history of Drogheda, its original foundation and development through time, up to the present day.
- An understanding of the many historic structures that remain in the development area, most of which are protected by inclusion in the Record of Protected

Structures, Record of Monuments and Places, and through the establishment of Architectural Conservation Areas in the Louth County Development Plan 2021-2027.

- Determining the impact upon the setting of the identified Architectural Heritage assets of the proposed development.

- Suggested mitigation measures based upon the results of the above research.

17.5 An impact assessment and a mitigation strategy have been prepared. The impact assessment is undertaken to outline potential adverse impacts that the proposed development may have on the architectural heritage resource, while the mitigation strategy is designed to avoid, reduce, or offset any such adverse impacts.

17.6 This chapter of the Environmental Impact Assessment Report has been prepared by Thomas McGimsey of Mesh Architects, a RIAI Grade 1 Accredited Conservation Practice. This chapter examines the likely impacts, both direct and indirect, on protected structures, monuments and other significant architectural heritage assets.

Definition of Architectural Heritage

17.7 Architectural Heritage falls within the more general term 'Cultural Heritage', and describes works of construction, ranging from buildings designed by esteemed architects to vernacular structures of modest scale and complexity.

17.8 Architectural Heritage, as defined for inclusion in the Record of Protected Structures, applies to manmade structures of special interest from an architectural, historical, archaeological, artistic, cultural, scientific, social or technical point view. Structures included for such statutory protection in Ireland generally date from AD 1700 up to the middle of the C20th, and are considered to have International, National or Regional importance, or significance.

Methodology

17.9 Research for this Chapter was undertaken in two phases. The first phase comprised a desk-based survey of all available historical and cartographic sources. The second phase involved a field inspection of the application site.

Paper Survey

- Record of Protected Structures, included in the Louth County Development Plan 2021-2027.

- National Inventory of Architectural Heritage.

- Architectural Conservation Area Plans, included in the Louth County Development Plan 2021-2027.

- Architectural Heritage Protection Guidelines for Planning Authorities, 2004/2011.

- Cartographic and written sources relating to the study area.

17.10 **Development Plans** contain a catalogue of all the Protected Structures and Architectural Conservation Areas within the county. The Louth County Development Plan (2021–2027) was reviewed to obtain information on architectural heritage sites in and within the immediate vicinity of the proposed development area.

17.11 **National Inventory of Architectural Heritage** (NIAH) is a state initiative under the administration of the Department of Housing, Local Government and Heritage and established on a statutory basis under the provisions of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999. The purpose of the NIAH is to identify, record, and evaluate the post-1700 architectural heritage of Ireland, uniformly and consistently as an aid in the protection and conservation of the built heritage.

17.12 **Cartographic sources** are important in tracing land use development within the development area as well as providing important topographical information on areas of archaeological potential and the development of buildings. Cartographic analysis of all relevant maps has been made to identify any topographical anomalies or structures that no longer remain within the landscape.

17.13 **Documentary sources** were consulted to gain background information on the archaeological and cultural heritage landscape of the proposed development area. A full list of references is provided in Section 16.4.

Field Inspection

17.14 Field inspection is necessary to determine the extent and nature of all significant architectural heritage assets, as well as any upstanding archaeological and historical remains, and can also lead to the identification of previously unrecorded or suspected sites and portable finds through topographical observation and local information all of which contribute to and are affected by the general historical landscape and urban setting.

17.15 The architectural heritage field inspection included the following:

- Walking the extent of application site and its immediate surroundings.
- Noting and recording all of the extant of old and historic structures lining the public roads and lanes within the project area.
- Noting and recording the presence of features of historic paving and other hard landscaping within the project area.

Guidance and Legislation

17.16 The following legislation, standards and guidelines were consulted as part of the assessment.

- National Monuments Act, 1930 to 2014;
- The Planning and Development Acts, 2000 (as amended);
- Heritage Act, 1995 (as amended);

- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999.

- Guidelines on the Information to be Contained in Environmental Impact Assessment Report 2022, EPA;

- Draft Advice Notes on Current Practice (in the preparation of Environmental Impact Statements), 2015, EPA;

- Architectural Heritage Protection, Guidelines for Planning Authorities, 2011, Department of Arts, Heritage and the Gaeltacht.

17.17 The Architectural Heritage assets that are likely to be affected by the proposed development have been identified and characterised. The characterisation has taken into consideration their Architectural and Cultural Significance, their sensitivity to change and the likely degree of impact.

17.18 Where negative impacts are noted as possible or likely, mitigation measures are identified that will reduce or eliminate the severity of that impact.

Definition of Impacts

17.19 The quality and type of an impact can be classed as one of the following (as per the EPA's Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (2022)):

- Negative Impact: A change which reduces the quality of the environment, for example a change that will detract from or permanently remove an archaeological or cultural heritage site from the landscape;

- Neutral Impact: A change which does not affect the quality of the environment; or

- Positive Impact: A change which improves the quality of the environment, for example a change that improves or enhances the setting of archaeological or cultural heritage site.

17.20 The below terms are used in relation to the cultural heritage and relate to whether an Architectural Heritage Asset will be physically impacted upon or not:

- Direct Impact: Where an Architectural Heritage Asset or site is physically located within the footprint of the proposed development and entails the removal of part, or all, of the Asset; and

- Indirect Impact: Where an Architectural Heritage Asset or its setting is located in close proximity to the footprint of a development.

Significance of Effects

17.21 The description and significance of effects are in accordance with the abovementioned EPA Guidelines (2022), as defined below:

- Imperceptible: An effect capable of measurement but without noticeable consequences.

- Not significant: An effect which causes noticeable changes in the character of the environment but without noticeable consequences

- Slight Effects: An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.

- Moderate Effects: An effect that alters the character of the environment in a manner that is consistent with existing and emerging trends.

- Significant Effects: An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.

- Very Significant: An effect which, by its character, magnitude, duration or intensity significantly alters the majority of a sensitive aspect of the environment.

- Profound Effects: An effect which obliterates sensitive characteristics.

Existing/Receiving Environment (Baseline Scenario)

17.22 An excellent and thorough account of the history of Drogheda is contained in the previous EIAR Chapter, i.e. 'Chapter 16 – Archaeology and Cultural Heritage', including a thorough cartographic analysis of the area. The application site is located in the south-west corner of the historic core of Drogheda Town, County Louth.

17.23 To avoid repetition, this Chapter will address the extant architectural heritage assets that generally post-date the beginning of the 18th Century. The background history and physical description of the upstanding monuments that stand within the project area are well covered in the preceding chapter and will not be duplicated in this chapter, however, the potential impacts and mitigation measures that relate to those heritage assets will be considered in this chapter.

17.24 Drogheda, the largest town of County Louth, has a rich and ancient history. Founded by Hugh de Lacy prior to his death in 1186, after the land of Meath was granted to him by Richard FitzGilbert de Clare, otherwise known as Strongbow. The town grew to be one of the busiest and wealthiest towns in Ireland, rivalling Dublin and Kilkenny in scale. Two distinct settlements were established on the opposite banks of the River Boyne and developed as two separate boroughs. Linked by a stone bridge over the Boyne, each borough had its own charter, "with independent privileges and corporations" (Bradley 1997). The two boroughs were finally merged to form a single town in 1412 (Bradley 1997: Thomas 1992).

17.25 Like many other towns in Ireland, Drogheda depended on a stout perimeter wall for its security, surrounding the compact city and entered through several well-protected gates. Of the two primary gates, which formed the main entrance points to the city's long high street, only the magnificent St. Laurence's Gate survives on the east end of the road. West Gate, possibly of similar scale and design, stood at the west end of West Street, the western continuation of Drogheda's principal street.

17.26 Although the West Gate itself has vanished, a substantial portion of the adjacent medieval town wall survives in reasonable condition, running down to the banks of the River Boyne. The West Gate and the adjacent town wall are believed to date from mid to late C13th when the town's walls were extended to the west, to enclose the medieval hospital of The Old Abbey (St Mary d'Urso), the ruins of which partially survive along Old Abbey Lane.

17.27 In addition to the St. Laurence's Gate and the section of the town wall beside the Bridge of Peace, significant above ground portions of the wall can also be seen near Mill Mount on the south side of the River Boyne. The full alignment of the medieval walls can be read in the pattern of roads within the historic town centre, and in the property boundaries of the large number of historic structures still standing in Drogheda (Gowan 2006).

17.28 An excellent resource for this project is the ***Conservation Plan – Town Walls and other Defenses of Drogheda***, prepared for the Drogheda Borough Council and The Heritage Council, and adopted in October of 2006. This document includes an excellently written background history of Drogheda, all of which is pertinent to the present Westgate project. Also included are in depth discussions of the vulnerabilities and issues affecting the town's ancient perimeter walls, and suggestions for development policies.

17.29 In Appendix 1 of the Town Walls Conservation Plan, the authors provided *'Specific recommendations in relation to care, maintenance and conservation of the fabric of the standing walls above ground and below ground…'.* The well-preserved section of the town wall that survives beside the Bridge of Peace was specifically described as requiring a '*…condition survey to identify remedial works necessary to repair and maintain the wall in good condition'*.

17.30 The following specific recommendations for survey and maintenance of the medieval wall were described on the same page:

> '*This section of wall slopes up hill away from the Boyne River bank beside the Bridge of Peace. The round is much built up both sides of the wall however the line of the wall-walk and the defensive loops are very visible. The wall suffers from open joints, missing stones, poor brick and block-work repairs, atmospheric pollution, extensive graffiti and substantial plant life including a large tree. Attempts have been made previously to cap the wall in places with brick and tile and stone masonry copings but other areas have no coping. A suitable, consistent hard coping treatment is recommended for this section of the wall. The lack of coping to the skyward surface of the wall is allowing water ingress to occur which is detrimental to the wall condition over the long term as it washes outpointing and encourages plant life which can cause structural instability in the wall. The patchy inconsistent repairs and extensive graffiti detract from the understanding and visual appreciation of this highly visible section of town wall.'*

Description of Architectural Heritage Assets in the Westgate Area

17.31 The Westgate Area contains a wealth of Protected Structures, as well as many other structures that make a positive contribution to the Architectural Conservation Areas in which they stand. As noted in the previous chapter, there are several nationally significant National Monuments within the Westgate Area that consist of significant

upstanding ruins, including the impressive remains of the medieval town walls (LH024-041014 National Monument), and the ruins of The Old Abbey (St Mary d'Urso) (LH024-041011)).

17.32 The built heritage of central Drogheda has been surveyed and recorded in the National Inventory of Architectural Heritage, and many buildings in and around the application site have been included on the Record of Protected Structures (RPS). Figure 17.2 identifies the development area in blue with all Protected Structures identified by a blue dot along with their RPS numbers. A full list of all Protected Structures in the project area follows this map, from the same source.

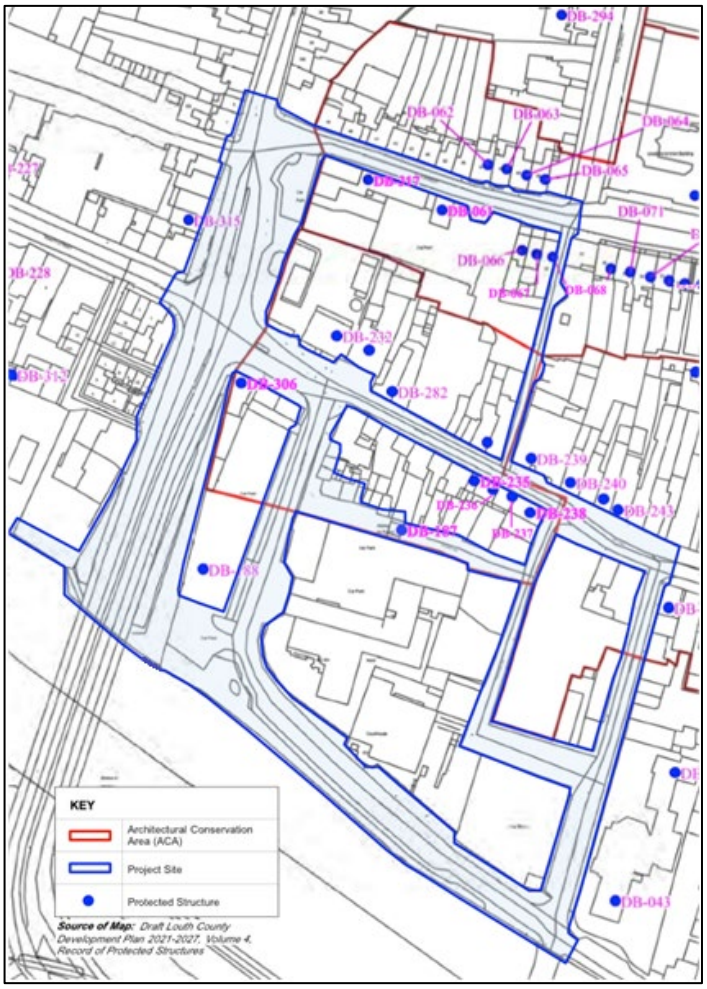


Figure 17.2: Extract from the Louth County Development Plan, 2021-2027, Volume 4, Record of Protected Structures.

Table 17.1: Protected Structures Located within/adjacent to the Application Site

Structure's Name	RPS No.	NIAH No.	Structure/s Location	Rating	Description of Special Interest	Description of Setting	Heritage Significance
Warehouse	DB.317	13618038	West End of Fair Street	Regional	Attached seven-bay four-storey warehouse, built c. 1840. Pitched slate roof, projecting hipped roof with winch over loading bay to west of north elevation, clay ridge and hip tile. Hoist and pulley mechanisms projecting from north elevation.	The warehouse stands on the south side of the west end of Fair Street, in an area comprised predominately of C18th terraced houses.	Well built C19th industrial warehouse, gives variety to the local townscape and has regional significance.
Former Cornmarket	DB.069a	13618043	52-53 Fair Street	National	Designed by prominent architect Francis Johnson, and built 1796. Converted to Council Offices during the C19th.	Prominent courtyard structure on the north side of Fair Street, outside of the boundary of the Westgate Project Area. This structure is undergoing refurbishment and extension as the seat of the Drogheda 342istrict Council.	National significance due to its famous architect, Francis Johnson, and its fine architectural design.
Former Convent of the Sisters of Charity	DB.069b	13618044	54 Fair Street	Regional	Late C19th redbrick convent, adjacent to the former Cornmarket with cupola on the roof.	Adjacent to the Local Authority offices in the former Cornmarket, and currently under renovation to link to those offices.	Regional significance due to its architectural, artistic and social interest.

Structure's Name	RPS No.	NIAH No.	Structure/s Location	Rating	Description of Special Interest	Description of Setting	Heritage Significance
Former Convent of the Sisters of Charity	DB.082	13618045	55-56 Fair Street	Regional	Late C19th redbrick convent school building with attractive polychrome brick details.	Adjacent to the Local Authority offices in the former Cornmarket, and currently under renovation to link to those offices.	Regional significance due to its architectural, artistic and social interest.
Residential House	DB.068 DB.067 DB.066	13618034 13618035 13618036	28 Fair Street 29 Fair Street 30 Fair Street	Regional	Terrace of Three Two-bay, three-storey, red brick houses, c. 1830, incl railings and steps.	Standing on the south side of Fair Street, this group of similar terraced houses date from the early C19th. They have similar iron railings to the front, and make a positive contribution to the historic townscape.	This terrace has architectural significance as a group of good quality vernacular terraced houses. As a group they have Regional Significance.
Residential House	DB.061	13618037	33 Fair Street	Regional	Four-bay, three-storey mid 18th Century house with carriage arch and spur stones.	The house stands on the south side of Fair Street, between a large empty site and the Protected Warehouse, RPS NO. DB.317	The house has architectural significance as a mid-C18th terraced house.
Residential House	DB.062 DB.063	13618039 13618040 13618041	47 Fair Street	Regional	Two-bay, three-storey over basement terraced mid 18thC house, with cement	Standing on the north side of Fair Street, this group of similar terraced houses date from the middle of the C18th. They have similar iron railings to the front, and make	This group of four similar houses was built as a group, with similar design and

Structure's Name	RPS No.	NIAH No.	Structure/s Location	Rating	Description of Special Interest	Description of Setting	Heritage Significance
	DB.064 DB.065	13618042	48 Fair Street 49 Fair Street 50 Fair Street		rendered façade, incl railings	a positive contribution to the historic townscape.	features, and represent good quality merchant's houses from the middle of the C18th. As a group they have Regional Significance.
Old Abbey Tower and Arch	Db.187	(Not Surveyed)	Old Abbey Lane	National	Ruins of the Abbey of St. Mary d'Urso.	The medieval ruins are a very visible feature in the Westgate area, with the tall ruined tower and associated gables. These ruins stand on Old Abbey Lane, a pedestrian lane that runs through the heart of the ruined Chapel from the Abbey.	National Monument due to its medieval history and architecture.
Town Wall	DB.188	(Not Surveyed)	Old Abbey Lane	National	100m section of Town Wall marking western boundary of Medieval Town.	The setting around the Town Wall has suffered from the development of a raised roadway and bridge to the west, and poorly planned carpark along its east side. Public access to the wall is difficult and without sufficient signage or amenity.	The Town Wall at Westgate is one of the best preserved sections of medieval town walls in Ireland. I has National Significance.

Structure's Name	RPS No.	NIAH No.	Structure/s Location	Rating	Description of Special Interest	Description of Setting	Heritage Significance
West Gate Hse	DB.306	13616002	63 West Street	Regional	Three-bay, three-storey house c. 1790 with cement rendered walls, early 20th Century cornice and shopfront. The return, of rubble stone and brick, is built on the line of the town wall, and possibly incorporates some medieval masonry.	The house stands adjacent to the location of the medieval West Gate, demolished during the early C19th. The historic setting is very different to when the gate was intact. More recent changes to the historic setting came from the clearing of many old structures to accommodate the Bridge of Peace and the additional traffic lanes to the west of the location of the West Gate.	Architectural Significance due to being part of the historic townscape of the Westgate area, and its proximity to the former West Gate, and to Barlow House, across the street.
Barlow House	DB.232	13618010	62 West Street	National	Five-bay three-storey over basement house of red brick with limestone dressings. Built by Alderman James Barlow in 1734. Attributed to Richard Castle and Francis Bindon.	Barlow House stands on the north side of West Street, adjacent to the location of the former medieval West Gate. The front of the house retains historic iron railings and entry stairs. The loss of the West Gate opened up area to the west, and the construction of the Peace Bridge added substantially more vehicular traffic to the area to the west of Barlow House.	Barlow House has substantial architectural significance due to its high quality design and construction details, and to the association with Richard Castle and Francis Bindon.

Structure's Name	RPS No.	NIAH No.	Structure/s Location	Rating	Description of Special Interest	Description of Setting	Heritage Significance
Gleeson's	DB.233	-	64-65 West Street	Regional	Five-bay two-storey house from mid-18th Century. 19th Century shopfront with fluted pilasters. Interior contains mid-C19 joinery.	This house stands adjacent to the Barlow House, and contributes to the historic character along the west end of West Street.	Significant because of its vernacular architectural design and shop front details.
Residential House	DB.282		66 West Street	Regional	Three-bay three-storey house, c.1840 of imported brick with limestone quoins.	This structure includes a narrow carriage arch, giving access to an early laneway to its rear. It make a positive contribution to the historic streetscape of West Street, and is close to Barlow House.	Significant because of its vernacular architectural design and shop front details.
Former House	DB.346	13621008	No.38 West Street	Regional	Three-bay, four-storey former house, Ca. 1800. Prominent location of corner site, with gable to front and rear.	Corner sited attached three-bay four-storey former house, built c. 1800, now in commercial house. This prominent house has a distinctive roof design, with gable to the front and rear.	Significant because of its vernacular architectural design.
Former House	DB.243	(Not Surveyed)	No. 80 West Street	Regional	Two-storey, three-bay house with shop front.	Standing on the north side of West Street among a large group of C18th former houses, all of which have been converted to commercial use.	Significant because of its vernacular architectural design and shop front details.

Structure's Name	RPS No.	NIAH No.	Structure/s Location	Rating	Description of Special Interest	Description of Setting	Heritage Significance
Former House now Public House	DB.242	13618015	79 West Street	Regional	Four-bay, three-storey house of red brick, with segmental-headed windows, yellow terra cotta string courses and voussoirs over windows with a moulded brick cornice.	Standing on the north side of West Street among a large group of C18th former houses, all of which have been converted to commercial use.	A well-maintained public house with distinctive polychromatic brick masonry.
West End Arcade Arch	DB.241	(Not Surveyed)	84 West End Arcade	Regional	Arched gate leading to West End Arcade.	Standing on the north side of West Street among a large group of C18th former houses, all of which have been converted to commercial use.	Significant because of its vernacular architectural design and shop front details.
Former House	DB.240	(Not Surveyed)	77 West Street	Regional	Two-bay, three-storey house, shopfront with good brackets and floral tiles.	Standing on the north side of West Street among a large group of C18th former houses, all of which have been converted to commercial use.	Significant because of its vernacular architectural design and shop front details.
Former House	DB.239	13618011	75-75 WEST street, Scholes Lane	Regional	Five-bay, three-storey house, 1730-1790, converted to commercial	Standing on the north side of West Street among a large group of C18th former houses, all of which have been converted to commercial use.	Significant because of its vernacular architectural design

Structure's Name	RPS No.	NIAH No.	Structure/s Location	Rating	Description of Special Interest	Description of Setting	Heritage Significance
					use with ornate shop front at street level.		and shop front details.
Former House	DB.238	13618014	43-44 West Street	Regional	Five-bay, three-storey house with high pitched roof. Structure dates from C 17 or possibly earlier.	This house stands on the south side of West Street, beside St. Patrickswell Lane. It is an important corner on the block of West Street with many protected structures.	Significant because of its origins in the C16th or C17th, and it vernacular architectural details.
Former House	DB.237	13618014	44 West Street	Shop	Five-bay, three-storey house with high pitched roof. Structure from C 17. Plaque, 1583, from Elcock house	Standing on the south side of West Street among a large group of C18th former houses, all of which have been converted to commercial use.	Significant because of its vernacular architectural design and shop front details.
Former House	DB.236	13618013	45 West Street	Shop	Three-bay, two-storey, late 18th Century house with rendered walls, and round headed doorcase. Simple shopfront.	Standing on the south side of West Street among a large group of C18th former houses, all of which have been converted to commercial use.	Significant because of its vernacular architectural design and shop front details.
Former House	DB.235	13618012	47 West Street	Shop	Three-bay, two-storey, late 18th Century house with	Standing on the south side of West Street among a large group of C18th former	Significant because of its vernacular

Structure's Name	RPS No.	NIAH No.	Structure/s Location	Rating	Description of Special Interest	Description of Setting	Heritage Significance
					rendered walls, and round headed doorcase. Simple shopfront.	houses, all of which have been converted to commercial use.	architectural design and shop front details.
Former House	DB.283	(Not Surveyed)	72 West Street	Shop	Three-bay three-storey house, c.1730, with two-bays on top floor. Windows have raised and fielded shutters	Early C18th gabled house.	
St. Mary Magdalene's Church St. Mary Magdalene's Convent	DB.043 DB.044	13621014 13621016	Saint Mary Magdalene's Catholic Church Saint Mary Magdalene's Dominican Convent	Regional Regional	T-Plan gable-fronted church, built 1878 to the design of noted architect George Ashlin. Attached to Saint Mary Magdalene's Dominican Convent, to the north. The church is significant for its richly detailed architectural design and for its importance as a local place of worship.	The church stands on the east side of Dominic Street, behind a wrought iron railing and stone plinth. The church is attached to Saint Mary Magdalene's Dominican Convent to the north, and the structures comprise a group of structures designed by the same architect and built at the same time.	The church and convent comprise an important group of C19th religious structures, designed by the internationally significant architect George Ashlin. They are of high architectural significance and are in excellent intact condition.

Structure's Name	RPS No.	NIAH No.	Structure/s Location	Rating	Description of Special Interest	Description of Setting	Heritage Significance
Former House	DB.315	13618008	1-2 Georges Street	Regional	Four-bay three-storey house, c. 1830-1850, converted to commercial shop.	Standing on the west side of Georges Street/	Prominent vernacular house, dating from c.1830-1850 of Regional Significance.

17.33 Additional protection was given to the heritage assets located within the project area, through the creation of three Architectural Conservation Areas (ACAs), whose boundaries include areas within the Westgate area.

- Fair Street (i.e. No. 4 in in Map 11.1 of Appendix 11 of Volume 3 of the LCDP 2021-2027);
- West Street and Surrounding Streets (i.e. No. 14 in Map 11.1 of Appendix 11 of Volume 3 of the LCDP 2021-2027); and
- Old Abbey Lane (i.e. No. 17 in Map 11.1 of Appendix 11 of Volume 3 of the LCDP 2021-2027).

17.34 As seen in the ACA plans in the figures that follow, there are many sites and structures of Local and Regional Importance, and more than a few of National Importance. The Fair Street ACA encompasses the full length of Fair Street, of which only the western quarter of the street is included within the northern corner of the Westgate Project area, behind Barlow House. As shown on the attached ACA map, the West Street ACA contains a remarkable concentration of historic structures, most of which were built as good quality houses during the early C18th through the mid-C19th. Many remain in residential use, while others have been converted to commercial, office or institutional use.

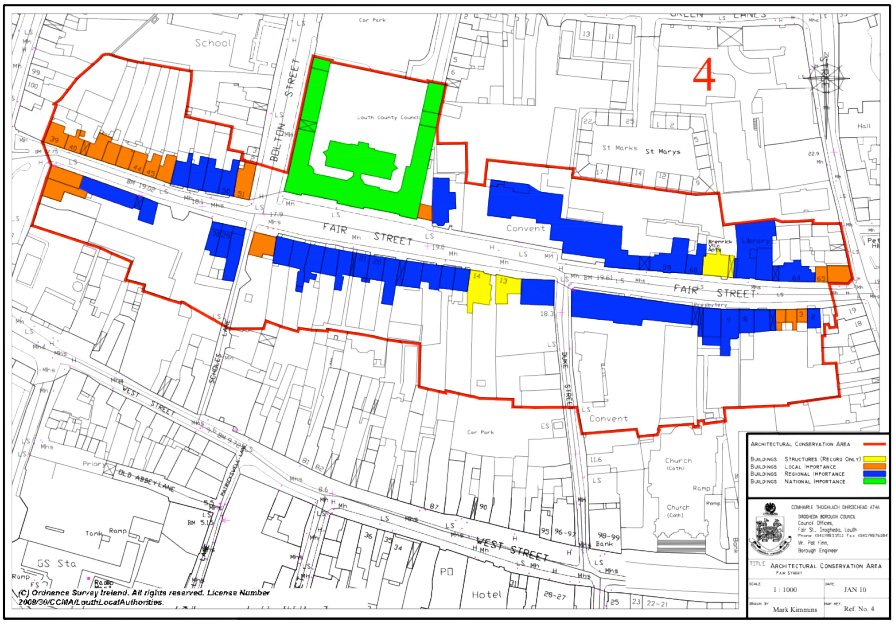


Figure 17.3: Architectural Conservation Area Plan

17.35 The West Street and Surrounding Streets ACA includes most of the former domestic structures that stand along the west end of West Street from West Gate to Patrickswell Lane, including Barlow House and several early 18th century structures. Also included in this ACA are the remaining portion of the city wall running down to the River Boyne, and the ruins of the Priory of The Old Abbey (St Mary d'Urso), on Old Abbey Lane.

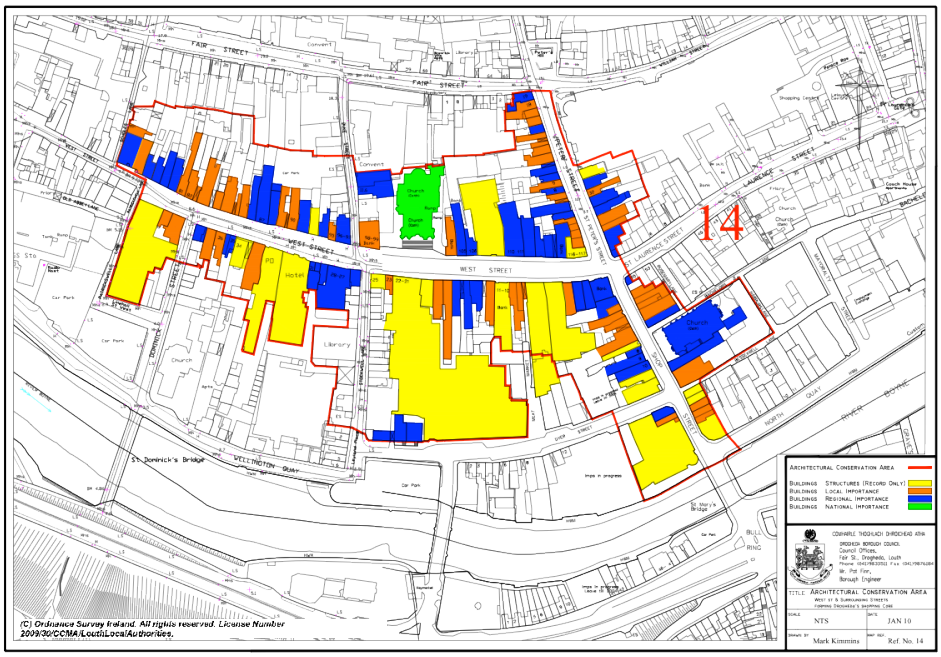


Figure 17.4: Architectural Conservation Area Plan

17.36 The Old Abbey Lane ACA includes the oldest and most significant Heritage Assets within the proposed development area. Those include a portion of the Town Wall, the medieval ruins of The Old Abbey (St Mary d'Urso) on Old Abbey Lane, Barlow House at the west end of West Street, and a large concentration of C18th and C19th terrace houses. In addition to the historic structures noted above, there are rubble stone boundary walls that run along the eastern edge of the north end of Father Connolly Way. That stretch of wall consists of limestone rubble stone masonry, and forms a solid boundary along the edge of the Father Connolly Way, from its junction with West Gate Street, down to the entrance to the Garda Station carpark.

Figure 17.5: Architectural Conservation Area Plan

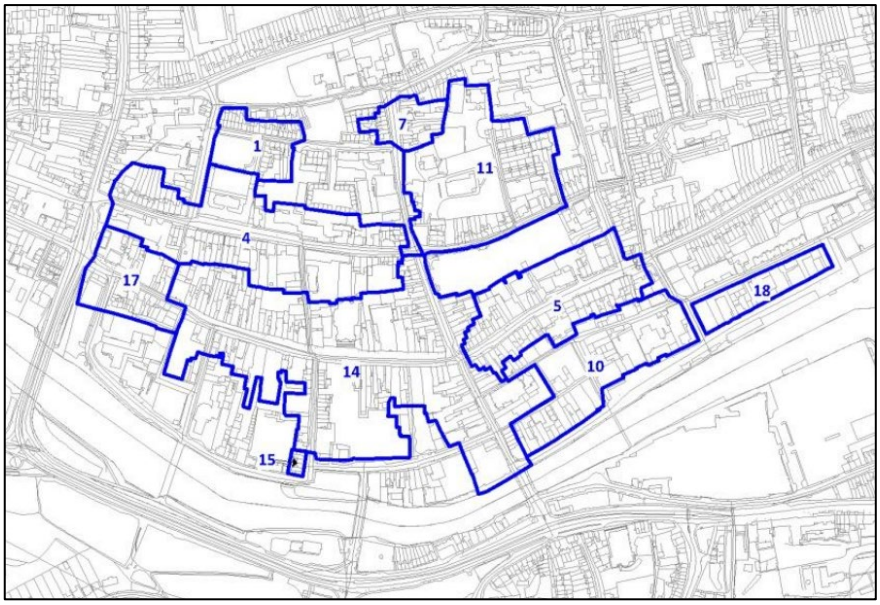


Figure 17.6: Louth County Council map showing the Architectural Con Conservation Areas currently established in the historic core of Drogheda.

17.37 The most prominent and significant of the structures that stands within the application site is undoubtedly the remains of the medieval The Old Abbey (St Mary d'Urso), a hospital named after its founder, Ursus de Swemele. The institution existed from its foundation in 1206-1214 until its dissolution in 1540. The visible remains of the Abbey, including the chapel's tower, roofless walls and a ruined gable from a side aisle, are believed to date from C15th. Like the town wall, these medieval ruins suffer from lack of maintenance, graffiti and structural decay.

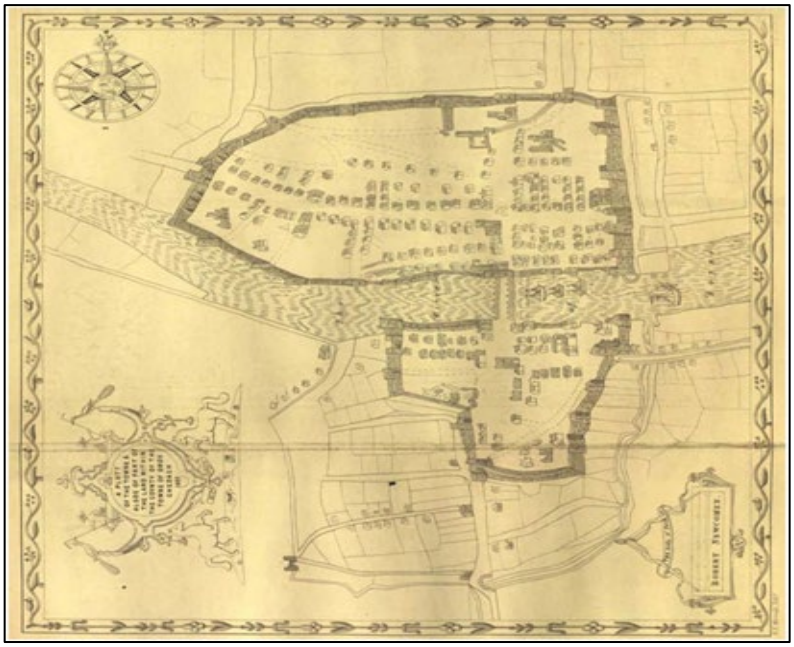


Figure 17.7: Plan of Drogheda from 1657, showing the town walls, West Gate and the surviving ruins of The Old Abbey (St Mary d'Urso). The Westgate area is at the top left corner of the map.

17.38 At present, the Westgate area is generally characterised by a lack of amenities for visitors or residents. An important exception to this issue is the presence of the Droichead Arts Centre, located in Barlow House, an important early 18th Century townhouse, located at the western end of West Street. This wonderful centre for the promotion of the arts in the town of Drogheda is surrounded by poorly utilised, run down and derelict historic buildings, many dating from the late 17th-19th centuries. Many of the building are in poor or even ruinous condition, leading to a general appearance of dereliction and anti-social behaviour.

17.39 The creation of the Peace Bridge during the late 20th Century saw an increase of traffic across the western edge of the Westgate area, and its unfortunate proximity to the ancient town walls left an unfriendly zone along the outer face of that highly significant monument. The immediate areas around the National Monuments are bleak and empty. It is also clear that the physical fabric of the town wall and the ruins of the former priory are crumbling and plagued by vegetation and graffiti. The current trends will likely worsen over time, leading to the loss of highly significant medieval masonry and details of the ancient structures.

17.40 Site photos are provided below which help to inform the context and understanding of the architectural heritage baseline/receiving environment.

Photo 1: General view looking north, showing the extent of the surviving town walls, running from the river Boyne up to the since demolished West Gate.

Photo 2: General view looking south, showing the degree to which the Peace Bridge at the right has impacted the historic setting of the town wall at left.

Photo 3: Detail view showing the current conditions on the east side of the town wall. Note the extent of invasive vegetation, missing mortar joints, structural cracks, and undermining of the wall's base.

Photo 4: General view looking north, showing the tower of The Old Abbey (St Mary d'Urso) as it currently appears. The Garda Station is to its right.

Photo 5: General view looking north-east, showing the free-standing west gable from the side aisle of the chapel at the Abbey of St. Mary d'Urso. The C19th rubble stone boundary wall running along the edge of Father Connolly Way is shown, forming a solid boundary between the road and the end of Old Abbey Lane.

Photo 6: General view looking west along Old Abbey Lane, showing the roofless ruins of the chapel and its tower, from the Abbey of St. Mary dDu'Urso**.**

Photo 7: Detail view showing the fragile masonry on the underside of the arch at the base of the medieval tower at The Old Abbey (St Mary d'Urso). Careful conservation works are required to all of the upstanding masonry ruins from the abbey, to prevent further deterioration.

Photo 8: General view showing the west gable end that survives from a side chapel at The Old Abbey (St Mary d'Urso). This fragment of the chapel was uncovered during the late 20th century when later structures were removed. It is currently in a precarious structural condition and depends on temporary props for its stability.

Photo 9: Detail view showing loose masonry on the west gable that survives from the Abbey of St. Mary d'Urso.

Photo 10: General view showing Barlow House, the fine 1734 mansion of Alderman James Barlow that is currently used as the Droichead Arts Centre.

Photo 11: General view showing west along West Street, towards the location of the long demolished Westgate. Barlow House is at the right edge of this photo. West Gate House is the three-storey structure left of centre.

Photo 12: General view looking north along the western edge of the project area. The historic West Gate formerly stood at the right hand side of this image, and the wide street crosses a former open square that existed outside of the medieval gate.

Photo 13: General view east across the former open square, on the west side of the former West Gate. The square is now a wide vehicular road, carrying traffic to the Peace Bridge, to the right.

Photo 14: General view looking east along West Street, from Barlow House, showing the group of 18th and 19th century former houses that stand on the south side of West Street in the project area. Old Abbey Lane is directly behind these properties.

Photo 15: General view showing the ruinous structure at the centre of the group of properties in the previous photo. The ruins of the Abbey of St. Mary d'Urso are directly behind this derelict site.

Photo 16: General view showing a row of former houses on the north side of West Street, in varying conditions and showing signs of dereliction and lack of maintenance. Barlow house is just beyond the left end of this group of 18th century structures.

Photo 17: General view showing the rear of the houses in the previous photo. Note the gabled rear elevation to the second house, showing its early 18th century date. Scholes Lane at left is shown in the following photo, and is an ancient lane through the town.

Photo 18: General view looking south along Scholes Lanes, the narrow medieval laneway that runs between West Street and Fair Street, within the project area.

Photo 19: General view showing a derelict group of structures on the south side of the western end of Fair Street, immediately behind Barlow House. At left is a large house dating from the

middle of the 18th century. Beyond is an attractive early 19th century industrial structure. Both structures are worthy of sensitive restoration and reuse.

Photo 20: General view showing the south elevations to the unused structures in the previous photo, and the open space to their rear.

Photo 21: General view looking south-east, showing the commercial/industrial structures standing on the north-west corner of the project area. Fair Street is at the left.

Photo 22: General view looking north, showing the fine terrace of houses standing on the north side of Fair Street. The formerly gabled roofs can be seen above the flat front parapets.

Photo 23: General view looking north along Scholes Lane, showing the gable rear elevations to three mid-18th century houses.

Photo 24: General view showing the front elevation of the houses on the south side of Fair Street, at the junction of Fair Street and Scholes Lane. These are well preserved late-18th century houses.

Photo 25: General view looking north across St. Dominick Bridge, over the River Boyne, showing the Church of St. Mary Magdalene, at the eastern edge of the project area.

Photo 26: General view showing St. Mary Magdalene Church and Convent, on the east side of Dominick Street, at the eastern edge of the project area.

Photo 27: General view showing the late C18th former Cornmarket, on the north side of Fair Street, close to the north-east corner of the Westgate Project Area. The Cornmarket was designed by noted Irish Architect Francis Johnston and has national significance. It has was converted to use as the Local Authority offices over a century ago.

Photo 28: General view showing the former Convent of the Sisters of Charity, on the north side of Fair Street, adjacent to the former Cornmarket. This structure is currently being redeveloped as part of the Local Authority offices.

Photo 29: General view showing the school attached to the former Convent of the Sisters of Charity, on the north side of Fair Street. This structure is currently being redeveloped as part of the Local Authority Offices.

Conclusions

17.41 In relation to the Conservation of the area's rich architectural heritage, the project team recognised that there were a few highly visible and highly significant monuments that give the Westgate quarter its principal identity. The largest surviving section of Drogheda's medieval town wall survives along the western edge of the area, but has been neglected for many years and negatively impacted by the presence of the late 20th century Bridge of Peace. Similarly, the access to and through the ruins of the Old Abbey (St. Mary D'Urso) has been problematical for many years, resulting in graffiti, unsocial behaviour, poor visitation and use, and neglect of the primary historic monuments. In addition to those ancient monuments, the area contains a significant concentration of historic houses and small scale commercial structures that illustrate the city's growth from the late C17th through the early C20th. While most of those structures consist of locally significant vernacular houses and shops, the Barlow House is a fine early Georgian townhouse of Regional Significance, currently in use as a community arts centre. It was noted that the Westgate area currently suffers from dereliction, vandalism and poor accessibility to the monuments.

Characteristics of the Proposed Development

17.42 The proposed development comprises public realm regeneration works on lands within the Westgate Vision Area of Drogheda, Co. Louth. Please refer to Chapter **5** of this EIAR for a detailed description of the proposed project.

17.43 In relation to the conservation of the area's rich architectural heritage, the proposed development seeks to improve and enhance the settings for a few highly visible and significant monuments that give the Westgate quarter its principal identity.

17.44 The largest surviving section of Drogheda's medieval town wall survives along the western edge of the area, but has been neglected for many years and negatively impacted by the presence of the late 20th century Bridge of Peace.

17.45 Similarly, the access to and through the ruins of the Old Abbey (St. Mary D'Urso) has been problematical for many years, resulting in graffiti, antisocial behaviour, poor visitation and use, and neglect of the primary historic monuments. The rubble stone wall shown in Photo 5 prevents Old Abbey Lane from connecting to the Father Connolly Way.

17.46 While these structures are not intended to be modified or changed to accommodate the proposed adjacent developments, there will be changes to their current setting, and how they are seen and understood by members of the public. There are also proposals for long needed conservation repairs to the Town Wall and to the upstanding ruins from the Old Abbey (St. Mary D'Urso), including proposals to structurally stabilize the free-standing west gable to the Priory. This will result in some visual changes to the current appearance of this feature.

Evaluation of Effects

'Do Nothing' Scenario

17.47 If nothing is done to create a more dynamic public realm across the Westgate area, the area will continue to languish and decline. The anti-social behaviour will continue with additional damage accruing to the important monuments and other notable historic structures.

Construction

The Old Abbey (St. Mary D'Urso)

17.48 The proposed works at the site of the Old Abbey (St. Mary D'Urso) will entail the construction of a new roof covering to the area to the east of the surviving medieval chapel tower, as well as conservation, stabilization and repairs to the free-standing west gable to the former Abbey chapel.

17.49 Both of these works will change the appearance and setting of these significant monuments. In both cases, the physical condition of each structure will be improved through careful conservation repairs, under the guidance of expert conservation advisors. The construction of the new roof structure will require some degree of excavation within the footprint of the original structure.

17.50 In addition to the potential for direct, negative and very significant impacts to the buried archaeological remains, these activities may also have a direct, negative and very significant impact to the adjacent upstanding remains of the former priory.

17.51 It is also intended to carry out conservation repairs to the historic masonry elements associated with The Old Abbey (St. Mary D'Urso). These interventions will constitute direct impacts to the ancient masonry, and have the potential to be negative, and significant.

17.52 The planning application also proposes to carry out expert conservation repairs to the upstanding remains of the Old Abbey (St. Mary D'Urso), and the stabilisation and careful conservation repairs to the west gable from a side aisle of the chapel. Repairs to loose masonry and extensive repointing are also required to the central tower that survives from the priory's chapel.

17.53 Further detailed examination and detailed repair methodologies must be prepared by expert architectural conservation architects and engineers, to enable the proper conservation works.

Medieval Town Walls

17.54 Like the nearby ruins of the Old Abbey (St. Mary D'Urso), the planning application proposes to improve the physical condition and visual setting of the ancient town walls that stand along the western edge of the project area. These proposals will include the construction of hard and soft landscaping in close proximity to the ancient town walls.

17.55 As the project Archaeologists have stated, these activities have the potential, prior to mitigation, to have a direct, very significant negative impact on the medieval masonry fabric of the town wall.

17.56 The upstanding medieval walls will receive substantial maintenance and repairs to remove vegetation and graffiti, remove modern concrete block and mass concrete infill, address structural cracking and undermining of the foundations to the wall.

Protected Structure - Barlow House

17.57 Barlow House, a fine early Palladian townhouse dating from c.1734, is currently occupied and managed by the Droichead Arts Centre. The Proposed Development will entail replacement of the paving surfaces to the public footpaths and roads to the front of Barlow House. New street furniture and public lighting will also be installed to these areas. The historic front entry stairs, front basement area and boundary railings to Barlow House will retained and unaffected by the Proposed Developmemnt. No works are proposed to Barlow House itself or any of the structures or carpark to its rear. The effect on Barlow House will not be significant.

Protected Structure - St. Mary Magdalene's Church and Convent

17.58 St. Mary Magdalene's Church and Convent stands outside of the eastern edge of the proposed area of development, on the east side of Dominick Street. They have retained their historic stone and wrought iron and cast iron boundary railings along Dominick Street. The Proposed Development will entail replacement of the paving surfaces to the public footpaths and roads to Dominick Street, adjacent to the church and convent. New street furniture and public lighting will also be installed to these areas. The historic boundary railings will retained and unaffected by the Proposed Developmemnt. No works are proposed to St. Mary Magdalene's Church or Convent, or within the boundary of the property. The effect of the Proposed Development on the church and convent would not be significant.

Group of Protected Structures in Project Area

17.59 As described above, the Westgate area contains a concentration of small scale residential and commercial structures, dating from the C17 to the early C20th. The Proposed Development will entail the replacement of the paving surfaces to the public footpaths and roads, public lighting and street furniture that form the public realm within the development area. The construction stage of this work will take place adjacent to, but outside of the site boundaries of all of those structures. No examples of historic paving or street furniture has been recorded within the project area, and no such examples of Heritage Assets will be impacted by the Proposed Development. Most of the houses on Fair Street, have retained their historic front entrance stairs, basement areas and perimeter boundary railings. All of those features will be retained and unaffected by the Proposed Development. The effect of the Proposed Development would not be significant.

Fair Street Architectural Conservation Area

17.60 The Fair Street Architectural Conservation Area extends the full length of Fair Street, of which only the western quarter of the street is within the Westgate Project Area. In addition to a large concentration of vernacular houses on both sides of the street, the Local Authority offices reside in the nationally significant former Cornmarket and the adjacent regionally significant former Convent of the Sisters of Charity. There will be no impact to the setting or appearance of any of the structures in the Fair street ACA, caused by the Proposed Development works. None of the historic features or boundary treatments at the Fair Street ACA structures will be changed or altered. The effect of the Proposed Development would not be significant.

West Street and Surrounding Streets Architectural Conservation Area

17.61 The West Street and Surrounding Streets Architectural Conservation Area includes a large proportion of the historic core of Drogheda. While there are a few large and important structure in the centre of Drogheda, the majority of the structures in this ACA consist of vernacular houses dating from the late C17th through the late C19th, most of which have been converted to commercial shops. There will be no impact to the setting or appearance of any of the structures in the West Street and Surrounding Streets ACA, caused by the Proposed Development works. None of the historic features or boundary treatments at the West Street and Surrounding Streets ACA structures will be changed or altered. The effect of the Proposed Development would not be significant.

Old Abbey Lane Architectural Conservation Area

17.62 The Old Abbey Lane Architectural Conservation Area covers a relatively small area however it includes the nationally significant ruins of the Old Abbey (St. Mary D'Urso) and the ancient town wall. Other than the regionally significant Barlow House, the majority of the other structures in this ACA consist of vernacular houses dating from the late C17th through the late C19th, most of which have been converted to commercial shops. There will be no impact to the setting or appearance of any of the structures in the West Street and Surrounding Streets ACA, caused by the Proposed Development works. A section of the C19th rubble stone boundary wall forming the east edge of the north end of Father Connolly Way will be removed to allow for access from Old Abbey Lane, through to Father Connolly Way. Otherwise, no boundary treatments at the Old Abbey Lane ACA structures will be changed or altered. The effect of the Proposed Development will change the appearance of the rubble wall on Father Connolly Way, but it will greatly improve the visual and pedestrian linkage between Old Abbey Lane and the Father Connolly Way.

General Public Realm Improvements

17.63 The proposed improvements to the streetscape in the streets, roads, and lanes within the project area are intended to address the general appearance of disrepair and dereliction that prevails along many of those streets. As mentioned above, a large concentration of historic structures can be found within the project area, mostly in private ownership. Many of those structures are protected by their inclusion on the Record of Protected Structures, and much of the area is further protected by inclusion in an Architectural Conservation Area.

17.64 Nonetheless, many of the structures suffer from lack of repair and chronic underinvestment. The improvements to the public realm included in the proposed development are intended to bring vitality, viability and confidence back to the area, which will see increased opportunities for residential living, tourism and commercial activities.

Operation

Old Abbey (St. Mary D'Urso)

17.65 A Conservation Management Plan will be produced by a suitably qualified Conservation Architect and Archaeologist, to ensure the long-term conservation of the upstanding remains of the the Old Abbey (St. Mary D'Urso (LH024-041011)), during its use as part of the public realm in the Westgate Area.

Medieval Town Walls

17.66 A Conservation Management Plan will be produced by a suitably qualified Conservation Architect and Archaeologist, to ensure the long-term conservation of the upstanding remains of the medieval town wall, during its use as part of the public realm in the Westgate Area.

Protected Structure - Barlow House

17.67 Barlow House, a fine early Palladian townhouse dating from c.1734, is currently occupied and managed by the Droichead Arts Centre. The improvements to the public realm adjacent to Barlow House will enhance the appearance of its historic setting, and encourage more visitors to the Arts Centre. No adverse operational effects are anticipated with respect to Barlow House as a result of the proposed development.

Protected Structure - St. Mary Magdalene's Church and Convent

17.68 St. Mary Magdalene's Church and Convent stands outside of the eastern edge of the proposed area of development, on the east side of Dominick Street. While there will be no direct physical impact on the setting of the church or convent, and no impact on the historic boundary railings that form the boundary along Dominick Street, the proposed development will make the area around the church and convent more attractive and accessible to residents and visitors/tourists, to better experience and celebrate the rich architectural and cultural heritage these structures bring to the area. No adverse operational effects are anticipated with respect to St. Mary Magdalene's Church and Convent as a result of the proposed development.

Group of Protected Structures

17.69 The Westgate area contains a concentration of small scale residential and commercial structures, dating from the C17 to the early C20th. The Proposed Development will entail the replacement of the paving surfaces to the public footpaths and roads, public lighting and street furniture that form the public realm within the development area. The proposed improvements to the public realm in the project area will have a very positive impact on this group of Protected Structures by making the area more attractive and accessible to tourists and visitors, thereby encouraging investment, restoration and occupancy of the derelict and empty structures in the area. No adverse operational effects are anticipated with respect to the group of Protected Structures as a result of the proposed development.

Fair Street Architectural Conservation Area

17.70 The Fair Street Architectural Conservation Area extends the full length of Fair Street, of which only the western quarter of the street is within the Westgate Project Area. In addition to a large concentration of vernacular houses on both sides of the street, the Local Authority offices reside in the nationally significant former Cornmarket and the adjacent regionally significant former Convent of the Sisters of Charity. No adverse operational effects are anticipated as a result of the proposed development noting that it will make this ACA more attractive and accessible to residents and visitors/tourists, to better experience and celebrate the rich architectural and cultural heritage within this area.

West Street and Surrounding Streets Architectural Conservation Area

17.71 The West Street and Surrounding Streets Architectural Conservation Area includes a large proportion of the historic core of Drogheda. While there are a few large and important structure in the centre of Drogheda, the majority of the structures in this ACA consist of vernacular houses dating from the late C17th through the late C19th, most of which have been converted to commercial shops. No adverse operational effects are anticipated as a result of the proposed development noting that it will make this ACA more attractive and accessible to residents and visitors/tourists, to better experience and celebrate the rich architectural and cultural heritage within this area .

Old Abbey Lane Architectural Conservation Area

17.72 The Old Abbey Lane Architectural Conservation Area covers a relatively small area, however it includes the nationally significant ruins of the Abbey of St. Mary d'Urso and the ancient town wall. Other than the highly significant medieval ruins, there are no significant architectural structures in this ACA. No adverse operational effects are anticipated as a result of the proposed development noting that it will make this ACA more attractive and accessible to residents and visitors/tourists, to better experience and celebrate the rich architectural and cultural heritage within this area.

Potential Cumulative Impacts

17.73 A review of other off-site developments and Proposed Developments was completed as part of this assessment. The projects and plans contained in Table 20.1 of Chapter 20 of Volume 2 of the EIAR were reviewed and considered for possible cumulative effects with the Proposed Development. No cumulative impacts (from surrounding permitted or proposed developments) are predicted upon the architectural heritage resource during either the construction or operational phases of the proposed project.

Avoidance, Remedial, and Mitigation Measures

Construction

17.74 Where the Proposed Developments abut the medieval ruins of the Old Abbey (St. Mary D'Urso), the design and details of the proposed developments have been conceived to avoid any direct physical impact to the adjacent structures. Additionally, the design team responsible for the detail design/tendering information, must be keenly aware of the potential for damage to the monuments during the construction stage of the works, and provide method statements and specifications that will guarantee that the required diligence will be practiced by the contractors on the project. A Grade 1 Conservation Architect will be required to produce a detailed methodology for all conservation repairs to the National Monument, and said method statement will require approval under Ministerial Consent. Of particular importance is the requirement to avoid any possibility of rust staining to the historic Abbey ruins, from the corten steel structure of the proposed canopy adjacent to the tower and east gable. The design team responsible for the detail design and detailing of the new canopy must make sure that there will be no runnoff of rust stained rainwater from the new canopy onto the adjacent ancient stone masonry.

17.75 Where the Proposed Developments abut the medieval town walls, the design and details of the proposed developments have been conceived to avoid any direct physical impact to the adjacent structures. Additionally, the design team responsible for the detail design/tendering information, must be keenly aware of the potential for damage to the monuments during the construction stage of the works, and provide method statements and specifications that will

guarantee that the required diligence will be practiced by the contractors on the project. A Grade 1 Conservation Architect will be required to produce a detailed methodology for all conservation repairs to the National Monument, and said method statement will require approval under Ministerial Consent.

17.76 The resurfacing of the existing public realm footpaths, carriageways and other hard landscaping features has the potential for direct, negative and significant impacts to the fabric of the protected structures, monuments and otherwise significant heritage assets that stand adjacent to the public realm construction activities. These impacts can be caused by the operation of heavy construction plant in close proximity to these heritage assets, causing vibration, abrasion or impact. A Grade 1 Conservation Architect will be required to produce a detailed methodology for all works in close proximity to heritage assets and appropriate method statements and specifications will be provided and practiced by the appointed contractors on the project.

Operation

17.77 A Conservation Management Plan will be produced by a suitably qualified Conservation Architect and Archaeologist, to ensure the long term conservation of the upstanding remains of the Old Abbey (St. Mary D'Urso 9LH024-041011)), during its use as part of the public realm in the Westgate Area. This plan will include measures for continuous assessment of the ongoing impact on the remains, from the use of the new public realm areas, along with procedures for addressing any impacts.

17.78 A Conservation Management Plan will also be produced by a suitably qualified Conservation Architect and Archaeologist, to ensure the long term conservation of the upstanding remains of the medieval Town Wall, during its use as part of the public realm in the Westgate Area. This plan will include measures for continuous assessment of the ongoing impact on the remains, from the use of the new public realm areas, along with procedures for addressing any impacts.

Monitoring & Reinstatement

Construction

17.79 At all areas of the Proposed Development, the design team responsible for the detail design/construction stage, must be keenly aware of the potential for damage to the monuments during the construction stage of the works, and provide method statements and specifications that will guarantee that the required diligence will be practiced by the contractors on the project. Of particular importance is the requirement to avoid any possibility of rust staining to the historic Abbey ruins, from the corten steel structure of the proposed canopy adjacent to the tower and east gable. The design team responsible for the detail design and detailing of the new canopy must make sure that there will be no runoff of rust stained rainwater from the new canopy onto the adjacent ancient stone masonry.

17.80 Where works are required to take place in close proximity to the National Monuments within the Project Area, in particular the medieval Town Wall and the medieval ruins of the Old Abbey (St. Mary D'Urso), all works must be monitored by a qualified archaeologist, and under license from the Minister.

Operation

17.81 At the proposed developments in close proximity to the Town Wall and the Priory ruins, the design and details of the proposed developments have been conceived to avoid any direct physical impact to the adjacent structures. Additionally, the design team responsible for the detail design/tendering information, must be keenly aware of the potential for damage to the assorted heritage assets during the construction stage of the works, and provide method statements and specifications that will guarantee that the required diligence will be practiced by the contractors on the project. Of particular importance is the requirement to avoid any possibility of rust staining to the historic Abbey ruins, from the corten steel structure of the proposed canopy adjacent to the tower and east gable. The design team responsible for the detail design and detailing of the new canopy must make sure that there will be no runnoff of rust-stained rainwater from the new canopy onto the adjacent ancient stone masonry.

17.82 Monitoring measures at the above-mentioned locations will include measurement of ground vibrations caused by the construction activities, particularly in relation to the movement of heavy construction vehicles, and the compaction of ground or granular sub-bases for paths or carriageways. All visible structures will be documented prior to the start of any works, and inspected daily to ensure that no damage has been incurred.

Residual Impacts

17.83 The assessment as presented above has found that there would be no significant residual effects upon architectural heritage assets resulting from the proposed project.

'Worst Case' Scenario

17.84 Under a 'worst case' scenario, without the adoption or failure of the measures outlined above, the proposed project could result in damage to the ruins of the abbey tower and the nearby west gable, surviving from one of the chapel's side aisles.

17.85 New foundations are required for the new freestanding structure over the portion of the roofless chapel in close proximity to the tower, and that will require ground disturbance and the possibility of vibration and undermining of the ancient masonry.

17.86 Similarly, it is proposed to create an exciting new outdoor space along the west side of the medieval town wall. This will require some degree of excavation close to the medieval masonry, to allow for the installation of drainage, site services and new footpaths.

Interactions

17.87 There is a direct interaction between this assessment and 'Chapter 16 - Archaeology and Cultural Heritage'. The chapters have been reviewed as part of this assessment to ensure all aspects of the historic environment have been assessed and also to prevent replication of information as much as possible.

Difficulties in Compiling Information

17.88 No difficulties were encountered in the preparation of this chapter.

References

- Bradley, J., 1997, ***Drogheda: Its Topography and Medieval Layout***. Old Drogheda Society.

- Gowan, M., et al, 2006, ***Conservation Plan, Town Walls and Other Defenses of Drogheda***. Drogheda, North East Printers.

- Halpin, Eoin, 1996, ***Excavations at St. Mary d'Urso, Drogheda, County Louth***, Journal of the County Louth Archaeological and Historical Society, 1996, Vol. 23, No. 4(1996), pp. 452-509.

- Thomas, A., 1992, ***The Walled Towns of Ireland***. 2 vol. Dublin.

18. Landscape and Visual

Introduction

Statement of Expertise

18.1 This Landscape and Visual Impact Assessment (LVIA) has been prepared by Park Hood Chartered Landscape Architects. Park Hood is a Chartered Member of the Irish Landscape Institute and Landscape Institute UK with extensive experience in preparation of Landscape / Townscape and Visual Impact Assessments for large scale projects throughout Ireland and the UK.

18.2 The primary author is Andrew Bunbury who is a qualified Landscape Architect and Chartered Member of the Landscape Institute (CMLI) with over 25 years' consultancy experience in the profession across Ireland and the UK. He works between the Dublin, London and Belfast offices of Park Hood where there are 25 members of staff including a further twelve Chartered Landscape Architects. All work is undertaken in compliance with the *Landscape Institute's Code of Standards of Conduct and Practice for Landscape Professionals* and checked in accordance with Park Hood's ISO 14001:2015 and ISO 9001:2015.

Summary of Proposed Development and Purpose of LVIA

18.3 The proposed development comprises upgrades to public spaces, realm and plazas, and to roads, junctions, cycleways and walkways to act as a catalyst to support positive regeneration, compact growth and sustainable development in the Westgate area of Drogheda comprising St. George Square, Narrow West Street, Fair Street, Father Connolly Way, Dominic Street, St Patrickswell Lane, Old Abbey Lane, and Schole Lane.

18.4 The purpose of this Landscape and Visual Impact Assessment (LVIA) is to identify and determine the potential effects on the character and visual amenity of the landscape / townscape as a result of the proposed development on this part of Drogheda town.

Methodology

Guidance Documents

18.5 The overall approach and methodology undertaken within this LVIA are based on the *Guidelines for Landscape and Visual Impact Assessment (3rd Edition)* by *The Landscape Institute and the Institute of Environmental Assessment (2013)* (GLVIA). Other published documents include:-

- *Technical Information Note on Townscape Character Assessment* published by the Landscape Institute (2016);
- *Guideline on the Information to be Contained in Environmental Impact Assessment Reports* published by EPA (2022); and
- *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment* published by the Department of Housing, Planning and Local Government (2018).

18.6 The EPA Guidelines (2022) provide a general methodology and impact ratings for all types of specialist assessments. The GLVIA provides specific guidelines for landscape and visual impact assessments. Therefore, a combination of the EPA guidelines, the Landscape Institute guidelines and professional experience has informed the methodology for this assessment.

Definition of Landscape and Visual Effects

18.7 For the purpose of this assessment, this chapter adopts the definition of landscape presented in the European Landscape Convention and as such, the term 'landscape' refers equally to areas of rural countryside and urban – built up –areas (typically historically referred to as 'townscape'). The definition of landscape is: -

"An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors."

18.8 The assessment process sets out to identify the effects of the proposed development on views and on the landscape / townscape. Landscape and visual effects can be quite different and are assessed separately; although the process is similar, and effects ultimately arise as a result of combined impacts upon the landscape and visual amenity of a proposed development. Developments can have significant visual effects but no impact on landscape/townscape character and some can be vice versa.

18.9 ***Landscape Effects*** are the effects on landscape / townscape as a resource and defined as follows:

"An assessment of landscape effects deals with the effects of change and development on landscape as a resource. The concern ... is with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character. ... The area of landscape that should be covered in assessing landscape effects should include the site itself and the full extent of the wider landscape around it which the proposed development may influence in a significant manner." (GLVIA3 paragraphs 5.1 and 5.2)

18.10 ***Visual Effects*** are the effects on Views and Visual Amenity and summarised as follows: -

"…establish the area in which the development may be visible, the different groups of people who may experience views of the development, the places where they will be affected and the nature of the views and visual amenity at those points." (GLVIA3 paragraph 3.13)

Summary of LVIA Objectives and Key Tasks

18.11 The objective of the LVIA is to evaluate the likely significance of townscape / landscape character and visual amenity effects to the Application Site and study area to assist the determining authority in considering the acceptability of this proposal. It is based on the interpretation of the physical and aesthetic characteristics following criteria and terminology partially drawn from *Principles and Overview of Processes (Chapter 3)* within the GLVIA. The LVIA focuses on key effects and issues as follows: -

- The effect of the proposed development upon the landscape / townscape resource;
- The effect of the proposed development on the perception of the landscape / townscape; and

- The effects arising from the proposed development on visual amenity.

18.12 The LVIA methodology can be summarised as undertaking the following key tasks: -

- Site Visits between September and October 2023;
- Assessing the baseline Landscape Setting and Conditions;
- Evaluation of key components of the proposed development based on site layouts and plans forming the core of the planning documents;
- Assessing the Predicted Project Impacts on landscape/townscape and visual amenity/ views;
- Assessing any Cumulative Impacts;
- Consideration of Remedial, Mitigation and Enhancement measures;
- Assessing Residual Impacts; and
- Summary and Conclusions.

Baseline Landscape Character Assessment

18.13 The study area includes the Site itself and the wider townscape where the Proposed Development may have an influence either directly or indirectly. There is no specific guidance on extent of study areas applicable to this type of development in Ireland. Given the baseline setting and nature of the project, an appropriate and objective study area was assessed as being within less than 1km of the site as all significant views or effects would be within this range.

18.14 The baseline study studies extend to include to the wider context into which the proposed development will be introduced. The baseline description of existing conditions forms an objective evaluation of the townscape / landscape character and visual amenity of the study area. This forms the base against which the townscape / landscape and visual effects deriving from the proposed development can be identified, assessed, and measured. It involves a desk-top analysis and review of material including:-

- National and Regional Landscape Character or local Landscape Character Assessments;
- Review of any historical planning applications on or near the Application Site;
- Existing National, Regional or Local Designations and relevant Planning Policy;
- Current and historical Ordinance Survey Ireland (OSI) Maps evidence;
- Aerial Photographs via Bing, Google and OSI; and
- Relevant environment / ecology, cultural heritage, historical and archaeology evidence.

18.15 As part of the baseline assessment, the combination of desk-top analysis and site survey allows a judgment to be made on the key elements that contribute to the landscape / townscape

character and its wider condition (positive, neutral, or negative) and wider value and sensitivity.

18.16 Townscape value, quality and sensitivity is affected by factors including: (i) whether the resource is common or rare; (ii) whether it is considered to be of local, regional, national or global importance; (iii) whether there are any statutory or regulatory limitations / requirements relating to the resource; (iv) the quality of the resource; (v) the maturity of the resource, and (vi) the ability of the resource to accommodate changes. **See Table 18.1**

Table 18.1: Determination of Landscape / Townscape Value and Sensitivity

Terminology	Definition	Summary
Highest Value Townscape	Nationally or regionally important townscape with high quality, highly valued rare or unusual features. Diverse, stimulating and thriving street level uses with high level of human comfort, interactive pedestrian environment and strong hierarchy of public amenity and civic spaces. National area / feature designation and assemblage of important listed historical and rich cultural features including Conservation Areas and Listed Buildings / Scheduled Monuments or valued modern buildings. Well maintained unified townscape with attractive visual detail and no detractors. Negligible pedestrian and traffic conflict.	Very vulnerable to change. *High Sensitivity*
Very Attractive Townscape	Locally distinctive development form with rich cultural associations using good quality locally characteristic materials. Harmonious relationship between buildings and hierarchy of publicly accessible spaces. Several Listed Buildings or local area / feature designations may apply including features of regional interest. Highly permeable, well maintained and no significant townscape detractors. A townscape that promotes social interaction and pedestrian movement dominates traffic circulation with few conflicts.	Some ability to absorb change in some situations without having significant effects. *Medium to High Sensitivity*
Good Townscape	Features with historical / cultural local value, possibly designated. Locally distinctive townscape, vernacular or planned layout often with ornamentation in good condition and well maintained. Possibly degraded by unsympathetic modern development but retaining essential characteristics with potential for enhancement. Townscape supports social interaction and pedestrian movement co-exists with traffic movement with few conflicts.	Some ability to absorb change in some situations without having significant effects. *Medium Sensitivity*

Ordinary Townscape	Development is primarily functional, incoherent development form or minimum design criteria being used in contemporary situations. Little indication of local distinctiveness, design expression or ornamentation. Remnant distinctive townscape features may persist but no longer in context. Few opportunities for social interaction, limited to specific 'community' locations. Traffic circulation usually controls pedestrian movement.	Able to accommodate change without significant effects. *Low Sensitivity*

Landscape / Townscape Character Criteria

18.17 The LVIA considers how the Proposed Scheme would impact on existing townscape elements and resources (e.g. ground level changes) which are normally associated with the direct effects on the Application Site itself and adjacent areas. The indirect impacts of the Proposed Scheme on the wider townscape are assessed with reference to townscape types or character areas as identified in the baseline assessment. This is affected by factors including: (i) the physical extent and nature of the key elements that make up the proposal; (ii) the landscape context of these effects and (iii) the time-scale of impact, such as whether it is temporary (short, medium or long term), permanent with reversible potentials, or irreversibly permanent. **See Table 18.2**

Table 18.2: Landscape / Townscape Effects - Criteria

Terminology	Definition
Severe	Total loss or major alteration to key elements / features / characteristics of the baseline (i.e. pre-development) townscape or view and /or introduction of elements considered to be totally dominant when set within the attributes of the receiving townscape.
Substantial	A prominent change that may be large in scale and / or extent, and include the loss of key townscape characteristics or the addition of new features or elements that would potentially change the overall townscape quality and character at a wider scale.
Moderate	Partial loss or alteration to one or more key elements / features / characteristics of the baseline (i.e. pre-development) townscape or view and / or introduction of elements that may be prominent but may not necessarily be considered to be substantially uncharacteristic when set within the attributes of the receiving townscape.
Slight	Minor loss or alteration to one or more) key elements / features / characteristics of the baseline (i.e. pre-development townscape or view and /or introduction of elements that may not be uncharacteristic when set within the attributes of the receiving

	townscape.
Negligible	Very minor loss or alteration to one or more key elements / features / characteristics of the baseline (i.e. pre-development) townscape or view and /or introduction of elements that are not uncharacteristic with the surrounding townscape - approximating the 'no change' situation.

18.18 In those instances where there would be no change to the townscape / landscape, the magnitude is recorded as 'zero' and the level of effect as 'no change.'

Visual Effects

18.19 Visual Effects are concerned wholly with the effect of the development on views, and the general visual amenity and are defined by the Landscape Institute in GLVIA 3 Paragraph 6.1 as follows:

"An assessment of visual effects deals with the effects of change and development on views available to people and their visual amenity. The concern ... is with assessing how the surroundings of individuals or groups of people may be specifically affected by changes in the context and character of views."

18.20 The baseline studies establishes the area from which the Proposed Scheme may potentially be visible and the different groups of people ("visual receptors") who may experience views or changes to view context.

18.21 Viewpoints are generally identified in locations that are publicly accessible, such as streets, public realm / domain areas, footpaths and parks. Selection is also based on a determination of the extent of visibility towards the Application Site or from locations where there may be significant numbers of visual receptors who will see the Proposed Scheme e.g. commuter routes or tourist sites. Viewpoints are chosen to be representative, specific or illustrative and cover as much of the study area as reasonable or necessary and address all areas where there may be changes in terms of views or visual amenity.

18.22 Cooperation was undertaken with the heritage consultants with regards to location of these historic or cultural heritage viewpoints on account of crossover in terms of impact assessment.

18.23 The viewpoints are used as the basis for professional judgement on the potential effects on visual amenity or view quality. Viewer sensitivity is based on the nature of the visual receptor (resident, tourist, commuter etc.) and the visual quality or value attached to a particular view**. See Table 18.3**

Table 18.3: Viewer Sensitivity and Types

Sensitivity	Definition	Summary of Visual Receptor Type
High	Notable views of heritage assets, quality, valued or historic	People whose interest is likely to be focused on an appreciation of townscape, culture, built

	townscapes. Views that may be in designated areas, feature in guidebooks, scenic tours, associated with culture, literature and art or an important contributor to experience.	form or particular views. e.g. tourists, cultural events. Residents / Communities living within close proximity of the proposal
Medium	Ordinary views where the reason for visual receptor to be in the area and does not involve or depend upon an appreciation of the views of the townscape or city form.	Commuters, travellers on road and rail. City centre / Public Building users including shopping / retail / commercial uses, recreational activity.
Low	Areas that may be viewed by the majority as incidental townscape where the focus of the viewer is on their work or activity and the setting is not important to the visual amenity or quality of working life.	Landowners for proposal. Workers with employment related to construction and management / maintenance activity in this part of the city and likely to have a low interest or appreciation of the view.

18.24 The nature of visual effects are based on a number of factors including:-

- Distance from Proposed Scheme;
- Contrast in terms of mass, colour, form and texture deriving from new feature(s);
- Extent of intervening vegetation (and seasonality if deciduous) or buildings and topography;
- Speed of passing visual receptor (and how long view is experienced);
- Angle and elevation of view e.g. oblique, direct, perpendicular;
- Nature of backdrop or skyline; and
- Duration of change or effect.

18.25 The visual effects deriving from a proposal are based on the combined judgement of all the above and where mitigation (or enhancement) measures are proposed or relevant, these are described as part of any judgement. **See Table 18.4**

Table 18.4: Visual Effects - Criteria

Terminology	Definition
Severe	A major change or obstruction of a view that may be directly visible, appearing as the dominant and contrasting feature appearing in the foreground.
Substantial	The proposal forms the focus or an immediately apparent component in the view and will redefine its baseline characteristics.
Moderate	The proposal is likely to form a readily apparent component within the overall view but the baseline characteristics will continue to prevail.
Slight	The proposal forms a minor component in the wider view which might be missed by the casual viewer / observer. Awareness of the proposal would not have a marked effect on the overall quality of the view.
Negligible	The proposal is barely discernible or may be at such a distance that it is very difficult to perceive equating to a no-change situation.

Nature of Landscape / Townscape and Visual Effects

18.26 The assessment process aims to be objective and quantify effects as far as possible. However, townscape / landscape and visual assessment has aspects of it that can be considered subjective. Magnitude of change to a view can be factually defined but any subsequent objective assessment should be based on professional training, experience, observation, evidence and informed opinion.

18.27 Effects classified as Substantial or Substantial / Moderate are likely to be significant. Those classified as Slight or Negligible are not likely to be significant. However, following the classification of effects, further consideration of whether such an effect is positive, neutral or adverse. **See Table 18.5**

Table 18.5: Nature of Landscape / Townscape and Visual Effects

Terminology	Definition
Positive Effect	A change that improves the quality of the townscape character and fits very well with the existing townscape character.
Neutral	A change which does not affect the scale, landform or pattern of the townscape and maintains existing townscape quality.
Adverse Effect	A change which reduces the quality of the townscape and cannot be fully mitigated.

18.28 For townscape to a degree, but particularly for visual effects, this is an inherently subjective exercise. This is because townscape and visual amenity are perceived by people and are therefore subject to variations in the attitude and values - including aesthetic preferences - of the receptor. One person's attitude to a development may differ from another person's, and thus their response to the effects of a development on a townscape or view may vary.

18.29 Additionally, in certain situations there might be policy encouraging a particular development in an area, in which case the policy is effectively prescribing townscape and visual change. If a development achieves the objective of the policy the resulting effect might be considered positive, even if the townscape character or views are profoundly changed. The classification of quality of townscape and visual effects should seek to take these variables into account and provide a reasonable and robust assessment.

Significance Criteria and Determination

18.30 Significance of an effect is determined by the combination of sensitivity of the affected receptor(s) or townscape and the predicted magnitude or type of change which combine to form a level of effect. Significance of visual effects is not absolute and can only be defined in relation to each development and its specific location. **See Table 18.6.**

18.31 This ES Chapter bases "Significance" of effects on the following definitions:-

- "Significant" in the Oxford Dictionary 2023 is defined as "*Sufficiently great or important to be worthy of attention; noteworthy.";* and
- "Significance" in the GLVIA3 is defined as "*A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic.*"

Table 18.6: Summary Scale of Significance

- Sensitive views or visual receptors; - Effects on recognised scenic, rare or distinctive townscapes; - Effects on mature or diverse townscape elements, features, characteristics, aesthetic or perceptual qualities; - Large scale changes.	***More Significant***
	↕
- Effects on poorer condition or degraded townscapes; - Effects on low sensitivity visual receptors; - Small scale changes	***Less Significant***

18.32 The significance of townscape and visual effects is determined by cross-referencing sensitivity of townscape or view with the magnitude of change. In determining significance, mitigation

measures are taken into account. Usually an effect is considered 'significant' if the level of effect is "moderate/major" or "major." **See Table 18.7.**

Table 18.7: Significance and Magnitude Criteria

Magnitude of Change	Townscape and Visual Sensitivity			
	High	**Medium**	**Low**	**Negligible**
Large	Major	Major/ Moderate	Moderate/ Minor	Negligible
Medium	Major/ Moderate	Moderate	Minor	Negligible
Small	Moderate/ Minor	Minor	Minor/ Negligible	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

Duration of Effects

18.33 The duration of effects is an important consideration for developments and corresponds to the following terms. **See Table 18.8.**

Table 18.8: Duration of Effects

Terminology	Definition
Temporary	Effect lasting one year or less.
Short-term	Effects lasting one to five years.
Medium-term	Effects lasting five to ten years.
Long-term	Effects lasting between ten and twenty years.
Permanent	Effects lasting over twenty years and irreversible.

Baseline / Receiving Environment

Site Location

18.34 The site is located within the 'Westgate Vision Area' of Drogheda town and extends to an area of approximately 1.89 hectares.

18.35 The application site comprises the following lanes/streets/roads/areas and their adjoining footpath/public realm/junction areas: R132/Bridge of Peace/George's Street (including the underpass on the northern side of the River Boyne); George's Square; Father Connolly Way (including part of an existing car park area); Dominick Street; Patrickswell Lane; Old Abbey Lane (including an area to the rear of 56/57 West Street); Scholes Lane; R900/West Street/Narrow West Street; Fair Street; and Wellington Quay, in the townland of Moneymore, Drogheda, Co Louth. It is noted that the application site is partly located within the following Architectural Conservation Areas: Fair Street; Old Abbey Lane; and West Street and Surrounding Streets.

Application Site – Existing Townscape Setting

18.36 The site is part of the dense Drogheda centre townscape defined by a historic pattern of roads, streets, public realm, buildings, open spaces and the frontage onto the River Boyne. The key components of this area include the following: -

- George's Square which includes a public parking area, public footpaths, public toilets, a bus stop area and adjoins existing premises;
- Historic elements including the Medieval Wall ruins adjacent to the eastern side of the Bridge of Peace/George's Street (R132), the Old Abbey ruins and a freestanding gable ruin within Old Abbey Lane;
- Lands beneath and adjacent to the Bridge of Peace/George's Street;
- Road infrastructure including carriageways, footpaths, retaining walls, junctions, bus stops, loading bays, car parking spaces, etc.
- Public utilities such as post boxes, street lighting, overhead electrical cabling and poles, underground services, CCTV cameras, electrical boxes, manholes, signage, parking meters, etc.
- Street furniture including public art, seating/benches, planter boxes, raised flower beds, bins, bicycle parking, hanging flower baskets, water fountain, railings, etc.
- Am embankment and retaining wall with a railing that bound the tidal section of the River Boyne to the south;
- Hard landscaped areas including stepped, sloping and level components; and
- Soft landscaped areas including grass, trees, shrubs, bushes, flowers, etc.

18.37 To the west of the site is the R132 George's Street which was widened to form a dual carriageway in the 1970's leading to a new river crossing at the Bridge of Peace which formed part of an inner by-pass of Drogheda. This is one of the widest and busiest sections of road in the town and ensures this part of the site is characterised by major transport infrastructure and movements.

Photo 18.1 Existing Townscape Setting (View from the Bridge of Peace)

18.38 The townscape of the site includes a diverse and notable mix of buildings set between the River Boyne and the rising valley side leading towards Fair Street to the north. In general the underlying topography is of a low-lying and gently sloping nature that rising approximately 15m between the south (on the river bank) and north over an approximate distance of 240m.

18.39 The Drogheda Courthouse, completed in 2017, is the most notable new building in this area but also emerging at the time of writing is an 11-storey apartment project off Mill Lane to the immediate west of the site off George's Street. Other notable buildings in the area include the Old Abbey (Abbey of St Mary d'Urso), the Abbey Shopping Centre, Barlow House (Drogheda Arts Centre), Drogheda Garda Station, the Drogheda Civic Offices and the Dominican Church. Notable structures include the Bridge of Peace and St. Dominic's Bridge that cross the River Boyne.

Photo 18.2 Aerial Image of the Application Site and Immediate Surroundings (Source: www.westgatevision.ie)

18.40 The Application Site also includes third party land to the rear of No. 56/57 West Street and a small area of the Office of Public Work's (OPW) existing car park adjacent to the former town wall and River Boyne (also known as Murdock's car park) off Father Connolly Way. This expansive surface car parking areas and a further car park off Dominic Street contribute to a utilitarian character to part of the character of the Application Site.

Photo 18.3 Existing Townscape Setting (George's Street)

18.41 A riverside footpath along Father Connolly Way to the north of the river exists though there is no access to a further paths to the west of Donaghy's Mill as the path is closed off under the Bridge of Peace. This also merges into areas of remnant open space on banks towards George's Street and the historic line of the town walls are evident set within linear strips of rough grassland (largely unmanaged) at this time.

18.42 The trees were subject to a Tree Survey and Report in October 2021 by M. Large Tree Services Ltd. which noted the following:-

"A total of thirty-eight individual trees and one small group have been surveyed on the site. Of these, the majority are in a healthy condition, and require only minimal remedial attention. The group, and three individual trees are in poor health, and are recommended for removal."

18.43 The majority of trees are Lime and Oak but there are also Hazel, Sycamore, Willow, Cypress, Hornbeam, Rowan and Ash. Of these, 31 no. are categorised "B" (Trees of Moderate quality) while 3 no. are "C" (Trees of Low quality) and 4 no. "U" (assessed as being dead, dying or diseased). The collective trees would appear to have been subject to regular monitoring and management by the Council as they are a part of the streetscape in this part of Drogheda. **See Appendix 18.1 Tree Survey.**

Wider Townscape Setting and Character

18.44 Drogheda (*Droichead Átha*, meaning "bridge of the ford") is a provincial town with a population of 40,956 (2016 Census). It can trace its origins back to the Norman period becoming an important walled town in the English Pale during the medieval period and was subject of two sieges during the Irish Confederate Wars in the 17th century.

18.45 On account of the setting, history and heritage, the medieval street historic quarter of the town is a tourist destination and it presents itself as the "Gateway to the Boyne" with the famous Battle of the Boyne (1690) site 6km to the west. The historic town walls extend to across the Westgate area and are on and aside George's Street which was formerly called Town Mall. The townland is now called Moneymore.

Photo 18.4 Aerial Image of the Application Site and Immediate Surroundings (Source: www.westgatevision.ie)

18.46 To the west of the site is the historic Donaghy's Mill which while derelict and suffering neglect, remains a significant reminder of Drogheda's industrial past. The Mill has been subject of a number of fires including 2008 and 2018 but the four storey façade facing south across the River Boyne and associated brick chimney are notable and historic components of Drogheda's townscape character.

18.47 In the late 20th and early 21st centuries, the hinterland of the town experienced significant growth principally resulting from its location close to Dublin, the completion of the motorway and improvements to rail commuter services. In terms of setting, the historic core straddles either side of the tidal Boyne River and is traversed by seven bridges of which the Bridge of Peace aside the Application Site is the furthest west. The undulating landscape rises to the north and south with localised notable landmarks including the Martello tower at Millmount.

18.48 This wider townscape includes the Drogheda Town Centre Shopping Centre (and cinema) and the Boyne Shopping Centre while institutional buildings include Our Lady of Lourdes Hospital, St. Peter's Roman Catholic Church, St. Peter's Church of Ireland and St. Peter's National School. These town centre is located north, north-east and north-west of the Application Site with a diverse mix of ground floor uses including retail, commercial, industrial, and residential. In intermittent areas, there is a degree of vacancy which has a knock on-effect on the relative visual amenity, vibrancy and liveliness of the townscape and streetscape.

Photo 18.5 Existing Townscape Setting adjacent to Drogheda Garda Station with View of the Old Abbey (Abbey of St Mary d'Urso) from Father Connolly Way

18.49 The public realm and landscape aside the River Boyne has been improved significantly in the 21st century offering enhance connectivity, amenity value, cycle lanes and boardwalks to encourage the vitality of the area. The riverside paths in the locality became part of the Celtic Camino Way in 2022 and are part of recently a recently completed Boyne Greenway leading west to the Battle of the Boyne Visitor Centre at Oldbridge. A contemporary sculpture set off Father Connolly Way called the 'Shafts of Light' (Ronan Halpin 2002) provides a focal point and public art feature in this area.

18.50 To the south-west across the river is the 4.5 hectare Saint Dominic's Park that includes play areas, parking facilities and informal recreation areas as well as the Princess Grace Rose Garden (renamed in 2017) set in a relatively formal treed setting off Rathmullen Road. It is physically and visually separated from the subject site by the River Boyne and mature trees respectively.

Photo 18.6 View east from the Bridge of Peace over the River Boyne, Father Connolly Way and the southern part of the Application Site

Historic Townscape Development

18.51 Please refer to Chapter 15 of the EIAR for a detailed account of the historic context of the site and wider area. The following identifies the key considerations that contribute to and are relevant to the townscape / landscape setting of this site.

18.52 The town of Drogheda was founded by the Norman, Hugh de Lacy, sometime after the construction of his motte castle at Mill Mount and bridge across the River Boyne in 1186. It is one of the most complete Anglo-Norman walled towns in Ireland and sections of the walls are visible throughout the town including two surviving gates namely St Laurence's gate and the Butter Gate as well as within the Application Site lands.

18.53 Historic maps show the settlements evolution with *Robert Newcommen's Map of Drogheda (1657)* providing the first detail of the internal layout of the walled town. *Ravell's Map of Drogheda (1749)* annotated much more detail on this layout though the walls along the River Boyne are no longer illustrated. **See Figure 18.1.**

18.54 By the 19th century when the 1st Ordnance Survey maps were produced, the maps show terraces of housing flanking all the streets and laneways in the Westgate area with these on former gardens or open spaces as shown on earlier maps. The street pattern is identical to the modern layout with the only exceptions being modern additions on and off Father Connolly Way Road and George's Street which was broadened as part of a traffic management scheme and related to the building of the Bridge of Peace in the 1970s.

Robert Newcommen's Map of Drogheda (1657) above

Ravell's Map of Drogheda (1749) to the right.
The red line illustrates the approximate location of the Application Site

OSI Historic Map (1870) with Application Site depicted in red

Figure 18.1: Historic Mapping of the Application Site area

18.55 The Application Site is predominantly located within a designated Zone of Archaeological Potential (Ref. LH024-041) which demonstrates the historic importance of this part of Drogheda. There are three specific recorded monuments within or immediately adjacent to the site are: -

- The Medieval Town Walls and the site of two gates recorded in the Record of Monuments and Places as town defences (ref. LH024-041014) and a designated National Monument; and
- The Old Abbey (Abbey of St Mary d'Urso) (ref. LH024-041011) a designated National Monument; and
- Site of a quay (ref. LH024-041079).

18.56 The line of the Town Wall (recorded as town defences LH024-041014), traverses the proposed development area being evident in areas on Fair Street, Narrow West Street, Father Connolly Way and Dominic Street. The West Gate was originally located at the western end of Narrow West Street and Fair Gate was at the western end of what is now Fair Street though neither survive above ground level. **See Figure 18.2.**

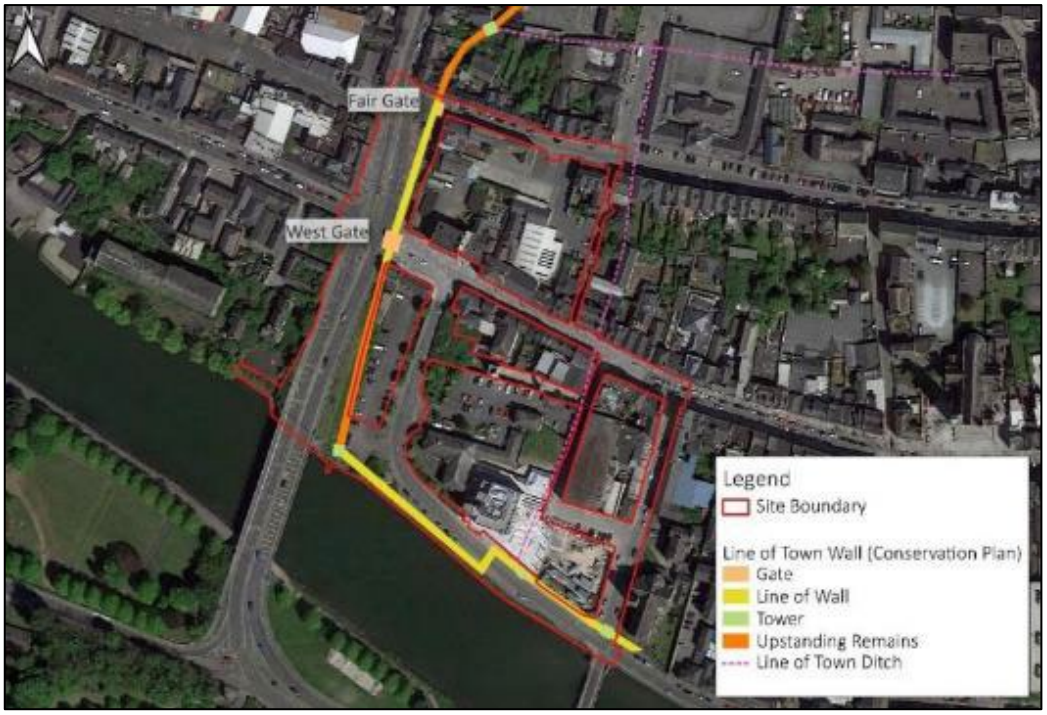


Figure 18.2: Recorded Archaeological Sites Within or Adjacent to Subject Site

18.57 The Town Wall is described in detail in the *Conservation Plan – Town Wall and other Defences of Drogheda (2006)* as follows:-

> *"'The largest extant section of the medieval defences is at the Bridge of Peace. From the water's edge north to Westgate House there is a 70m stretch of surviving wall, currently located in Murdock's Yard car park that stands 2.8m above present ground level* (Section 2.2)."

18.58 The Conservation Plan also notes that at *"… the Bridge of Peace a 70m section of the town wall stands 2.8m above present ground level, but the wall is somewhat dwarfed by an embankment for the bridge and widened George's Street, so it appears insubstantial when viewed from the street and bridge* (Section 7.1)." **See Photo 18.7.**

Photo 18.7 Remnant Sections of the Medieval Drogheda town walls

18.59 The Old Abbey (Abbey of St Mary d'Urso) (ref. LH024-041011) was founded c. AD 1206-14 with the evident remains including parts of the nave, the central bell tower, the western gable of the northern aisle and the chancel (as referenced in the SMR file). **See Photo 18.8.**

Photo 18.8 View west from St Patrickswell Lane towards the Old Abbey (Abbey of St Mary d'Urso)

Published Landscape Character Assessments

18.60 The *Louth County Council – Landscape Character Assessment (2002)* identified and categorised nine landscape character areas (LCA) in the county. While now slightly dated, it includes broad overview of the landscape character, description, condition and sensitivity for each area and is a useful research document as a base for assessment of this study area.

18.61 The Application Site is located within *Landscape Character Area (LCA) Boyne and Mattock Valleys*. No specification mention is made to the Westgate area of Drogheda town, however, the sensitivity of the archaeological and historical importance of the area is noted. The key characteristics of this LCA are note as follows though all are not relevant to the townscape associated with the Application Site: -

- *Land tends to slope southward presenting panoramic views of Drogheda, the Coast and the plains of Meath. This landscape area should be considered as one which includes the southern side of the Boyne as defined by Meath Co. Council;*
- *Noted for its archaeological, historical and landscape values;*
- *New motorway Boyne Bridge has already become a dominant landscape icon. New interchanges will attract new commercial and industrial development;*
- *Drogheda town is recognised as being within the commuter belt for the greater Dublin region where in-migration is expected to increase at an even greater pace than in the past;*
- *Hinterlands of Drogheda are subject to pressures for further isolated housing development, mainly generated from within the town itself;*

- *The area is quite extensively covered with broadleaf trees and fine hedgerows;*
- *Popular Tourist destination particularly for bus tours from Dublin and beyond; and*
- *Disused quarries tend to degrade the landscape qualities.*

Environment, Heritage and Planning Designations

18.62 The *Louth County Development Plan (LCDP) 2021-2027* provides the relevant statutory planning context for the subject site and came into effect in 2021, superseding the Drogheda Borough Council Development Plan. The following sections outline policies and objectives of the above policy document that are relevant to the assessment of potential townscape and visual impacts of the proposed development.

Land Use Zoning

18.63 The Application site is zoned '*D1 – Regeneration'* and merges into areas zoned '*B1 – Town Centre'* and '*G1 - Community Facilities'* (though no works are proposed within B1 and G1 lands). The historic nature of the existing built environment is demonstrated through the extent of protected structures and national monuments (indicated by red and blue dots) on the LCDP Drogheda Composite Map. **See Figure 18.3.**

18.64 The Zoning Objective for 'D1 – Regeneration' is '*To facilitate social, economic and physical regeneration and/or rejuvenation of an area or specific lands*'. The LCDP provides the following additional guidance for this zoning: -

- *The purpose of the 'Regeneration' zoning is to encourage and facilitate opportunities for regeneration and place making*;'
- *The lands or areas are strategically located within settlements and consist of vacant or under-utilised buildings or land with significant potential to stimulate the rejuvenation of an area or neighbourhood; and*
- *The potential uses of the lands in these zones are specific to the location of each area or piece of land and can include residential, commercial, business, retail, employment, or community uses. The primary objective is to support regeneration, make a positive contribution to urban spaces, and improve quality of life for all.'*

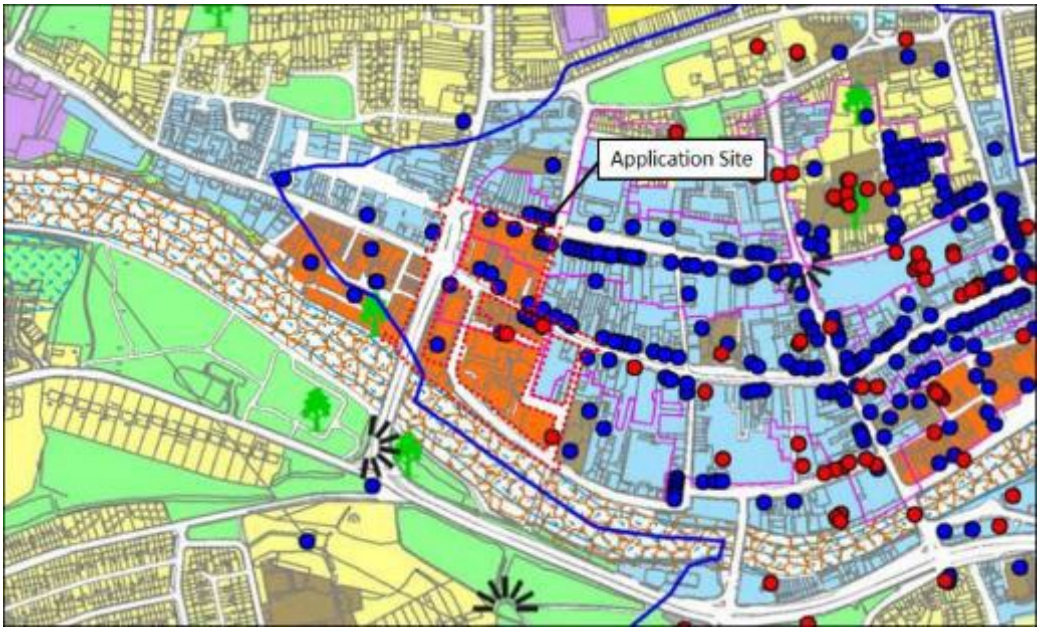


Figure 18.3: Extract from Drogheda Composite Map (Volume 1A of LCDP, 2021-27)

Architectural Conservation Area (ACA)

18.65 The Application Site is within three ACAs that are focused on Fair Street, West Street and Old Abbey Lane and identified on LCDP Map 11.1 – Louth ACAS. **See Figure 18.4.**

18.66 LCDP *Chapter 9 Built Heritage* includes the following policies relevant to potential developments within ACAs :-

- ***BHC 31:*** *To require that all development proposals within or affecting an Architectural Conservation Area preserve or enhance the character and appearance of that area, protect architectural features of special interest and ensure that the design respects the character of the historic architecture in terms of height, scale, layout, and materials. All development proposals shall have regard to the Architectural Conservation Area objectives in Appendix 11, Volume 3 and objectives contained in applicable Character Appraisals where available.*

- ***BHC 33:*** *To ensure any new service infrastructure (installed by the Local Authority or Public/Private Sector Utility Companies) shall not be located where it will be detrimental to the character of the Architectural Conservation Area.*

- ***BHC 36:*** *To ensure that new trading bays and all associated signage shall not be located where it will be detrimental to the character of the Architectural Conservation Area or any important building or vista in the Architectural Conservation Area.*

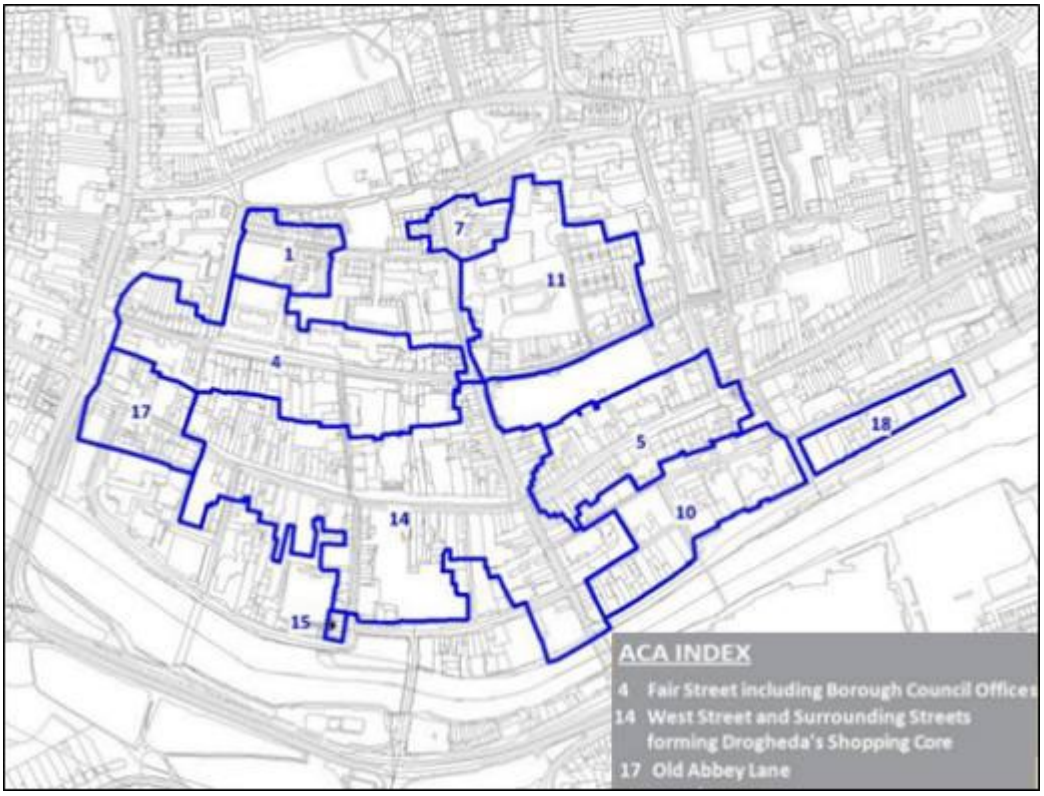


Figure 18.4: Extract from 'Map 11.1 – Louth ACAS - LCDP 2021 - 2027

18.67 The extent of buildings and site identified within the National Inventory of Architectural Heritage or designated within the LCDP and the associated ACA's and Zone of Archaeological Potential (LH024-041) again show the Application Site is within a historically important setting. The most notable of these are:-

- Barlow House (1730 – 1735) on West Street which NIAH notes as "*…representing an important component of the early eighteenth-century domestic built heritage of County Louth*";

- The remains of the Old Abbey (Abbey of St Mary d'Urso) (founded 1206) in the area known locally as 'Old Abbey Lane'; and

- The Drogheda Town Walls. While this now survives in a fragmentary, and in places, neglected and structurally vulnerable state, there is a notable section aside the Murdock's Yard car park towards George's Street. Further, excavations in advance of drainage works in 1996 and 1997 revealed sections of the town and quay walls in the area.

Environmental Designations

18.68 The section of river adjacent to the Application Site is a designated part of the *River Boyne and River Blackwater SAC* on the Landscapes Objectives Map and Map 8.1: Special Protection Area and Special Area of Conservation (and protected under Policy CH 3).

Landscape and Visual Guidance and Designations

18.69 LCDP *Chapter 8 Natural Heritage, Biodiversity and Green Infrastructure* includes objectives in terms of the general landscape. The site is not within a Landscape Conservation Area, Area of High Scenic Quality or Area of Outstanding Natural Beauty.

18.70 With reference to trees, none of those within the Application Site are subject to Tree Preservation Orders or noted as being of Special Amenity Value.

Views and Prospects of Special Amenity Value Protected Views

18.71 LCDP Section 8.12.3 identifies views and prospects of special amenity value and notes:-

> *'The County boasts many vantage points from which views and prospects of great natural beauty are available. The scenery and landscapes of the County are of enormous amenity value to tourists and residents alike, contributing to quality of life and constituting a valuable economic asset. The protection of this asset is therefore of importance in developing the potential of the County. The challenge is to manage the landscape so any change is positive in its effects thereby ensuring that the landscape is protected. There is a need therefore to preserve views and prospects for the enjoyment of future generations.*
>
> *It is not proposed that this should prohibit development, but rather, where development is permitted that it should not hinder or obstruct these views and prospects and be designed and located to minimise impact.'*

18.72 With respect to views and prospects, the following Policy Objectives are a material consideration with the proposed development:

- **NBG 38** - Protect and sustain the established appearance and character of views and prospects listed in Tables 8.14 – 8.18 of this Plan that contribute to the distinctive quality of the landscape, from inappropriate development.

- **NBG 39** - To improve, where necessary, public access to viewing points, subject to availability of resources.

18.73 There are no designated views within the Application Site but there are a number in close proximity within the Drogheda townscape of which three are relevant. **See Figure 18.5.**

- VP 49 - Views of the town from Millmount.

- VP 50 - Views of the town from Ballsgrove.

- VP 51 - Views of Millmount from the West

18.74 Each of these views is assessed as part of this study with representative viewpoints (Viewpoints 8, 9 and 10) being from these designated views and effects on these are reviewed below.

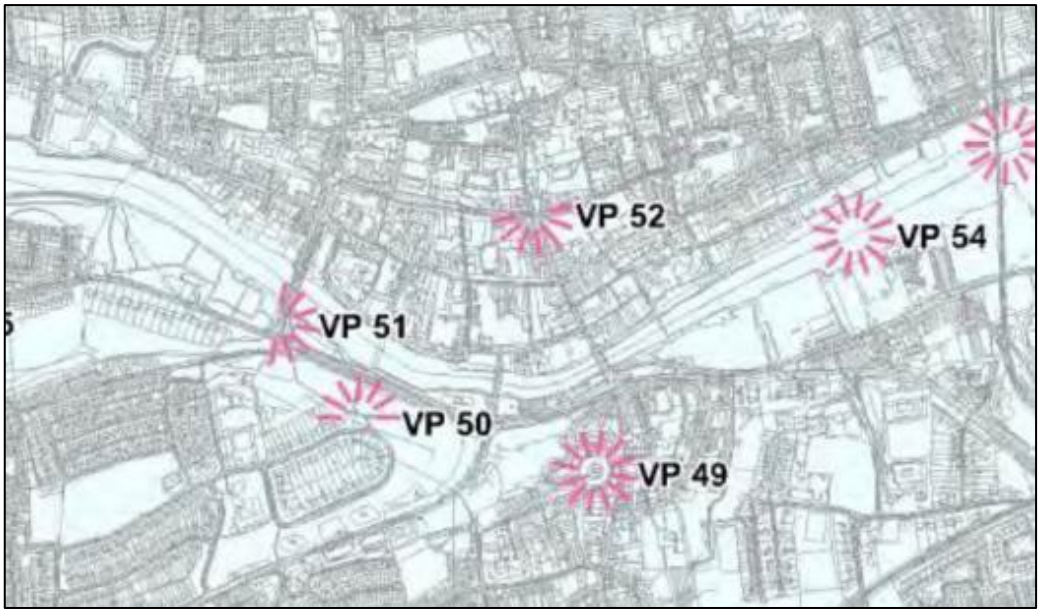


Figure 18.5: Extract from LCDP Map 8.18 "Views and Prospects Drogheda"

Townscape Quality and Condition

18.75 Given the ACA designation, the majority of the Application Site should, in principle, possess a high quality and value townscape baseline. The river corridor also gives this part of the town an inherent aesthetic core and the associated public realm and pedestrian bridge are an important amenity and landscape being rated as attractive and subject to high numbers of visual receptors.

18.76 However, there are elements of the townscape including unoccupied or little-used buildings that have a degraded appearance in terms of facades and these give incidental street sections a more dishevelled character that does lower the townscape quality. Many of these areas, such as Dominic Street would be categorised as "poor" townscape of low sensitivity being damaged landscapes and very capable of accommodating change. While recent public realm projects on West Street and in the vicinity of Barlow House have improved the townscape, there are notable neglected areas aside the historic walls off George's Street with extensive graffiti evident aside areas of unkempt landscape.

18.77 The broad and busy R132 inner by-pass to the west of the site also gives this part of the site an association with functional transport corridor use that physically and visually severs the townscape with the broad streetscape near the Fair Street junction notably dominated by traffic and associated functional uses.

18.78 In general terms, this part of Drogheda has a mix of good and ordinary and poor townscape. The base of historic street structure, buildings and riverside provide a high quality potential but this is compromised by intervening land-uses and incidental degraded streetscape and buildings.

Townscape Sensitivity

18.79 Sensitivity is based on the landscape or townscape's physical shape, scale, pattern, its visual environment/enclosure, any sense of heritage or architecture, sensitive or designated areas and the presence of rare or unique features, elements or components. This is ultimately an assessment of the ability of a surrounding landscape or townscape to accommodate and

absorb change within the application site without affecting its character. GLVIA notes that landscape/townscape sensitivity should be classified with consideration of "*…the particular project or development that is being proposed and the location in question*." Sensitivity of the townscape is determined by two factors:-

- **Susceptibility to change**: *"This means the ability of the landscape receptor (whether it be the overall character or quality/condition of a particular landscape type or area, or an individual element and/or feature…) to accommodate the proposed development without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape policies or strategies."*

- **Value of the landscape/townscape receptor**: This can be indicated by designations or, where there are no designations, by judgments based on criteria that can be used to establish landscape value.

18.80 The sensitivity of the receiving environment to townscape change is classified as high adjacent to listed buildings and the river but drops to medium and low across the wider site on account of the very mixed townscape quality. The surface car parks off Father Connolly Way and Dominic Street and nature of the passing George's Street / R132 inner by-pass are notable areas of low sensitivity.

18.81 Key considerations in terms of classifying townscape sensitivity include the following:-

- The site has been identified for urban regeneration, comprising redevelopment, and public realm improvement, to recover the streetscape and this formed the basis of the earlier Westgate Vision;

- The nature of the proposed development is one of public realm improvement and one that is sympathetic to and compliments the historic and riverside character of the Westgate area; and

- The architectural conservation areas, protected structures, and all other cultural heritage constraints in the immediate and surrounding townscape have been taken into careful consideration to inform the design and enhance their visual/cultural/historic offering. The proposed development will not alter the setting of the architectural heritage within the surrounding townscape.

18.82 On balance, the site is rated as having mixed townscape sensitivity but given the nature of the proposed, it would be considered that the site has a good ability to absorb changes without any detriment to landscape / townscape character or visual amenity of this area.

Representative Viewpoints and Visual Amenity

18.83 Site surveys were undertaken in September and October 2023 to establish locations where there are potential views of the proposal. Viewpoints were selected within publicly accessible areas based on the following criteria:-

- Review of any designated Views and Prospects (as noted above being VP 49 – Millmount, VP 50 – Ballsgrove and VP 51 - Views of Millmount from the west);

- Site investigation to establish those locations where there was likely to be significant views;

- Site investigation to establish those locations where there was likely to be a significant number of visual receptors (e.g. commuter routes or tourist locations).

18.84 Within this area, the built townscape means that views consistently change in context, scale and extent with views of the entire Application Site, even from close proximity locations closed off by intervening buildings, embankments or traffic infrastructure not being possible. While views are confined and limited to specific areas they are subject to high numbers of visual receptors. Fifteen representative viewpoints in and near the Application Site as set out in **Figure 18.6** below and these formed the basis for the photomontages used as part of the broader visual assessment process.

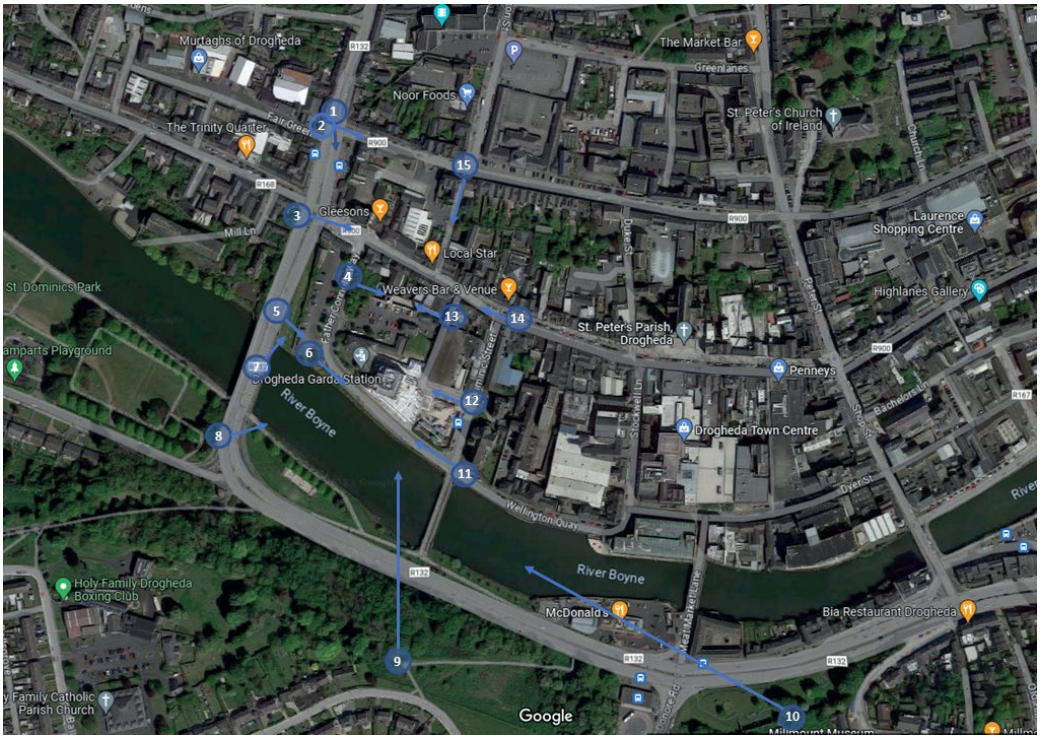


Figure 18.6: Representative Viewpoint Locations

Characteristics of the Proposed Development

18.85 The proposed development comprises public realm regeneration works on lands within the Westgate Vision Area of Drogheda. A detailed description of the proposed development is provided in 'Chapter 5 – Description of the Proposed Development' but the key considerations in terms of townscape / landscape and visual matters are as follows:-

- **George's Square** - Transformation into an attractive public realm, including landscaping, water feature, Corten Steel walkways and signage; plaza area; and reprioritisation of road network.

- **Westgate** - Introduction of a 'cultural square' to the front of Barlow House, including public realm works; landscaping; erection of 2 no. Corten Steel structures; shared surface area; upgrades to junction and road layout; and cycle parking.

- **Medieval Wall** - Construction of ramped wooden walkway to Riverfront; construction of footpath along former medieval town wall; new water channel and SuDs feature; soft and hard landscaping; and road reprioritisation.

- **Old Abbey Lane** - Demolition of wall located between Old Abbey Lane and Father Connolly Way; enlargement of Old Abbey Lane to incorporate new public square; new freestanding Corten steel pavilion within, but offset from, the Old Abbey; reinstatement of freestanding gable ruin; provision of soft and hard landscaping, seating areas and Corten steel sign.

- **Riverfront** – Construction of freestanding Corten Steel pavilion; construction of promenade plaza; construction of pedestrian boardwalk; construction of cycle path; enlargement of soft landscaped areas with new tree plantings; and provision of new hardstanding arrangements.

Design, Built Form and Location

18.86 The proposed development has been designed taking into account both guidance and policy within the *Louth County Development Plan 2021–2027* and the considerations for the area as outline within the *Westgate Vision – A Townscape Recovery Guide',* prepared by Louth County Council (2018).

18.87 Key site characteristics were identified and used to inform the concept for the proposed design to ensure an integrated and sympathetic response to the immediate receiving environment. The following principles informed the design of the proposed development:

- Create a quality gateway / arrival space, public spaces, pedestrian linkages and public realm.

- Ensure inclusivity for all members of the community; the very young, the youth, the old, the mobility impaired, socially disadvantaged, the pedestrian and cyclist.

- Develop proposals which meet the design principles of national and international best practice.

- Promote proposals an environment which leads to both day and night-time activities.

- Improve connectivity and legibility for all members of the community and for visitors/tourists to the town.

- Capitalise and respect the rich heritage of this town centre location.

- Operate / employ sustainable development principles by minimising energy consumption and maximising the use of renewable energy technology.

Materiality and Expression

18.88 The proposed materials have been carefully considered to create an environment that respects the surrounding context and rich history of the area. This will be accomplished through the use of appropriate tones, colours, textures, and materials.

Predicted Project Impacts

Do-Nothing Scenario

18.89 The anticipated change or evolution of this area in the absence of this proposal Proposed is likely to be a continuation of ongoing situation.

18.90 It is worth noting that the level of vacancy, (36% at ground floor level, 44% at first floor level and 70% at second floor level - Source: Westgate Vision , 2018) was having significant impacts on the vibrancy and liveliness of the townscape and streetscape and without this proposal, the stimulus for town centre growth might continue to stall leading to a decline in its appeal, character and visual quality.

18.91 The landscape / streetscape is likely to remain as currently exists (and be of a comparable value / condition) though the hard landscape and boundary treatments are likely to deteriorate in condition without management or repair thus leading to a further diminishment of the townscape and visual quality of this part of Drogheda.

Construction Phase

18.92 During this phase, the site and immediate environs would be subject to inevitable construction related activities and resulting impacts that are likely to constitute an adverse townscape and visual effect for this temporary period.

18.93 Specific site areas will be bound by new hoardings to clearly delineate working areas. Where feasible existing walls and fences will be retained in situ for the construction period to also form this function. Publicity material may be displayed on the hoardings to inform the public and passers-by about the proposal and programme for delivery. These will also obscure views from low-level street / road areas.

18.94 When considering construction stage impacts it is reasonable to factor in the following:-

- That the construction process is temporary to short term; and
- Construction activity, streetscape or urban environmental schemes are commonplace in towns like Drogheda and have been part of the character of town centre and riverside areas as part of the wider process of urban evolution and improvements.

18.95 Such is their condition, the removal of any existing features such as damaged pavements, boundaries, furniture and streetscape elements across the site would have no significant effects on townscape character and be of a neutral nature (i.e., no better or worse) on its broader character. The magnitude of change to the townscape and views would be *medium* at construction stage on the site itself including the more sensitive heritage sites at the Abbey, Barlow House and aside the historic walls. However, while of an adverse nature to the site itself due to construction activity and associated impacts, the significance of any of these temporary effects would reduce to **low or negligible** once at any distance due to extent of intervening townscape and the nature of the development.

18.96 Such effects should be measured against the current low condition and quality of parts of the Westgate area and the fact they will be temporary, localised and short-term; these are not therefore not considered significant or adverse in context of the baseline setting and wider Drogheda townscape.

Operation (Completed) Phase – Townscape Effects

Application Site and Westgate

18.97 Improving the appearance of the Westgate area is not solely related to making people feel good when they visit, shop, work or live in this part of the town (although that is an important factor). If an area has been upgraded and is attractive it will be healthier, safer and cleaner with an improved sense of place and therefore more people will want visit or reside there. It also means that businesses will be more likely to invest money, to build or to trade there, which improves the economy and creates jobs. Thereby, the broader scope and intent of the project is to achieve substantial positive effects in townscape / landscape and visual terms on this part of Drogheda.

18.98 In terms of the actual Application Site, there are no distinctive or notable built features, facades or architecture that will be lost; any demolition would have ***neutral* effects** (i.e., no better or worse) on the character of the site.

18.99 The proposed development consists of the construction of public spaces / realm / square / plazas, walkways / footpaths, boardwalks, cycle paths, rationalisation of the road network, introduction of feature Corten Steel structures, soft and hard landscaping and street furniture, correlating with the aims, principles and objectives as set out within the LCDP and Westgate Vision.

18.100 Given the nature of the project, it will provide enhanced connectivity and movement patterns across the Westgate area, delivery of high quality and enhanced public realm to promote general use and enjoyment of the public space. This will allow for permeability across the site to be improved with the linkages between the River Boyne corridor and town centre being improved in both aesthetic and practical terms.

18.101 In terms of Green Infrastructure, the proposals allow for retention of existing trees and introduction of extensive soft and hard landscaping that will result in significant new and notable planting across this part of the town. The removal of ornamental shrubs aligning Father Connolly Way and the River Boyne to allow for improved connectivity (i.e. pedestrian and cycle access) will be compensated through the planting of more indigenous / native species appropriate for this area along this corridor.

18.102 While the broader project will not alter the inherent scale, built form or set townscape pattern of this part of the town to any significant degree in terms of the actual magnitude of change (rated primarily *medium*), the enhancement and improvement works will have ***substantial positive* effect** on its baseline townscape character, visual quality, condition and general sense of place.

Drogheda

18.103 The effects will be a positive statement in terms of the townscape development, legibility and future while tying effectively in with many of the ambitions and objectives of the LCDP and Westgate Vision. In townscape character terms, the development will improve the quality and character of this area symbolising progress, revitalisation and have wider townscape benefit.

18.104 For passing traffic and pedestrians on George's Street and the R132 Road, it will be seen in context with the existing and emerging townscape and contribute positively to this area's identity through the new public realm and landscape character improvements. In longer or

distant views, it will invariably merge into the wider townscape and the finer details will not be so discernible Effects from these areas, while generally more limited due to intervening built environment, will be **positive** based on the enhanced general sense of place and townscape quality and condition.

Operational (Completed) Phase – Visual Effects

18.105 The following section summarises the existing setting and likely or anticipated visual effects on the 15 no. representational viewpoints for which verifiable photomontages have been prepared by G-Net 3Dbased on the proposed development plans, elevations and details. The locations of the viewpoints are given in **Figure 18.6** above.

18.106 An extract from the proposed view photomontage is included below for ease of cross-reference but the existing and proposed views are set out in larger scale within the Photomontage Report prepared by G-Net 3Dwhich in included in **Appendix 18.2** (see Volume 3 of the EIAR).

Table 18.9: Viewpoint 1 – George's Street

Viewpoint Location	George's Street (R132 Road) near junction of Fair Street/West Street
Baseline Setting	George's Street is part of the R132 Road and one of the main approaches to Drogheda from the north. The road alignment has not changed since the 19th century but its character and use changed significantly with the opening of the new Boyne crossing at the Bridge or Peace in the 1970's and the related roadworks to make it an inner-town by-pass. Traffic is a major component of local townscape character. Due to proximity, there are open and close views of the western edge of the Application Site. The majority of visual receptors will be passing road-users including local residents, commuters, workers and tourists.
Viewpoint Sensitivity	Medium
Predicted Change	The proposed junction upgrade includes realignment of the road, repositioning of the bus stop and new tiered public realm area with associated public realm landscape works and a water feature. The existing streetscape and character of this part of the site (and ACA) would be enhanced by the upgraded and re-aligned junction and new public realm, stepped terraces and tree planting that will improve its inherent visual quality, amenity value and appearance.
Significance Summary	Moderate Positive

Table 18.10: Viewpoint 2 – George's Street

Viewpoint Location	Western footpath at George's Street (R132 Road) looking eastwards towards Fair Street.
Baseline Setting	George's Street is part of the R132 Road and one of the main approaches to Drogheda from the north. The road alignment has not changed since the 19th century but its character and use changed significantly with the opening of the new Boyne crossing at the Bridge or Peace in the 1970's and the related roadworks. Traffic is a major component of local townscape character. Due to proximity, there are open and close views of the western edge of the Application Site. The majority of visual receptors will be passing road-users including local residents, commuters, workers and tourists.
Viewpoint Sensitivity	Medium
Predicted Change	The proposed junction upgrade includes realignment of the road, repositioning of the bus stop and new tiered public realm area with associated public realm landscape works and a water feature. The existing streetscape and character of this part of the site (and ACA) would be enhanced by the upgraded and re-aligned junction and new public realm, stepped terraces and tree planting that will improve its inherent visual quality, amenity value and appearance.
Significance Summary	Moderate Positive

Table 18.11: Viewpoint 3 – George's Street

	
Viewpoint Location	View from western side of George's Street (R132 Road) looking eastwards towards West Street & Barlow House.
Baseline Setting	George's Street is located on the historic edge of the walled town of Drogheda and is annotated as Town Mall on early Ordinance Survey maps. This area was part of the inner town by-pass construction leading to the Bridge or Peace in the 1970's (to the right / south) being subject to significant modifications leading towards the dual-carriageway severing the traditional townscape. This viewpoint is located from the edge of the historic or medieval streetscape of Drogheda and looks directly across to West Street where works are proposed. Due to proximity, there are open and close views of the western edge of the Application Site. The majority of visual receptors will be passing road-users including local residents, commuters, workers and tourists.
Viewpoint Sensitivity	Medium to High
Predicted Change	The proposed works include improved surfaces to the streets including stone pavements, associated landscaping, tree planting and two freestanding Corten Steel structures defining the entrance to West Street. The broader proposals entail a new 'cultural square' to the front of Barlow House which would consequently enhance the streetscape and usability of the street, creating a 'destination' for users. The collective will improve its inherent visual quality, amenity value and appearance.
Significance Summary	Moderate Positive

Table 18.12: Viewpoint 4 – Father Connolly Way

Viewpoint Location	Father Connolly Way looking eastwards towards the Old Abbey (Abbey of St Mary d'Urso).
Baseline Setting	This is a potentially close proximity view in the direction of Old Abbey Lane though an intervening stone wall set to the eastern side of Father Connolly Way and scaffolding restricts vantage of a much of a freestanding Gable and the Abbey Tower structure that make up the key components of this historic site. Hence, it is physically separated from this viewpoint. The road has a functional character and is mainly used to access the adjacent car park, the Garda Síochána Station to the south of the Abbey and provide a through-link to Wellington Quay. It would not, currently, be subject to anything significant in terms of visitors or passers-by here for tourism / culture reasons.
Viewpoint Sensitivity	Medium to High
Predicted Change	The proposal including public realm works with an associated amenity garden area, and the sympathetic renovation of Abbey gable that would substantially improve the quality of the overall view and restore a visual and physical link between Old Abbey Lane and areas to the west. This would open up connectivity in this part of Drogheda and allow the historic and cultural heritage of the Old Abbey (Abbey of St Mary d'Urso) to be both enhanced and thereby more appreciable to greater numbers of visual receptors.
Significance Summary	Substantial Positive

Table 18.13: Viewpoint 5 – Bridge of Peace / George's Street

Viewpoint Location	George's Street (R132 Road) on northern end of the Bridge of Peace.
Baseline Setting	The Bridge of Peace (sometimes called the Boyne Bridge) was built in the early 1970's as part of the R132 inner by-pass project. It comprises a dual-carriageway and is one of the busiest roads in Drogheda which is subject to high numbers of visual receptors, though these are predominantly in vehicles. The character is therefore largely dominated by transport infrastructure but there are footpaths on either side subject to pedestrian use with that on the east offering vantage over the Application Site area aside the River Boyne and Father Connolly Way. The majority of visual receptors are road users and will inevitably be passing at varying speeds having partial views of a transient nature.
Viewpoint Sensitivity	Medium
Predicted Change	The proposed works include new public realm, cycle lane / footpaths and soft landscape works along the north bank of the River Boyne. This would enhance the general open space of this riverfront area entailing removal of graffitied walls, reworking of remnant or unused landscapes and major investment symbolised most by the new promenade / boardwalk. This would assist in changing the predominant characteristic of partially neglected, functional or utilitarian townscape into one that has a more amenable and aesthetic basis as well as providing improved sustainable elements in terms of connectivity and infrastructure for the town.
Significance Summary	Moderate Positive

Table 18.14: Viewpoint 6 – Father Connolly Way

Viewpoint Location	Father Connolly Way to south of Murdock's Car Park near the Bridge of Peace.
Baseline Setting	This viewpoint is located to the south of a car park (Murdock's) off Father Connolly Way in a landscaped area leading towards the bank of the River Boyne. An informal footpath currently leads towards the underside of the Bridge of Peace to the west but pedestrian access beyond this is closed off by a barrier (towards the derelict lands at Donaghy's Mill). The area would not be subject to any significant numbers of visual receptors as there is limited reason to walk or be in this area at this time. The adjacent landscape has a degraded and neglected character and anti-social activity is evident.
Viewpoint Sensitivity	Medium to Low
Predicted Change	The proposed works include a new pedestrian footpath at riverfront level, public realm works, cycle lane, an enhanced setting for the existing Shaft of Light sculpture and soft landscape works including new trees. The landscape character of this area would be enhanced with the addition of a promenade / boardwalk and cycle lane that are ultimately intended to be part of a wider connection along the north bank of the River Boyne and link through to Hope Lane further west. Should this connection be realised, it would result in a significant increase in visual receptors at this location.
Significance Summary	Moderate Positive

Table 18.15: Viewpoint 7 – Bridge of Peace

	
Viewpoint Location	Bridge of Peace (eastern footpath) on R132 Inner-By-Pass.
Baseline Setting	The Bridge of Peace (sometimes called the Boyne Bridge) was built in the early 1970's as part of the R132 inner by-pass project. It comprises a dual-carriageway and is one of the busiest roads in Drogheda which is subject to high numbers of visual receptors, though these are predominantly in vehicles. The character is therefore largely dominated by transport infrastructure but there are footpaths on either side that are subject to pedestrian use. This view to the north-east overt the site includes the river, the Medieval Wall area and long view of Barlow House and the Abbey area. The majority of visual receptors are road users and will inevitably be passing at varying speeds having partial views of a transient nature.
Viewpoint Sensitivity	Medium
Predicted Change	The proposed works include new public realm, cycle lane / footpaths and soft landscape works along the north bank of the River Boyne. This would enhance the visual character of this riverfront area entailing removal of graffitied walls, reworking of remnant or unused landscapes and major investment symbolised most by the new promenade / boardwalk. The renovation works to the Abbey and town walls would also be evident. The collective would assist in changing the partially neglected, functional or utilitarian townscape into one that has a more amenable and aesthetic basis as well as providing improved sustainable elements of connectivity and infrastructure for the town.
Significance Summary	Moderate Positive

Table 18.16: Viewpoint 8 – Bridge of Peace

Viewpoint Location	Bridge of Peace (northbound) on R132 Inner-By-Pass. LCDP Protected View No. 51.
Baseline Setting	The Bridge of Peace (sometimes called the Boyne Bridge) was built in the early 1970's as part of the R132 inner by-pass project. It comprises a dual-carriageway and is one of the busiest roads in Drogheda which is subject to high numbers of visual receptors, though these are predominantly in vehicles. The character is dominated by transport infrastructure but there are footpaths on either side that are subject to pedestrian use. This view is typical on that which would be experienced by north-bound traffic towards the Application Site. The majority of visual receptors are road users and will inevitably be passing at varying speeds having partial views of a transient nature.
Viewpoint Sensitivity	Medium to Low
Predicted Change	The proposed works will be largely obscured to due to extent of road and angle of view. There will be incidental features evident that will be subject to visual improvement but these would be of limited consequence and are likely to be missed by the casual viewer. This view is close to that identified as a protected view/prospect (VP51) LCDP stating *'Views of Millmount from the West'* though the proposal is not in that specific view direction. Irrespective, it will have no effects on any appreciation of the vantage towards Millmount or any consequence on any appreciation of this view.
Significance Summary	Slight Neutral

Table 18.17: Viewpoint 9 – Ballsgrove

Viewpoint Location	Highfield Road, Ballsgrove. LCDP Protected View No. 50.
Baseline Setting	This view from an area of open space off Highfield Road a residential area, in the Ballsgrove area. It is noted as a Protected View on account of providing an elevated and panoramic view from the south of the River Boyne over the town centre including its notable church steeples and Millmount tower. The majority of potential visual receptors will be the local residents in the estates to the south of this viewpoint.
Viewpoint Sensitivity	High
Predicted Change	Vegetation may have established in this area to such an extent that views in the direction of the proposed development are now obscured from this general area. The view is primarily focused on the town centre of Drogheda and the proposed development is on the western periphery of the view cone. The proposed development will be a barely discernible addition but due to distance, intervening vegetation and nature of townscape, the effects will not be of a negligible nature. It will not have any effects on the key components that make up this protected view.
Significance Summary	Negligible Neutral

Table 18.18: Viewpoint 10 – Millmount

	
Viewpoint Location	Martello Tower, Millmount. LCDP Protected View No. 49.
Baseline Setting	The mound at Millmount is reputed to be 3,000 years old and, Amegin, the Celtic poet is buried here according to local folklore. During the Norman period, Hugh De Lacy built a defensive Motte and Bailey on this site which is the highest point within the modern town. The complex evolved into an army barracks and in 1808 the Martello Tower, which defines its landmark characteristic, was completed. The tower is now part of the Drogheda / Millmount Museum. From the tower, there are expansive and panoramic views over Drogheda town and surrounding countryside with the Application Site being part of a townscape but specific streetscape elements not widely notable or discernible. The view is clearly one that is appreciated by tourists and museum visitors (accounting for its Protected status).
Viewpoint Sensitivity	High
Predicted Change	The new public realm, cycle lane, sculpture, soft landscaped area along river frontage will be discernible but given the distance, 450m+, their influence or impact on the panoramic view of the wider town will be muted. The majority of the proposed works will be obscured and will have negligible impact. Irrespective, there will be some slight improvements to the riverside setting and tree cover towards the Bridge of Peace and visible in the Dominic Street area.
Significance Summary	Sight Positive

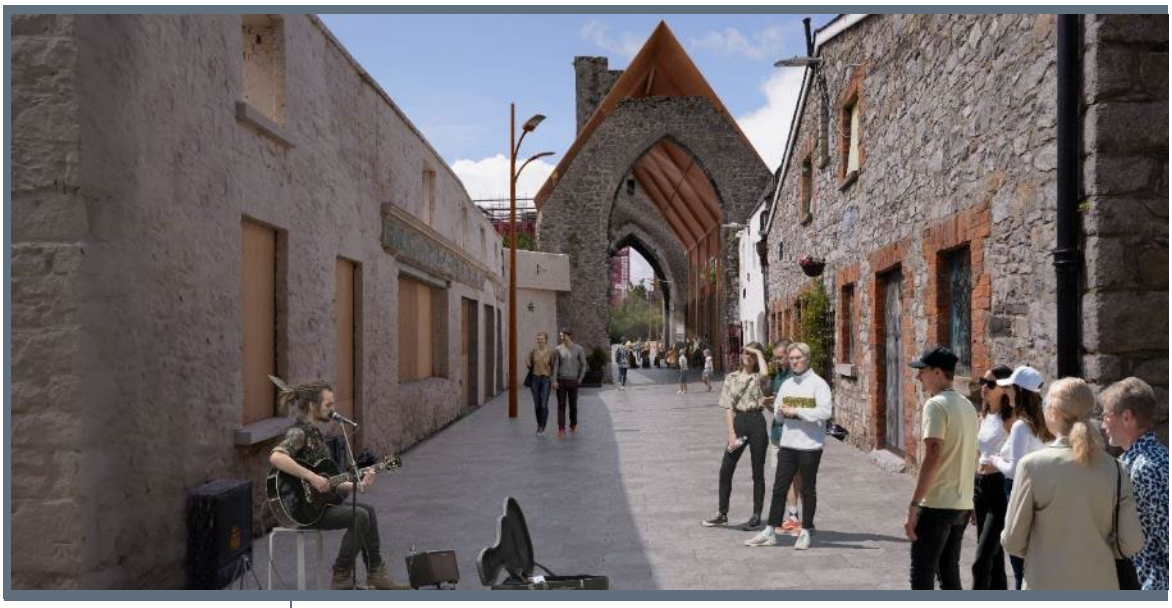
Table 18.19: Viewpoint 11 – Father Connolly Way

Viewpoint Location	Junction of Father Connolly Way and Dominic Street.
Baseline Setting	This view is from the north of St Dominic's Bridge and on the eastern periphery of the Application Site were open views are afforded along Father Connolly Way to the west, Dominic Street to the north and an expansive surface car park. While the bridge has resulted in visual enhancement and amenity, the wider area has a utilitarian townscape with some degraded elements and traffic movement and infrastructure dominating the view. Being located near the town centre, the visual receptors will include retail / shoppers, commuters / workers, tourists and those passing in traffic.
Viewpoint Sensitivity	Medium
Predicted Change	The existing character would be enhanced with the addition of a promenade/boardwalk aside the River Boyne, a feature Corten Steel canopy, tree planting and wider streetscape design and material quality improvements. Planting will also help to break up views of the adjacent car park. This will enhance the baseline view quality and value having positive effects in terms of the vibrancy and overall condition of the public realm and sense of place.
Significance Summary	Moderate Positive

Table 18.20: Viewpoint 12 – Dominic Street

Viewpoint Location	Dominic Street adjacent to the Dominic Street Car Park.
Baseline Setting	The southern part of Dominic Street is dominated by broad streets merging into an expansive surface car park and has a functional town-centre character. The surfaces are mixed in terms of visual quality but, in general terms, it presents a poor townscape image with little in terms of aesthetic uplift towards the adjacent buildings including the façade of St Dominics Church. The façade of the Abbey Centre to the right (north) and parts of this streetscape are also in a degraded state. Being located near the town centre, the visual receptors will include retail / shoppers, commuters / workers, tourists and those passing in traffic.
Viewpoint Sensitivity	Medium
Predicted Change	The existing character would be enhanced through improved streetscape design and material quality improvements on Dominic Street including new tree planting (where nothing exists at present) and street furniture provision. This will enhance the baseline view quality and value having positive effects in terms of the vibrancy and overall condition of the public realm and sense of place.
Significance Summary	Moderate Positive

Table 18.21: Viewpoint 13 – St Patrickswell Lane

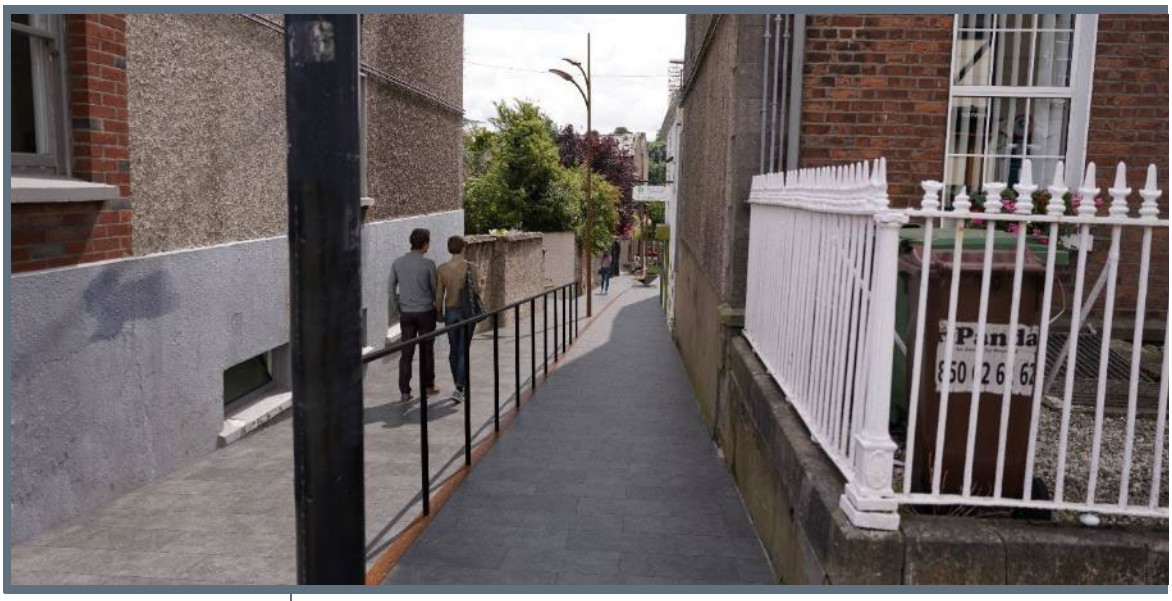


Viewpoint Location	St Patrickswell Lane looking west along Old Abbey Lane.
Baseline Setting	Known as Old Abbey Lane, this pedestrian street leads towards the Old Abbey (Abbey of St Mary d'Urso) and is part of the historic street structure with the Abbey itself dating from 1206 (and being core of the ACA). The view west includes the two arches of the Abbey under which there is a connection from St Patrickswell Lane, via a newly gravelled path, to West Street. There is not extensive traffic in this area due to adjacent townscape uses and narrow nature of streets and the majority of visual receptors will be those workers in the town walking at breaks or after, tourists and those using Old Abbey Lane as a pedestrian link to go shopping or across town.
Qo6.	High
Predicted Change	The baseline cultural heritage quality of the view is high though the boarded up windows suggest limited use and detract from the scene. The proposal will serve to enhance the Abbey setting including renovation of key remaining structures and improvements of the public realm leading towards and around the site. This, the new breakthrough connection to Father Connolly Way and the associated sympathetic canopy will enhance the remnant Abbey's presence in terms of historic and cultural heritage thereby having positive effects on the general visual amenity of this part of Drogheda.
Significance Summary	Moderate Positive

Table 18.22: Viewpoint 14 – West Street

Viewpoint Location	Junction of West Street and Dominic Street.
Baseline Setting	West Street is one of the main shopping areas within Drogheda and a core part of its ACA designation. The street has been subject to incidental townscape improvement schemes in the past including tree planters and new paving to pedestrian paths. It is evident that traffic is still a dominating characteristic but the area is also busy in terms of pedestrian use being a town centre location. . Being located near the town centre, the visual receptors will include retail / shoppers, commuters / workers, tourists and those passing in traffic.
Viewpoint Sensitivity	Medium
Predicted Change	The proposed works entail an upgraded road surface, new street furniture and mature tree planting. The design seeks to continue to allow vehicular access to West Street but downplay its dominance and give the wider streetscape a more pedestrian feel. The broader townscape would be subject to no significant change but it would benefit from the baseline public realm enhancements that would improve its quality and value in visual amenity terms.
Significance Summary	Moderate Positive

Table 18.23: Viewpoint 15 – Scholes Lane



Viewpoint Location	Junction of Scholes Lane and Fair Street.
Baseline Setting	Scholes Lane is a narrow pedestrian connection linking Fair Street and West Street. It sits between walls of rear gardens and taller buildings (many of which are listed within the NIAH) and has a very enclosed character with parts being like alleyways. Being located near the town centre, the majority of visual receptors will be pedestrians using this as a link for retail / shop / work purposes.
Viewpoint Sensitivity	Medium
Predicted Change	The primary works would be an upgrade to the pavement surface of Scholes Lane that will tidy up its overall visual appearance and improved the safety, quality / condition of the townscape. This will enhance the sense of place, general function and purpose of the lane comparative to the existing situation.
Significance Summary	Slight Positive

Potential Cumulative Impacts

18.107 Cumulative townscape / landscape or visual effects are the combined effects that arise through the interaction of two or more developments, whether of the same type or not, within the landscape and visual baseline context. Collectively they give rise to an overall combined effect.

18.108 A significant cumulative effect will occur where the addition of the proposed development to other existing and developments results in a landscape or view that is defined by the presence of more than one major development and is characterised primarily by large scale development so that other patterns and components are no longer definitive.

18.109 A review of other consented developments was completed as part of this assessment. The most significant recent addition to the townscape (and under construction at time of writing) is the Mill Lane apartment development to the west of George Street. The collective, if completed, would have positive effects fort this part of the town in terms of general improvement in character and visual quality due to removal of degraded buildings, enhanced connectivity and landscape and the general sense of place.

18.110 Given the existing built form and evolving townscape this part of Drogheda, there are **no significant or unacceptable cumulative effects** predicted to derive from this proposal in conjunction with these in townscape / landscape and visual amenity terms.

Avoidance, Remedial, and Mitigation Measures Construction Phase

18.111 The project is inherently about improvements to the visual appearance and townscape character of this part of Drogheda and includes for extensive landscape, public realm and open space works with the overall objective of a resulting project that integrates the development into the surrounding townscape / landscape and provides a series of coordinated and linked spaces. This includes designing of green infrastructure, formal and informal open spaces, public realm and other external areas for the amenity and use of residents, visitors and others in this area. A key mitigation measure is therefore the very nature of the project itself that correlates with the broader objectives set out in the LCDP and the Westgate Vision.

Construction Phase

18.112 The key mitigation measures are those standard to best practice construction site management but the significance of effects can be limited by implementing the following strategies:-

- All activities will be subject to pre-planned method statements in accordance with appropriate legislation in particular Construction Design and Management Regulations and Management of Health and Safety at Work Regulations;

- Erection of temporary hoarding around construction areas to clearly delineate working areas and protect public from the works. Hoardings will be maintained in good condition throughout this stage;

- Lighting will be maintained in good order and provided where necessary to ensure sufficient illumination. Precautions will be taken to ensure no shadows are cast by hoardings or building works onto pavement or road areas. Internal construction lighting will be angled so that it does not cause nuisance to adjacent properties or carriageways;

- Careful siting of construction machinery, materials and welfare facilities to avoid unnecessary impacts on adjacent areas;

- Ensuring the streets or roads providing access to the work are maintained free of dust and mud as far as possible and that any damaged surfaces are made good; and

- To have effective site and litter management systems in place from the outset to ensure a clean, tidy and presentable image.

Operation Phase

18.113 The potential townscape and visual effects of the proposal in the operational phase have been classified as positive on the basis that the overriding nature of the project is to improve the townscape, public realm and visual amenity of this part of Drogheda. No negative effects have been identified and therefore no mitigation measures are required for townscape and visual effects.

Monitoring & Reinstatement Measures

Construction Phase

18.114 Monitoring and Reinstatement is not applicable to this chapter.

Operation Phase

18.115 No monitoring of townscape and visual effects is required other than the monitoring of soft landscape works after planting to ensure the health and viability of the plants. The management of landscape areas will initially be undertaken by an ACLI approved landscape contractor. There will be a five year guarantee after construction that all the proposed planting works still exists and has been established in line with landscape design expectations. This will ensure that no planting has been removed or damaged due to the subsequent construction or plant failure. A Landscape Management and Maintenance Plans will set out the objectives for management of external spaces or public realm areas for a 20 year period.

18.116 Regular monitoring will be undertaken to determine success of landscape operations and ensure they are behaving in the manner anticipated at design stage. If required, elements of the design can be adapted to accommodate changes required by actual field experience.

Residual Impacts

18.117 The proposed development is regarded as being permanent or long term in landscape and visual terms.

18.118 As all mitigation is embedded in the proposed development and there is no additional mitigation, all effects described in the Predicted Projects Impact section above are residual. The following tables therefore present a summary of the landscape and visual assessment.

Residual Townscape Effects

18.119 The proposed works are predominantly to streetscape areas and include built elements and structures designed to enhance the townscape character of the Westgate area. The magnitude of change is assessed as being of a *medium* rating, which when measured against the baseline sensitivity of the receiving environment (*medium / high*) would result in the overall townscape effects being rated as being of *moderate* significance.

18.120 While rated as significant to the Application Site, these impacts/ effects would be of a positive nature on all the main elements of the townscape character, including (a) the land use, (b) the urban grain and movement patterns, (c) the network of public realm and communal open spaces, (d) green infrastructure, and (e) the overall perception of quality and liveliness of the townscape.

18.121 Beyond the immediate site, the effects will be less easy to discern due to the nature of the townscape but there will be an overall perception that the quality, condition and sense of place of the Westgate area has improved and this will have wider positive effects on the Drogheda area.

18.122 In summary, the townscape effects of the proposed development in the operational phase are predicted to be **significant positive**.

Table 18.24: Summary of Residual Townscape Effects

Townscape Area	Townscape Sensitivity	Magnitude of Change	Significance & Magnitude of Effects		
			Construction (Temporary)	Operation (Permanent)	Residual (Permanent)
Application Site / Westgate	Medium to High	Moderate	Slight Adverse	Substantial Positive	Substantial Positive
Drogheda Town	Low / Medium / High	Low to Moderate	Slight Adverse	Slight Positive	Slight Positive

Residual Visual Effects

18.123 The predicted effects on 15 no. representative viewpoints in the receiving environment are summarised in **Table 18.25** below.

Table 18.25: Summary of Visual Effects Assessment

Viewpoint	Viewpoint Sensitivity	Magnitude of Change	Significance & Quality of Effects		
			Construction (Temporary)	Operation (Permanent)	Residual (Permanent)
1: George's Street	Medium	Moderate	Slight Adverse	Moderate Positive	Moderate Positive
2: George's Street	Medium	Moderate	Slight Adverse	Moderate Positive	Moderate Positive
3: George's Street	Medium to High	Moderate	Slight Adverse	Moderate Positive	Moderate Positive

Viewpoint	Viewpoint Sensitivity	Magnitude of Change	Significance & Quality of Effects		
4: Father Connolly Way	Medium to High	Moderate to Major	Slight Adverse	Substantial Positive	Substantial Positive
5: Bridge of Peace	Medium	Moderate	Slight Adverse	Moderate Positive	Moderate Positive
6: Father Connolly Way	Medium to Low	Moderate to Major	Slight Adverse	Moderate Positive	Moderate Positive
7: Bridge of Peace	Medium	Moderate	Slight Adverse	Moderate Positive	Moderate Positive
8: Bridge of Peace	Medium to Low	Minor	Slight Neutral	Slight Neutral	Slight Neutral
9: Ballsgrove	High	Minor	Negligible Neutral	Negligible Neutral	Negligible Neutral
10: Millmount	High	Minor	Negligible Neutral	Slight Positive	Slight Positive
11: Father Connolly Way	Medium	Major	Slight Adverse	Moderate Positive	Moderate Positive
12: Dominic Street	Medium	Moderate to Major	Slight Adverse	Moderate Positive	Moderate Positive
13: St Patrickswell Lane	High	Moderate to Major	Slight Adverse	Moderate Positive	Moderate Positive
14: West Street	Medium	Moderate	Slight Adverse	Moderate Positive	Moderate Positive
15: Scholes Lane	Medium	Moderate	Slight Adverse	Slight Positive	Slight Positive

Worst Case Scenario

18.124 The worst-case scenario is not applicable in this instance in terms of landscape / visual considerations related to the proposed development.

Interactions

18.125 As is the case where a development will result in a change to the visual environment of an area, the landscape and visual impacts of the development will result in interactions with Cultural Heritage, Population and Human Health, Residential Amenity and Biodiversity.

18.126 The area contains numerous listed buildings and monuments including the Medieval Town Walls, the Old Abbey (Abbey of St Mary d'Urso) and the site of a historic quay on the River Boyne banks. In general terms, the proposal is related to improving each of their settings and understanding in visual terms that will have inherent positive effects.

18.127 In terms of any residential amenity, landscape and visual effects will be most pronounced during the construction stage causing initial visual impacts. Thereafter the effects will be positive as the vantage of their properties, general townscape, amenity provision and connectivity in this part of Drogheda will be enhanced.

18.128 The proposed landscape works were reviewed by the project ecologist and plant species include significant indigenous species and other ecology measures are included which will have a positive effect as it matures on local ecology and diversity. The species selected as part of this development are based on those listed in the *All-Ireland Pollinator Plan 2015-2020.*

18.129 In conclusion no adverse impacts are predicted in relation to any of the above mentioned interactions and the effects are all considered to be of a positive nature.

Difficulties in Compiling Information

18.130 No difficulties were encountered in the preparation of this assessment.

References

18.131 There are a number of published guidance documents including Development Plans, which include planning designations relevant to the Study Area or are referenced as part of the baseline assessment of the townscape / landscape as listed below*:-*

- *Environmental Protection Agency (2022) Guidelines on the Information to be contained in Environmental Impact Assessment Reports;*
- *European Commission (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report;*
- *Louth County Development Plan 2021-2027;*
- *National Inventory of Architectural Heritage http://www.buildingsofireland.ie;*
- *National Parks and Wildlife Service (NPWS) and Environmental Protection Agency - https://gis.epa.ie/EPAMaps;*
- *https://www.heritagecouncil.ie*
- *Design Manual for Urban Roads and Streets by the Department of Transport, Tourism and Sport and the Department of Housing, Planning and Local Government (2019);*
- *Urban design manual - a best practice guide by the Department of Environment, Heritage and Local Government (2009).*
- *Landscape Character Assessment 2002 by Louth County Council (LCA Boyne and Mattock Valleys); and*

- *Westgate Vision – A Townscape Guide Recovery Guide by Louth County Council (2018)*

18.132 The baseline assessment included study of *Ordinance Survey Ireland* historical and recent mapping to assess how this part of Drogheda has historically developed or changed since the early 19th century as well as assess approximate calculations of relevant distances or areas.

19. Interactions

Introduction

19.1 This Chapter of the EIAR has been prepared by Turley and deals with likely interactions between effects predicted as a result of the proposed development.

19.2 In addition to the requirement under the Planning and Development Regulations 2001 (as amended) to describe the likely significant effects of the proposed development on particular aspects of the environment, it is also required to consider the interaction between impacts on different environmental factors. As such, these are assessed below.

19.3 The interaction of effects within the Proposed Development in respect of each of the environmental factors, listed in Article 3(1) of the EIA Directive, has been identified and addressed in the respective chapters in this EIAR. This chapter presents an overview of these interactions of impacts, from the Proposed Development, between the various environmental factors.

19.4 This Chapter outlines the areas where potential interactions may arise as a result of the proposed development.

19.5 The potential cumulative impact of the proposed development with committed or planned development projects in the surrounding area is also recognised as an interaction between potential environmental impacts. Cumulative impact has been addressed in detail in **Chapter 20** below.

Description of Potential Interactions

19.6 All aspects of the environment are likely to interact to some extent and to various degrees of complexity. The likely significant interactions between factors arising from the proposed development are set out in the matrix provided as **Table 19.1** below.

Table 19.1: Matrix of Interactions Between Effects Predicted as a Result of the Proposed Development

Source \ Receptor	Population and human health	Biodiversity	Land, Soils and Geology	Hydrogeology & Hydrology	Air & Climate	Noise & Vibration	Material Assets (Waste)	Material Assets (Traffic and Transportation)	Material Assets (Site Services)	Cultural Heritage & Archaeology	Architectural Heritage	Landscape and Visuals
Population and human health				✓	✓	✓	✓	✓	✓			✓
Biodiversity				✓								
Land, Soils and Geology				✓								
Hydrogeology & Hydrology		✓	✓									
Air and Climate	✓	✓	✓					✓				
Noise & Vibration	✓	✓						✓				
Material Assets (Waste)	✓	✓	✓					✓				
Material Assets (Traffic and Transportation)	✓				✓	✓						
Material Assets (Site Services)	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Cultural Heritage & Archaeology											✓	
Architectural Heritage										✓		
Landscape and Visuals	✓	✓								✓		

Table 19.2: Summary of Interaction and In-combination Effects

Environmental Discipline	Interaction With	Interaction Effect
Population and human Health	**Hydrology & Hydrogeology**	Interactions between 'Population & Human Health' and 'Hydrology & Hydrogeology' have been considered in this EIAR as the proposed project has the potential to create impacts on surface water runoff during the construction stage as a result of increased levels of silt or other pollutants, in addition to potential pollution from spillages, wheel washing and water from trucks on site.
	Air & Climate	**Air & Climate**: interactions between 'Population & Human Health' and 'Air & Climate' have been considered in this EIAR as the proposed project has the potential to create nuisance/health impacts related to exposure to dust during the construction stage and construction traffic related emissions during the construction stage.
	Noise & Vibration	**Noise & Vibration**: interactions between 'Population & Human Health' and 'Noise & Vibration' have been considered in this EIAR as the proposed project has the potential to create potential impacts during the construction stage related to elevated noise levels.
	Material Assets - Traffic & Transportation	**Material Assets - Traffic & Transportation**: interactions between 'Population & Human Health' and 'Material Assets – Traffic & Transportation' have been considered in this EIAR as the proposed project has the potential to create traffic/parking impacts during the construction stage due to presence of construction traffic and traffic management measures and traffic impacts due to the traffic generated by the operational stage.
	Material Assets – Waste	**Material Assets – Waste**: interactions between 'Population & Human Health' and 'Material Assets – Waste' have been considered in this EIAR as the proposed project has the potential to create health impacts if improper waste management

Environmental Discipline	Interaction With	Interaction Effect
		measures are implemented during both the construction and operational stages.
	Material Assets – Site Services.	**Material Assets – Site Services**: interactions between 'Population & Human Health' and 'Material Assets – Site Services' have been considered in this EIAR as the proposed project has the potential to create health impacts related to improper safety protocols, e.g. related to diversions of power lines, and potential nuisance/impacts on residential amenity due to potential water/power/service outages during the construction phase.
	Landscape and Visual Impact	**Landscape and Visual Impact**: interactions between 'Population & Human Health' and 'Landscape and Visual Impact' have been considered in this EIAR as the proposed project has the potential to create visual impacts related to the presence of a construction site during the construction stage, and the presence of a sizeable new residential development during the operational phase.
Biodiversity	**Hydrogeology & Hydrology**	Interactions between 'Biodiversity' and 'Land, Soils and Geology' have been considered in this EIAR as the proposed project has the potential to create impacts on nearby watercourses during the construction stage as a result of silt laden runoff and potential spills/leakages of fuels/contaminants.
Land, Soils and Geology	**N/A**	This Land, Soils and Geology Chapter is closely linked to Chapter 8 Biodiversity and Chapter 10 Hydrology and Hydrogeology, cross references are included in this report where relevant. Geology often shapes the topography and geology of a site. Ecology is also closely linked due to water quality having an impact on the ecosystems and their flora and fauna.
	Hydrogeology & Hydrology	Of particular significance is the interaction between Land, Soils and Geology and Hydrology and Hydrogeology. Potential effects associated with Geology, including

Environmental Discipline	Interaction With	Interaction Effect
		excavations and management of excavation arisings produce potential sources of contamination and a hazard in terms of runoff and surface water quality, e.g. entrainment of solids in runoff and intercepted by receiving surface water network.
Hydrogeology & Hydrology	**Land, Soils and Geology**	This Hydrology Chapter is closely linked to Chapter 9: Land Soils and Geology. Particular significance is the interaction between Land, Soils and Geology and Hydrology and Hydrogeology. Potential effects associated with Geology, including excavations and management of excavation arisings produce potential sources of contamination and a hazard in terms of runoff and surface water quality, e.g. entrainment of solids in runoff and intercepted by receiving surface water network.
	Biodiversity	The Hydrogeology & Hydrology Chapter is closely linked to the Biodiversity Chapter (Chapter 8) due to water quality having an impact on the ecosystems and their flora and fauna. Cross references are included in the Hydrogeology & Hydrology Chapter where relevant.
Air and Climate	**Material Assets (Traffic & Transportation)**	The proposed scheme has the potential to increase traffic related emissions from moving construction materials to and from Site during the construction phase and
	Population & Human Health	The proposed scheme has the potential to create impacts relevant to dust nuisance during construction and vehicular emissions during both the construction and operational phase.
	Biodiversity	The proposed scheme also has the potential to create impacts on local biodiversity in the area (including all relevant designations) during the construction phase.
	Lands, Soils and Geology	The proposed scheme has the potential to create dust nuisance impacts from earthworks, construction and track out during the construction phase.

Environmental Discipline	Interaction With	Interaction Effect
Noise & Vibration	**Material Assets (Traffic & Transportation)**	There is the potential for traffic related noise to impact residents during the Operational Phase of the Proposed Development; however, due to the implementation of the proposed mitigation measures, there will be no significant impact. Noise and vibration interactions with Roads and Traffic and information provided in the traffic assessment has been used in preparing this EIAR Noise & Vibration Chapter.
	Population & Human Health	The assessment of noise and vibration has concluded that additional noise associated with the Proposed Development will not have any major negative impacts beyond the site boundary. Mitigation and monitoring measures will be incorporated to further reduce the potential for noise generation from the Proposed Development. No human health impacts are anticipated as a result of noise from the Proposed Development.
	Biodiversity	The Noise and Vibration effects of the Proposed Development will cause disturbance to the local fauna including birds during the Construction Phase of the Proposed Development, however, the proposed mitigation measures will reduce this disturbance. Please refer to the relevant Biodiversity EIAR Chapter.
Material Assets (Waste)	**Population and Human Health**	Interactions between 'Material Assets - Waste' and 'Population & Human Health' have been considered in this EIAR as the proposed project has the potential to create impacts during the construction stage as a result of the removal, handling and storage of waste.
	Biodiversity	Interactions between 'Material Assets - Waste' and 'Biodiversity' have been considered in this EIAR as the proposed project has the potential to create impacts during the construction and operation stages as a result of the handling and storage of waste.

Environmental Discipline	Interaction With	Interaction Effect
	Land, Soils & Geology	Interactions between 'Material Assets - Waste' and 'Land, Soils & Geology' have been considered in this EIAR as the proposed project has the potential to create impacts, such as contamination of soil and stones excavated from the site, during the construction stage as a result of handling and segregation of hazardous or contaminated wastes.
	Material Assets (Traffic & Transportation)	Interactions between 'Material Assets - Waste' and 'Material Assets – Traffic & Transportation' have been considered in this EIAR as the proposed project has the potential to create impacts during the construction and operational stages as a result of waste collection activities.
Material Assets (Traffic & Transportation)	**Population & Human Health**	Construction Stage There is an interaction between the Material Asset (Traffic and Transportation) and Population and Human Health predicted during the construction stage of the proposed development as a result of traffic generation. However, it is considered that this will not result in any likely significant effects as the works will be managed ad carried out in accordance with standard practices and environmental mitigation advanced. Operation Stage There is an interaction between the Material Assets (Traffic and Transportation) and Population and Human Health predicted during the operational stage of the proposed development as a result of traffic generation. The proposals will result in a narrowing of the carriageway so that existing traffic is more centralised and allow for the provision of a plaza area on the eastern side of Georges Square and enhance the pedestrian and cyclist experience in the area. The improved streetscape in the area, the proposed of the walkway along the Medieval Wall and the facilities along the River Boyne will enhance the existing

Environmental Discipline	Interaction With	Interaction Effect
		character of the various areas and improve the experience for the users. A Stage 1 Road Safety Audit has been undertaken in order to assess the impact of the proposed development on the human health and safety and the recommended mitigation measures have been reviewed and incorporated in the proposed development. Proper planning and traffic management should be employed to minimise congestion and ensure safety through the proposed scheme.
	Air & Climate	Construction Stage The construction phases of the project have the potential to releases atmospheric pollutants into the surrounding environment as a result of construction related vehicle movements. Emissions from site services, such as energy consumption and waste management, can contribute to air pollution and climate change. Implementing energy-efficient systems and proper traffic management practices will help minimise these impacts. Mitigation measures detailed for the construction stages will however aid in reducing levels of air pollution. Operation Stage There is no significant impact predicted on local air quality concentrations at human exposure receptors or designated sites as a result of the operational stage of the proposed development. The current composition of traffic and traffic volumes are set to be reduce due to the provision of area wider Active Travel Schemes.
	Noise & Vibration	Construction Stage There is an interaction between noise / vibrations and traffic through generation of construction stage traffic. Overall predictions are that there will be no significant noise impact generated during construction stages due to traffic generation with appropriate mitigation.

Environmental Discipline	Interaction With	Interaction Effect
		Operation Stage There is an interaction between noise / vibrations and traffic through generation of operational stage traffic. Proper mitigation measures should be employed to minimise disturbance to nearby residents and sensitive receptors. Overall predictions are that there will be no significant noise impact generated during the operational stages due to traffic generation with appropriate mitigation.
Material Assets (Services)	**Population & Human Health**	The EIAR takes into account the interactions between "Material Assets - Site Services" and "Population & Human Health" concerning the proposed project. During the construction stage, potential impacts may arise due to excavation work in areas where built services are present, including the risks of encountering live electricity lines or causing damage to live gas or water mains.
	Biodiversity	The EIAR takes into account the interactions between "Material Assets - Site Services" and "Biodiversity".Site services, particularly waste management and drainage systems, can affect local ecosystems and biodiversity. Ensuring appropriate waste disposal and treatment methods will help protect sensitive habitats and species especially near the woodland walk area.
	Land, Soils, & Geology	During the construction stage, potential impacts may occur due to activities such as the removal of topsoil and earthworks to facilitate the construction of roads and infrastructure service provision, storage systems, and trench excavations for site service installation.
	Hydrology & Hydrogeology	The EIAR takes into account the interactions between "Material Assets - Site Services" and "Hydrology & Hydrogeology" with regards to the proposed project. During the construction stage, potential impacts may arise due to the connection of services and the implementation of Sustainable Urban

Environmental Discipline	Interaction With	Interaction Effect
		Drainage Systems (SUDS), which could affect the hydrology and hydrogeology of the area.
	Air & Climate	The EIAR takes into account the interactions between "Material Assets - Site Services" and "Air Quality & Climate". Emissions from site services, such as energy consumption and waste management, can contribute to air pollution and climate change. Implementing energy-efficient systems and proper waste management practices will help minimize these impacts.
	Noise & Vibration	Site services, such as waste collection and maintenance activities, can generate noise and vibrations. Proper scheduling and mitigation measures should be employed to minimize disturbance to nearby residents and sensitive receptors.
	Landscape & Visual Impact	The EIAR takes into account the interactions between "Material Assets - Site Services" and "Landscape". Site services infrastructure such as proposed overhead power cables, underground services etc.. can have impacts on the landscape. Careful planning and design should be employed to minimize these effects and integrate the infrastructure into the surrounding environment.
	Material Assets (Traffic & Transportation)	The .EIAR considers the interactions between "Material Assets - Site Services" and "Roads, Traffic & Transportation". Site services can generate additional traffic, particularly during construction and maintenance activities. Proper planning and management should be employed to minimize congestion and ensure safe transportation.
	Material Assets (Waste)	The EIAR considers the interactions between "Material Assets - Site Services" and "Waste Management". Proper waste management practices are crucial for minimizing environmental impacts and ensuring public health. The design and operation of waste management, especially during construction phase, facilities should

Environmental Discipline	Interaction With	Interaction Effect
		adhere to relevant regulations and guidelines.
	Cultural Heritage& Archaeology	The EIAR takes into account the interactions between "Material Assets - Site Services" and "Archaeology". Site services construction and maintenance activities can potentially impact archaeological resources. Proper planning, surveying, and mitigation measures should be implemented to preserve and protect these resources.
	Architectural Heritage	The EIAR takes into account the interactions between "Material Assets - Site Services" and "Architectural Heritage". Site services infrastructure should be designed and located in a manner that respects and preserves architectural heritage. Coordination with local authorities and heritage experts will help ensure the protection of historical and culturally significant structures.
Cultural Heritage & Archaeology	**Architectural Heritage**	There is a direct interaction between this assessment and Chapter 17 Architectural Heritage. Chapter 17 has been reviewed as part of this assessment to ensure all aspect of the historic environment have been assessed and also to prevent replication of information.
Architectural Heritage	**Cultural Heritage & Archaeology**	There is a direct interaction between this assessment and 'Chapter 16 - Archaeology and Cultural Heritage'. The chapters have been reviewed as part of this assessment to ensure all aspects of the historic environment have been assessed and also to prevent replication of information as much as possible.
Landscape and Visual	**Population & Human Health**	In terms of any residential amenity, landscape and visual effects will be most pronounced during the construction stage causing initial visual impacts. Thereafter the effects will be positive as the vantage of their properties, general townscape, amenity provision and connectivity in this part of Drogheda will be enhanced.

Environmental Discipline	Interaction With	Interaction Effect
	Cultural Heritage & Archaeology	The area contains numerous listed buildings and monuments including the Medieval Town Walls, the Old Abbey (Abbey of St Mary d'Urso) and the site of a historic quay on the River Boyne banks. In general terms, the proposal is related to improving each of their settings and understanding in visual terms that will have inherent positive effects
	Biodiversity	The proposed landscape works were reviewed by the project ecologist and plant species include significant indigenous species and other ecology measures are included which will have a positive effect as it matures on local ecology and diversity. The species selected as part of this development are based on those listed in the All-Ireland Pollinator Plan 2015-2020.

20. Cumulative Impacts

Introduction

20.1 This Chapter has regard to the potential cumulative impact upon the environment arising from the proposed project, in combination with other developments (committed or planned projects) in the surrounding area. This Chapter should be read in conjunction with **Chapter 3** and **Tables 20.1 and 20.2** below.

20.2 The accepted meaning of "cumulative impacts" is as set out in the Guidance on the Preparation of the EIA Report (Directive 2011/92/EU as amended by 2014/52/EU) as:

> *"changes to the environment that are caused by activities/projects in combination with other activities/projects."*

20.3 This very broad interpretation has been further defined in the Irish context in the EPA's 2017 Guidelines on the Information to be Contained in Environmental Impact Assessment Report to mean:

> "*the addition of many minor or significant effects including effects of other projects, to create larger, more significant effects*".

20.4 The EPA guidance goes on to provide that while a single activity may itself result in a minor impact, it may, when combined with other impacts (minor or significant), result in a cumulative impact that is collectively significant.

20.5 Having regard to the built-up urban environment within which the subject lands are located, there is a significant amount of new development either under construction, permitted or proposed.

20.6 In recognition of this, and the potential for cumulative impacts upon the environment, an extensive exercise has been undertaken to identify projects within the surrounding area that have the potential to give rise to cumulative impact, when considered in combination with the proposed development.

20.7 The methodology surrounding the identification of relevant projects is set out below.

Methodology

20.8 A scoping exercise was first undertaken to identify an appropriate study area in respect of cumulative assessment. This comprised an initial survey of all planning applications within a spatial limit of c. 1km radius of the site boundary. An initial radius of c. 1km was selected for the reasons outlined in **Table 20.3** below.

20.9 For the purposes of this initial survey, a search of all planning applications which were recorded on the National Planning Applications Database (DoHPLG) with extant permissions or were otherwise under consideration at the time of writing were included. A further review of An Bord Pleanála's website was undertaken to identify any requests submitted for SHD pre-application consultations.

20.10 Due to the extent of the site area and the nature of the proposed works it should be noted that the planning history search excludes small scale applications such as:

- Incomplete planning application.
- Minor change of use applications.
- New residential schemes of less than 10 units.
- New commercial schemes (including change of use) of less than 3000 sqm).
- Retention applications.
- Minor amendments to permitted applications.
- Minor signage applications.
- Other development types of scale that would not exacerbate significant environmental / planning concerns (including car parking proposals, internal reconfigurations etc.)

20.11 Table 20.1 provides details on standard planning applications and Part 8 planning applications submitted within the adjoining/surrounding area of the application site.

Table 20.1: Recent Planning History for the Adjoining/Surrounding Area

Planning Reference	Site Location	Proposed Development	Decision
21/625	Peters Hill, Drogheda, Co Louth	Part 8 - Louth County Council proposes to carry out the development of a public meeting space at Peter's Hill, including the provision of high quality paving and seating, removal of existing public car parking and reallocation of existing Blue Badge or wheelchair accessible parking to adjoining streets, construction of a retaining structure to modify the existing gradient, provision of areas of soft planting and street tree planting, provision of a bespoke sculptural art work and all associated services necessary for the aforementioned works. The proposed works are within Drogheda Architectural Conservation Area No. 11 and are within a zone of archaeological potential.	Approved
20/1055	70 West Street, Drogheda, Co Louth	Permission for the construction of a first floor and second floor extension to the rear of the property, internal alterations at first and second floor for the provision of two no. apartment units and all associated site works.	Refused
20/763	Mill Lane Trinity Street	Permission to vary development permitted under P.A. Ref. 18/1056 on a site known as Nos, 1 & 2 Mill	Approved

Planning Reference	Site Location	Proposed Development	Decision
	Bridge of Peace, Drogheda, Co Louth	Lane, Trinity Street and R132 Bridge of Peace, overlooking the River Boyne and includes a pedestrian link beneath the Bridge of Peace to Fr. Connolly Way. A Natura Impact Statement (NIS) accompanies this application. The proposed development consists of an increase in the height and variations to the external and internal design and layout of the permitted apartment building resulting in an increase in the number of storeys from 10 as permitted to 11 storeys, comprising ten storeys of apartments and a lower ground floor level comprising an undercroft car park and communal facilities, an increase in the number of apartments from 41 no. to 49 no. in a mix of 27 no. 1 bed and 22 no. 2 bed apartment types. The area previously allocated to a laundry is now proposed as a management office. The proposed development also provides for a single storey standalone ESB substation, in addition to all associated site development works, boundary treatments, landscaping and public lighting. The number of car parking spaces and upgrade proposals for Mill Lane itself and the pedestrian link under the Bridge of Peace permitted under P.A Ref. 18/1056 are unaltered.	
20/738	Drogheda Civic Offices, Fair Street, Drogheda, Co Louth	Part 8: Amendments to development at Drogheda Civic Offices permitted under previous Part 8 Application Ref. No. 18/727. The amendments comprise the inclusion of an ESB Substation & LV Switchroom at ground floor level within the permitted service area yard and all associated site development works.	Approved
18/1056	Nos.1 & 2 Mill Lane, Mill Lane, Trinity Street and R132/Bridge of Peace, Drogheda, Co. Louth	Urban Life Developments Ltd intend to make a planning application for 'full' planning permission for development at this site known as Nos.1 & 2 Mill Lane, Mill Lane itself, Trinity Street and R132/Bridge of Peace, Drogheda, Co. Louth. The development overlooks the River Boyne. The development will include the demolition, excavation and clearance of all existing buildings and structures on site, including derelict buildings and the construction of 41no.apartments comprising 23no. one bed and 18no. two bed apartments with private balconies and communal roof terrace over a total of ten storeys (comprising	Approved

Planning Reference	Site Location	Proposed Development	Decision
		nine storeys of apartments and an undercroft car park). The proposed development includes a laundry room for residents, plant room and bicycle storage and 23no. car parking spaces. Vehicular and pedestrian access is via Mill Lane on to Trinity Street. Mill Lane will be upgraded as part of the development. A new pedestrian access is also proposed off the R132/Bridge of Peace. The development provides for all associated site works, lighting, parking, open space, landscaping, and boundary treatments. *Significant Further Information Submitted 23/10/19 - a Natura Impact Statement has been submitted as part of the Significant Further Information**	
18/727	Drogheda Civic Offices, Fair Street, Drogheda, Co. Louth	Part 8: 1. Refurbishment of the existing council office building - 52-53 Fair Street (Single Storey PROTECTED STURCTURE-ref DB-069A; NIAH ref.no.13618043). 2. Refurbishment of the former council chamber building - 54 Fair Street (Two Storey PROTECTED STRUCTURE ref - DB-069b & NIAH ref.no.13618044). 3. Refurbishment of the Former Community Services Building - 55-56 Fair Street (Two Storey PROTECTED STRUCTURE ref no. DB-082. NIAH ref. 13618045).	Approved
18/598	68-69 West Street, Drogheda, Co. Louth	Part 8: Change of use of existing ground and part upper floor retail unit to office with public counter area and ancillary facilities, external signage, and associated site development works.	Approved
17/243	48 - 51 Narrow West Street, Drogheda	Change of Use/Refurbishment/Extension - Commercial to Residential.	Approved
14/510044	South side of Bridge of Peace, adjacent to dual carriageway / R132 Public Road, Drogheda	Part 8: Permission to construct a skateboard park, construction of associated fencing, lighting & access pathways.	Approved
13/510084	Wellington Quay, Drogheda, County Louth	In accordance with the provisions of Part 9, Planning & Development Regulations 2001 (S.I. 600 of 2001), (as amended), The Commissioners of Public Works Ireland propose to carry out the following works to construct a new Courthouse.	Approved

Planning Reference	Site Location	Proposed Development	Decision
		The development will consist of the construction of a new courthouse of approximately 1385m² on a site of 1910m², to include 2 no Courtrooms & ancillary accommodation. The subterranean historical town wall, a Protected Structure, is located on the Southern boundary of the site & will be represented as part of the hard landscaping. The development does not materially affect the character of the Protected Structure. The proposal includes a new vehicular access gate, & the reminder of the perimeter will be secured with a railing & pedestrian gates. A new separate foul & surface water drain will connect to the existing public separate foul & surface drain avoiding all sub surface archaeological material.	
13/510003	Dominic's Park, Rathmullen Road, Drogheda	Permission for development that will consist of a bandstand & associated site works	Approved

20.12 Table 20.2 provides details on planning applications within the adjoining/surrounding 0area of the application site submitted directly to an Bord Pleanála for assessment, including Strategic Housing Development applications and Section 175 and/or Section 177AE applications.

Table 20.2: Strategic Housing Developments in the Adjoining/Surrounding Area

Planning Reference	Site Location	Proposed Development	Decision
315460	Townlands of Mell and Moneymore, Drogheda, Co. Louth	Development which involves the construction of the Boyne Greenway - North Bank	Pending
309668	Land adjacent to Scotch Hall Shopping Centre, Drogheda	275 no. apartments, creche and associated site works.	Approved
308224	St. Dominick's Bridge, Ballsgrove, Moneymore, Drogheda.	Refurbishment of St. Dominick's Bridge, Co. Louth	Approved
307652	Ship Street in Drogheda, Co. Louth to Mornington Village in Co. Meath	Construction of the Boyne Greenway, pedestrian and cycleway linking Drogheda Town in Co. Louth to Mornington Village in Co. Meath	r Refused

Planning Reference	Site Location	Proposed Development	Decision
305819	Lands at Newtownstalaban, Newfoundwell Road, Drogheda.	217 no. residential units (137 no. houses, 80 no. apartments) creche and associated site works.	Approved
305552	Rathmullan Road, Rathmullan, Drogheda, Co. Meath.	Demolition of existing buildings/structures on site and construction of 661 no. residential units (509 no. houses and 152 no. apartments), childcare facility and associated site works.	Annulled
305110	Newtown, Marsh Road & McGraths Lane Railway Terrace, Drogheda.	450. no residential units (81 no. houses and 369 no. apartments), creche and associated site works.	Annulled

20.13 A screening exercise was then undertaken to determine whether each identified project has the potential to generate cumulative impacts of significance on the environment, when considered in combination with the proposed development. There were two stages to this:

- Identifying projects of a scale and nature ('major' projects) with the potential to generate cumulative impacts of significance (in line with the parameters set out in **Table 20.3** below); and

- The record of applications resulting from (1) was further reviewed by the expert consultants to determine whether the identified 'major' projects, located within a 1km radius of the subject site, have the potential, in respect of each environmental aspect, to interact with the proposed development from a cumulative impact perspective.

20.14 Following the above screening exercise, a consolidated list of projects emerged, including both committed and planned projects that were determined to have the potential to give rise to cumulative impacts with the proposed development. Some of the projects were identified by more than one expert consultant whereas others were identified in relation to only one environmental aspect.

20.15 This final list was then distributed to the expert consultants undertaking the assessment of each environmental aspect. For completeness, despite the initial screening process, each chapter has regard to all of the projects identified in Tables 20.1 and 20.2.

Table 20.3: Parameters/ Terms adopted in determining the study area and relevant projects for cumulative impact assessment with the proposed development.

Parameter/ Term	Detail/ Definition	Justification
1km radius	All lands within 1km of the application site.	Having reviewed a number of recent EIARs that relate to development within existing built-up areas, the general spatial catchment adopted in respect of cumulative impact assessment is 1km.
Extant Permissions	Planning permissions relating to committed development projects that have the potential to be implemented, at the time of writing.	The identification of all extant permissions ensures that any development that has the potential to interact with the proposed project from a cumulative impact perspective is identified (subject to the other parameters outlined in this section). This excludes planning permissions that have been granted but have since lapsed or been fully implemented/ operational at the time of writing. Implemented/ operational projects are captured as part of the assessment of the baseline environment.
Major Projects	All development within the settlement boundary of Drogheda were screened for projects of a 'major' scale and nature. For the purposes of this exercise, the following developments were excluded: • Minor change of use applications; • New residential schemes of less than 50 units; • New commercial schemes (including change of use) of less than 3000 sqm) • Retention applications; • Minor amendments to permitted applications; • Minor signage applications;	

Parameter/ Term	Detail/ Definition	Justification
	• Other development types of scale that would not exacerbate significant environmental concerns (including car parking proposals, internal reconfigurations etc.)	
Committed Projects	Development projects with an extant planning permission, including projects currently under construction.	This parameter aligns with EIA Guidance surrounding the projects that should be included for cumulative impact assessment.
Planned Projects	Development projects (i.e., planning applications) that have been submitted to a Planning Authority for a decision, but were yet to be decided at the time of writing. Or potential projects that are at preapplication stage and within the public domain	This parameter aligns with EIA best practice surrounding the projects that should be included for cumulative impact assessment.
Time of Writing	June 2023	N/A
Expert Consultants	The consultants that are responsible for the preparation of the chapters in respect of each environmental aspect assessed within the EIAR. The EIAR team, together with their qualifications, is outlined in **Chapter 2.**	This aligns with the amended EIA Directive (Directive 2014/52/EU) which states the following in relation to the person responsible for preparing the environmental impact assessment reports; *"Experts involved in the preparation of environmental impact assessment reports should be qualified and competent. Sufficient expertise, in the relevant field of the project concerned, is required for the purpose of its examination by the competent authorities in order to ensure that the information provided by the developer is complete and of a high level of quality."*

Potential Cumulative Impact

20.16 Each Chapter which addresses a specific environmental factor provides a detailed cumulative impact assessment in respect of the relevant parameters set out in Table

20.1. The relevant chapters should be referred to for full details of the assessment; this chapter provides a summary of the cumulative impact assessment.

Table 20.4: Parameters/ Terms adopted in determining the study area and relevant projects for cumulative impact assessment with the proposed development.

Chapter/ Environmental Factor	Potential Cumulative Impact
Population & Human Health	**Construction and Operational Stages** No significant cumulative impacts are anticipated with respect to population (human beings) and human health.
Biodiversity	**Construction Stage** Planning applications in the vicinity of the site were reviewed using the online planning records of Louth County Council. The majority of applications were for changes-of-use in existing buildings, or small-scale works such as extensions to commercial premises. However, one development of moderate scale was noted, as follows: Planning reference 181056. Permission granted in 2020 for the demolition of existing derelict structures and the construction of 41 no. apartments. The application was accompanied by a Natura Impact Statement and a Bird and Bat survey. A variation was granted in 2021 (planning reference 20763) to increase the height of the buildings and the number of residential units. The development will be located in close proximity to the River Boyne, and could potentially act in-combination to increase the magnitude of ecological impacts. It is noted that the Natura Impact Statement for the residential development includes construction-phase pollution-prevention measures, intended to avoid indirect impacts on water quality in the river. **Operational Stages** No cumulative impacts on biodiversity are envisaged during the operational stage of the project.
Land, Soils and Geology	**Construction and Operational Stages** Considering cumulative effects of pressures on the surface water network of the River Boyne, if an accidental release of contaminants were to occur, there is a potential to temporarily effect the water quality and ecosystem of this sensitive receptor. Taking into account this projects works but also additional projects such as the construction of 275 no. residential units on Land adjacent to Scotch Hall Shopping

Chapter/ Environmental Factor	Potential Cumulative Impact
	Centre, Drogheda (Planning Ref: 309668) and 215 no. units on Lands at Newtownstalaban (Planning Ref: 305819), the Refurbishment of St. Dominick's Bridge (Planning Ref: 308224), the construction of the Boyne Greenway (Planning Ref: 315460 & 307652), there is potential for large cumulative effects. However, the objectives of the outlined mitigation measures in this **Chapter 10: Hydrology and Hydrogeology** and in the **Flood Risk Assessment** (FRA) completed by Nicholas O'Dwyer Ltd, are to reduce any potential effect to acceptable levels. Therefore, the Development is not considered likely to significantly contribute to cumulative effects in terms of water quality nor flood risk. No cumulative effects on the land, soils, and geological environment are envisaged during the operational stage. This is due to the existing infrastructure and the addition of more permeable soils being exposed on site.
Hydrology and Hydrogeology	**Construction and Operational Stages** ***Hydrology*** With respect to hydrology, the effects of the Development are considered to contribute to the cumulative nature of adverse effects imposed on the surface water network in the catchments associated with the Development (Appendix 10.2). However, considering the pre-existing the transitional waters of the River Boyne are of ''Moderate'' WFD status of the surface waters surrounding the proposed Development (Appendix 10.6), the potential for the Development to have adverse cumulative effects on hydrology is limited to the construction phase if prescribed mitigation measures are not adhered to. ***Surface Water*** Considering cumulative effects of pressures on the surface water network, if an accidental release of contaminants were to occur, there is a potential to temporarily effect surface waterbodies in the catchment, taking into account this projects works but also additional projects such as the construction of 275 no. residential units on Land adjacent to Scotch Hall Shopping Centre, Drogheda (Planning Ref: 309668) and 215 no. units on Lands at Newtownstalaban (Planning Ref: 305819), the Refurbishment of St. Dominick's Bridge (Planning Ref: 308224), the construction of the Boyne Greenway (Planning Ref: 315460 & 307652). However, the objectives of the outlined mitigation measures in this chapter and in the Flood Risk Assessment (FRA) completed by Nicholas O'Dwyer Ltd, are to reduce any

Chapter/ Environmental Factor	Potential Cumulative Impact
	potential effect to acceptable levels. Therefore, the Development is not considered likely to significantly contribute to cumulative effects in terms of water quality nor flood risk. ***Hydrogeology*** With respect to hydrogeology, and the potential effects of the Development having been assessed as likely being to be minor and temporary, for example; in the event of a minor spill of fuel / hydrocarbons, the spill will be contained and remediated efficiently. Therefore, the development is not likely to contribute significantly to cumulative effects on groundwater quality, but the residual risk even if small in scale is important to consider in the context of the elevated sensitivity and importance of the receptor. ***Summary*** Assuming the adequate application and execution of mitigation measures, and achieving the objectives set, for example; <25mg/l Suspended Solids, the Development is not considered to potentially significantly contribute to cumulative surface water or groundwater effects.
Air & Climate	**Construction Phase** The phasing/commencement of any other permitted developments in the locality could potentially result in the scenario where a number of other construction sites are in operation at the same time as the proposed development. However, all permitted developments are expected to agree and follow site specific Construction Environmental Management Plans or Dust Management Plans and Construction Traffic Management Plans that will adequately control emissions from construction. Therefore, cumulative construction phase effects are considered to be not significant. **Operation Phase** As per construction phase impacts, any other permitted developments are expected to follow best practice mitigation measures to minimise emissions to air during the operational phase. Therefore, significant GHG emissions and exceedance of the relevant AQSs is considered unlikely and cumulative operational phase effects are considered not significant.
Noise & Vibration	**Construction Phase** The phasing/commencement of any other permitted developments in the locality could potentially result in the scenario where a number of other construction sites are in

Chapter/ Environmental Factor	Potential Cumulative Impact
	operation at the same time as the proposed development. However, all permitted developments are expected to agree and follow site specific Construction Environmental Management Plans or Dust Management Plans and Construction Traffic Management Plans that will adequately control emissions from construction. Therefore, cumulative construction phase effects are considered to be not significant. **Operation Phase** As per construction phase impacts, any other permitted developments are expected to follow best practice mitigation measures to minimise emissions to air during the operational phase. Therefore, significant GHG emissions and exceedance of the relevant AQSs is considered unlikely and cumulative operational phase effects are considered not significant.
Material Assets (Waste)	**Construction Phase** The phasing/commencement of any other identified permitted developments in the locality could potentially result in the scenario where a number of other construction sites are in operation at the same time as the proposed development. Should construction of nearby sites coincide with construction of the proposed development, this could result in a general increase in construction waste generation in the wider Westgate area. However, there will be sufficient capacity in the local waste collection and disposal network to ensure that all construction waste is removed from site and disposed of in an environmentally sustainable and responsibly manner. In the event that the local waste capacity is stretched, where necessary, appropriate waste management facilities outside the local area will be considered. **Operational Phase** The development of the proposed site along with other developments is capable of having in-combination effects could potentially result in a general increase in operational waste generation in the wider Westgate area.
Material Assets (Traffic & Transportation)	**Construction and Operation Phases** No planning application / decisions have been found within the red line boundary of the site that would inform the proposed

Chapter/ Environmental Factor	Potential Cumulative Impact
	development. However, two significant and wider Active Travel Scheme are proposed and will be submitted to planning in 2024. These applications will have a direct impact on the proposed development in relation to reducing the level of traffic entering the area, in particular along the R132 and they have been considered as part of the design concept evolution to ensure that the 2040 Westgate Vision Regeneration maximises the potential to link to existing and future infrastructure where possible. The overall traffic implication of the scheme and associated Active Travel Schemes needs to be assess on a town wide basis but in principle will make a significant contribution to the reduction of traffic movements on the existing road network. See Chapter 14 Material Assets (Traffic & Transportation) for further details.
Material Assets (Site Services)	**Construction and Operational Stages** Wastewater Cumulative impacts may include temporary disruptions to the existing sewer system during construction activities, potentially affecting wastewater treatment facilities' capacity and efficiency. Excavation and construction work can lead to sediment runoff, which may impact water quality and the functionality of the wastewater management system. Further impacts may arise, during the operational phase, from increased wastewater generation due to possible future developments, putting additional strain on the sewer system and treatment facilities. Proper management, regular maintenance, and potential upgrades are necessary to ensure the efficient treatment and disposal of wastewater, reducing cumulative impacts on the environment and public health. Water Supply Cumulative impacts may involve temporary disruptions to the water supply system as connections are made to new sources or storage facilities. Construction activities such as excavation can impact water quality through sediment runoff and potential contamination. Cumulative impacts may result from increased water demand in the regenerated town, necessitating proper management and infrastructure upgrades to ensure a sustainable water supply. Efficient water conservation practices and regular monitoring of water resources are essential to mitigate cumulative impacts on water availability and maintain water quality.

Chapter/ Environmental Factor	Potential Cumulative Impact
	Surface Water Cumulative impacts may include alterations to drainage patterns, increased stormwater runoff, and sediment discharge into water bodies. Proper erosion control measures, stormwater management practices, and sedimentation ponds should be implemented to minimize cumulative impacts on surface water quality and hydrological systems. Cumulative impacts may arise from ongoing changes in land use, increased impervious surfaces, and altered surface water flows due to the regenerated town. Sustainable drainage solutions, regular monitoring, and preservation of natural watercourses can mitigate cumulative impacts, reducing the risk of flooding and preserving water quality. Electricity Cumulative impacts may involve temporary disruptions to the electrical supply as connections are made to new infrastructure. Construction activities can also pose risks to electrical infrastructure integrity, potentially requiring repairs or upgrades. Other impacts may result from increased electricity demand due to population growth and additional infrastructure requirements later on. Proper capacity planning, integration of renewable energy sources, and grid resilience measures are necessary to minimize cumulative impacts on the electrical system and ensure reliable power supply. Gas Cumulative impacts may include temporary disruptions or adjustments to the gas supply network during construction activities. Proper coordination, monitoring, and timely restoration of gas service are essential to minimize impacts on gas availability. Other cumulative impacts may arise from increased gas demand due to any further upgrade projects in the town, requiring infrastructure upgrades and efficient management to meet the enhanced requirements. Monitoring gas supply, addressing potential infrastructure upgrades, and exploring alternative energy sources can minimize cumulative impacts on the gas distribution network. Telecommunications Cumulative impacts may involve temporary disruptions to existing telecommunications infrastructure during construction activities. Proper planning, coordination, and prompt

Chapter/ Environmental Factor	Potential Cumulative Impact
	restoration of services are necessary to minimize impacts on communication systems. Cumulative impacts may also result from increased data traffic and communication demands. Continuous monitoring, capacity upgrades, and the deployment of advanced technologies are important to ensure reliable and efficient telecommunications services, reducing cumulative impacts on connectivity. Lighting Cumulative impacts may include temporary disruptions or adjustments to existing lighting infrastructure during construction activities. Proper planning, scheduling, and maintenance are necessary to minimize cumulative impacts on lighting services and public safety. Further impacts may arise from increased lighting requirements for any future projects in the town, necessitating efficient lighting design and energy management strategies.
Cultural Heritage and Archaeology	**Construction and Operational Stages** No cumulative impacts (from surrounding permitted or proposed developments) are predicted upon the archaeological or cultural heritage resource during the construction or operational phase any buried archaeological remains will be preserved by record.
Architectural Heritage	**Construction and Operational Stages** A review of other off-site developments and Proposed Developments was completed as part of this assessment. The projects and plans contained in Table 20.1 of Chapter 20 of Volume 2 of the EIAR were reviewed and considered for possible cumulative effects with the Proposed Development. No cumulative impacts (from surrounding permitted or proposed developments) are predicted upon the architectural heritage resource during either the construction or operational phases of the proposed project.
Landscape and Visual	**Construction and Operational Stages** Cumulative townscape / landscape or visual effects are the combined effects that arise through the interaction of two or more developments, whether of the same type or not, within the landscape and visual baseline context. Collectively they give rise to an overall combined effect. A significant cumulative effect will occur where the addition of the proposed development to other existing and developments

Chapter/ Environmental Factor	Potential Cumulative Impact
	results in a landscape or view that is defined by the presence of more than one major development and is characterised primarily by large scale development so that other patterns and components are no longer definitive. A review of other consented developments was completed as part of this assessment. The most significant recent addition to the townscape (and under construction at time of writing) is the Mill Lane apartment development to the west of George Street. The collective, if completed, would have positive effects fort this part of the town in terms of general improvement in character and visual quality due to removal of degraded buildings, enhanced connectivity and landscape and the general sense of place. Given the existing built form and evolving townscape this part of Drogheda, there are no significant or unacceptable cumulative effects predicted to derive from this proposal in conjunction with these in townscape / landscape and visual amenity terms..

Mitigation and Monitoring

20.17 Having regard to the conclusions set out in Table 20.4 above, the proposed project, when considered in combination with the committed and planned projects, is not expected to give rise to significant cumulative impacts. It is therefore further concluded that no further mitigation or monitoring measures are required, beyond those proposed by each chapter in respect of the proposed project.

'Do-Nothing' Effect

20.18 If the proposed project does not proceed, there will be no cumulative impacts arising.

21. Mitigation and Monitoring Measures

Introduction

21.1 Paragraph 2(d) of Schedule 6 to the Planning and Development Regulations 2001, as amended by the 2018 regulations, provides that the following information must be contained in an EIAR:

> '*A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of an analysis after completion of the development), explaining the extent to which significant adverse effects on the environment are avoided, prevented, reduced or offset during both the construction and operational phases of the development*'.

21.2 This Chapter provides a consolidated list of all of the environmental commitments/ mitigation measures that have been recommended by the various specialists throughout the Chapters of this EIAR.

21.3 The mitigation and monitoring measures have been recommended on that basis that they are considered necessary to protect the environment during both the construction and operational phases of the proposed project.

Population and Human Health - Mitigation and Monitoring

Table 21.1: Mitigation Measures for Population and Human Health

Construction Phase
• A preliminary CEMP has been prepared to accompany the planning application and to help protect the amenities of the area. The contractor will further develop the pCEMP and submit it for further approval, if necessary, and implement the requirements during the construction phase. The content of the pCEMP is also based on the mitigation measures set out in this EIAR. • No further specific mitigation measures are recommended for the construction phase with respect to population (human beings) and human health having regard to the mitigation measures contained within each of the other specialist chapters of this EIAR for each environmental factor assessed. Readers are also directed to 'Chapter 21 – Mitigation Measures' of this EIAR which summarises all of the proposed mitigation measures.
Operation Phase
• A range of operation related mitigation measures are proposed throughout this EIAR in relation to each environmental factor assessed in

order to avoid, where possible, and in other cases minimise/reduce, potential and predicted impacts associated with the proposed project.

- The recommended mitigation measures will reduce the potential for any likely significant effects on the environment with respect to population and human health during the operation phase. Readers are directed to 'Chapter 21 – Mitigation Measures' of this EIAR which summarises all of the remedial and mitigation measures proposed as a result of this EIAR.

- It is noted that the operational phase of the proposed project is considered to have likely positive effects on population (human beings) and human health in relation to the provision of high quality hard and soft landscaping and public realm, access to heritage assets and improved connectivity, permeability and pedestrian/cycle infrastructure encouraging the use of active travel and subsequent health benefits.

Table 21.2: Monitoring Measures for Population and Human Health

Construction and Operational Phases
• The mitigation measures for this project are standard, best-practice measures that do not require any monitoring.

Biodiversity Mitigation and Monitoring for

Table 21.3: Mitigation and Monitoring Measures for Biodiversity

Construction Phase
Engagement of an Ecological Clerk of Works
• A number of sensitive habitats and species were recorded in the vicinity of the proposed development site, and some of these mitigation measures require specialist skills during construction works. Therefore, the construction contractor will employ an Ecological Clerk of Works (ECoW) to oversee the implementation of the mitigation measures outlined below. The ECoW will be required to provide reports and written correspondence to the Employers' Representative as requested, in order to demonstrate compliance with the measures outlined in this report.
Pollution Prevention Measures
• The implementation and monitoring of all mitigation measures will be the responsibility of the site foreman. Some tasks may be assigned to a qualified member of the construction team (e.g., an environmental manager), although it will be the responsibility of the foreman to ensure that the relevant personnel are sufficiently trained, competent and informed to carry out the tasks outlined here. Liability for any pollution

incidents will be assigned to the foreman and their construction company.

Concrete and cement

- Concrete pouring / mixing will only take place in dry weather conditions. It will be suspended if high-intensity local rainfall events are forecast (e.g. >10 mm/hr, >25 mm in a 24 hour period or high winds).

- If any on-site mixing of concrete is required, it will be carried out at least 25m from the River Boyne. If any cement-based products will be stored on-site, they will be kept in a sheltered area at least 25m from the River Boyne, and will be covered (e.g. with a thick plastic membrane) to prevent spread by wind.

- Ready-mix lorries and larger plant will not be cleaned on-site; they will be taken to an appropriate off-site facility with capacity to capture and treat contaminated wash waters

- If any on-site cleaning of tools or concrete-batching plant is required, it will take place at least 25m from the River Boyne. Wash waters will be discharged to a soakaway.

Suspended sediments

- Excavation works will be suspended if high intensity local rainfall events are forecast (e.g., >10 mm/hr, >25 mm in a 24-hour period, or high winds).

- If any excavations need to be dewatered, the SS-contaminated water will be retained and treated within the boundary of the Site. It will be collected and pumped into a settlement tank / pond (or similar feature), left undisturbed until sediments have settled, and then discharged via a buffered outflow to a soakaway that is at least 25m from the River Boyne.

- Stockpiles of mud, sand or other fine sediments will be stored at least 25m from the River Boyne. Stockpiles will be levelled and compacted and will be covered with thick plastic membranes in order to limit wind/rainwater erosion.

- Dust suppression and road cleaning measures will be implemented, as outlined in Section 8 of the IFI guidelines.

Hydrocarbons and chemicals

- Any fuel, oil or chemical containers will be kept at least 25m from the River Boyne. These pollutants are hazardous and must be stored in a designated bunded area that has sufficient capacity to retain any spills.

- All machinery should be protected from vandalism and unauthorised interference and will be turned off and securely locked overnight.

Construction Phase

- If any on-site re-fuelling is required, it will take place at least 25m from the River Boyne. Immobile plant will be refuelled over drip-trays.

- While in operation, diesel pumps, generators or other similar equipment will be placed on drip trays to catch any leaks.

- A spill kit will be kept on-site. If any spills occur, appropriate measures will be taken to intercept hydrocarbons or chemicals on-site before they can leave the Site.

Bat Sensitive Lighting

- Low-UV LEDs are the preferred bulb type, as they have least effect on bats. Lights will have a 'warm' tone, with minimal blue / UV content.

- Lights in pedestrian areas will be installed at a low level, e.g. bollards or hand rails of up to one metre in height, with light directed onto ground level, with no light spill above the horizontal. Lux levels will be the minimum required for pedestrian safety.

- No lights will be directed towards freshwater habitats (i.e. the River Boyne), woodland or trees.

Protection of nesting birds and terrestrial mammals

Under Sections 22 and 23 of the Wildlife Act 1976 (as amended), it is an offence to kill or injure a protected bird, or to disturb their breeding / resting places. Most birds nest between March and August (inclusive), so it is strongly recommended that any tree or shrub removal is carried out between September and February (inclusive). If this is not possible, an ecologist will survey relevant vegetation in advance in order to determine whether any nests are present. If any are encountered, the vegetation clearance will be delayed until the nesting attempt has been completed, e.g., when chicks have fledged and the nest has been abandoned.

Tree protection zones will be marked out for all retained trees and hedgerows in the vicinity of working areas.

Operation Phase

Bat Sensitive Lighting

- Low-UV LEDs are the preferred bulb type, as they have least effect on bats. Lights will have a 'warm' tone, with minimal blue / UV content.

- Lights in pedestrian areas will be installed at a low level, e.g., bollards or handrails of up to one metre in height, with light directed onto ground level, with no light spill above the horizontal. Lux levels will be the minimum required for pedestrian safety.

Construction Phase
• No lights will be directed towards freshwater habitats (i.e., the River Boyne), woodland or trees.

Table 21.4: Monitoring Measures for Biodiversity

Construction and Operational Phases
The mitigation measures for this project are standard, best-practice measures that do not require any monitoring.

Mitigation and Monitoring Measures for Chapter 9 - Land, Soils & Geology

Table 21.5: Mitigation Measures for Land, Soils & Geology

Construction and Operational Phases
Any and all direct impacts on soils/peat and bedrock arising from the Development are considered localised, therefore the above assessment and classification of the weighted significance of land take encompasses all impacts to soils and bedrock considering the Development as a whole. Therefore, impacts assessed and classified in the following section/s are considered at the localised scale, with the exception of potential indirect impacts on downgradient receptors, for example; associated with Surface Water.

Soil Sealing

George Square character area will include the introduction of soft landscaping to include new tree planting, shrubs, and grass/lawn areas to help green the plaza, soften the built form in the area, enhance natural drainage and provide a natural buffer between the R132/George's Street and the new public plaza area. In the Westgate character area, the creation of a 'shared surface' area to the east of the proposed freestanding Corten steel structures within West Street with high quality hard and soft landscaping. As well as the introduction of soft landscaping along West Street to include new tree planting to help green the area, soften the built form in the area and help to reduce the speed of vehicles.

Land Take Mitigation measures by Reuse and Reduction

Excavation of materials is unavoidable however the impacts of same can be minimised if managed appropriately. Similarly, given that excavations are unavoidable, so too are temporary stockpiles. However, if managed appropriately, the impact of same can be minimised.

No permanent stockpiles will remain on the Site. All excavated materials from the Site or introduced materials for construction will be either used or removed from the Site. All temporary stockpiles will be positioned on established and exor in designated areas which are appropriate for short term storage. Temporary

storage locations will also be managed in terms of potential for solids entrainment by runoff (Chapter 10: Hydrology).

Stockpiling of material will invariably lead to the entrainment of solids in surface water runoff, discussed in Chapter 10: Hydrology. Mitigation measures to address same are detailed in Chapter 10. The immediate reuse of material in so far as practical, thus reducing the potential for temporary stockpiles in general. For example; the material arising from the first excavation is deposited in areas identified as having potential for restoration or requiring fill, the material arising from the second excavation is used as fill and reinstatement material in the first excavation location, etc.

Medieval Wall area: Introduction of soft landscaping improvements to include wildflowers, plants, shrubs and trees to create a medieval garden feel; enhanced sensory experience; soften the built form in the area; and enhance natural drainage opportunities. Old Abbey Area: Introduction of trees to: soften the built form in the area; enhance the sensory experience; provide opportunities for birds to nest and rest in the area and enhance natural drainage opportunities. Retention of existing trees along Father Connolly Way and provision of soft landscaping improvements including new grass/lawn areas to help green the area and soften the overall built form.

Soil and Subsoil Compaction

The in-situ soils and subsoils underlying the development area will be subject to a certain amount of compaction, but this will be unavoidable.

Any infill material/landscaping that is required will be placed and levelled in appropriate lift thicknesses to ensure the material is not over compacted thereby retaining it drainage properties.

Subsoil and Bedrock Removal

Subsoil and bedrock which are excavated as part of the initial decommissioning and construction phase will be reused onsite where possible.

Similarly, all soil and subsoil types or horizons identified during site investigations and during actual construction, will be treated as separate materials and arisings separated accordingly. This includes, for example Acrotelm peat, catotelm pet, clays, subsoils (GRAVEL / TILL), weathered rock.

The management, movement, and temporary stockpiling of material on site, including a materials balance assessment and plan is detailed in the pCEMP, this will include identification of suitable temporary set down areas which will be located within the Development footprint and will consider and avoid geo-constraints. Temporary set down / stockpile areas will be considered similarly to active excavation areas in terms of applying precautionary measures and good practices, and mitigation measures, including those relating to control of runoff

and entrapment of suspended solids (**Chapter 10: Hydrology and Hydrogeology**).

Soil Contamination

All plant and machinery will be serviced before being mobilised to site. No plant maintenance will be completed on site, any broken-down plant will be removed from site to be fixed.

Refueling of vehicles and the addition of hydraulic oils or lubricants to vehicles will be undertaken offsite where possible. Where this is not possible, filling and maintenance will take place in a designated material storage compound, which is located at least 15 meters from any temporary or permanent drainage features.

Refueling, if necessary, on the Site, will be completed in a controlled manner using drip trays at all times or a designated refueling area will be created on an impervious surface such as a concrete slab with drainage to a hydrocarbon interceptor or other tank type which will hold run-off from the concrete slab.

Mobile bowsers, tanks and drums will be stored in secure, impermeable storage areas away from open water. No bulk chemicals will be stored within the active construction areas. Fuel containers will be stored within a secondary containment system, e.g., bunds for static tanks or a drip tray for mobile stores. Containers and bunding for storage of hydrocarbons and other chemicals will have a holding capacity of 110% of the volume to be stored. Ancillary equipment such as hoses and pipes will be contained within the bund. Taps, nozzles or valves will be fitted with a lock system.

Fuel and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage. Drip-trays will be used for fixed or mobile plant such as pumps and generators in order to retain oil leaks and spills. Only designated trained operators will be authorized to refuel plant on site.

Procedures and contingency plans will be set up to deal with emergency accidents or spills. An emergency spill kit with oil boom, absorbers etc. will be kept on-site for use in the event of an accidental spill. A specific team of staff will be trained in the use of spill containment. Highest standards of site management will be maintained, and utmost care and vigilance followed to prevent accidental contamination or unnecessary disturbance to the site and surrounding environment during construction. A named person will be given the task of overseeing the pollution prevention measures agreed for the site to ensure that they are operating safely and effectively as well as having responsibility for the implementation of Emergency Procedures for spill control measures.

Further Assessment

To determine if there is any historic ground pollution from previous land use practices, intrusive ground investigations are recommended to determine if there is any historic ground pollution from previous land use practices.

Table 21.6: Monitoring Measures for Land, Soils & Geology

Construction and Operational Phases
Chapter 10 Hydrology & Hydrogeology, outlines the surface water monitoring that is proposed during construction of the development. This will give indications on whether the mitigations on land and soil management is being adhered to. In areas of intensive groundworks, continuous monitoring stations will be established.

Mitigation and Monitoring Measures for Chapter 10 - Hydrology & Hydrogeology

Table 21.7: Mitigation Measures for Hydrology & Hydrogeology

Construction Phase

Earthworks Proposed Mitigation Measures

Preventing run-off is an effective method of preventing sediment pollution in the water environment. Therefore, adoption of appropriate erosion and sediment controls to manage run-off during construction is essential to prevent sediment pollution.

It is understood the proposed development will aim to maintain existing on-site levels as far as is practical. This should constitute a minimum interference with the natural soils below ground level. This should reduce the volumes of soils being disturbed and soils being stockpiled which will reduce the potential for sediment run-off and sediment loading of surface waters.

Intrusive ground investigation, i.e., SI Report will provide more information on the description of the underlying soils of the site

Mitigation measures to address the potential effects sediment loading include the following:

- Management of excavated material, that is: a materials management plan will be established and form part of the Construction & Environmental Management Plan (pCEMP) with a view to establishing material balance during the proposed construction phase, thus minimising the potential for, or the length of time excavated materials are exposed and vulnerable to entrainment by surface water runoff.

- A full GPR-Utility survey was conducted of existing drainage features such as manhole investigation. The existing drainage is expected to have the capacity for any temporary increases in surface water flow where applicable. However, surface water will be reduced overall following the construction of the development as green areas are incorporated in the design.

- Drainage and measures to control run-off will be employed to manage sediments prior to any works being undertaken on Site.

- No permanent, or semi-permanent stockpile will remain on the site during the construction phase of the Development.

- Suitable locations for temporary stockpiles will be identified on a case-by-case basis. The suitability of any particular location will consider characteristics of the proposed site including; slope incline and topography, drainage networks in the vicinity and proximity to same, other relevant characteristics which are likely to facilitate, increase, or compound the potential for entrainment by surface water runoff.

- Earthworks will be limited to seasonally dry periods and will not occur during sustained or intense rainfall events. Similarly, controls measures in preparation for and during storm events will be outlined in the SWMP, for example, pause excavation activities during storm events.

- Any permitted, exposed soils (temporary stockpiles) will be covered with plastic sheeting during all relatively heavy rainfall events and during periods where works have temporarily ceased before completion at a particular area (e.g., weekends).

- Silt fencing will be installed around the perimeter of the site at any locations where surface water is likely to run off, directly into the River Boyne. This could include the river-bank, land drains, natural depressions in the soil surface, or any other geomorphological feature which might accommodate surface water run-off. The location of the silt fencing will be determined in the construction stage pCEMP and is subject to a detailed assessment of the area or phase to be developed. The purpose of the silt fencing is to prevent silt leaving the site in run-off water and entering adjacent land with the potential to effect nearby watercourses. Silt fences will consist of a geotextile membrane fixed to wooden stakes approximately 600 mm high. The membrane will be anchored into the ground to form a continuous barrier with the soil surface. Silt fences will be monitored and maintained when necessary during the construction period. Maintenance will include the replacement of the geotextile when damaged and the removal of any silt build-up on the upslope side of the silt fence. Silt fences will be temporary features but will remain in place for a period following the completion of the Construction Phase.

- Construction waters will be collected and pumped to the established treatment train prior to discharging from Site, if necessary.

- Emergency contact numbers for the Local Authority Environmental Section, Inland Fisheries Ireland, the Environmental Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent position within the site compound. These agencies will be notified immediately in the event of a pollution incident.

- Site personnel will be trained in the importance of preventing pollution and the mitigation measures described here to ensure same.

- The site manager will be responsible for the implementation of these measures. They will be inspected on at least a daily basis for the duration of the works, and a record of these inspections will be maintained.

- Road sweepers will be employed to clean the site access route as required. For example, Any hard surface site roads will be swept to remove mud and aggregate materials from their surface.

Release of Hydrocarbons Proposed Mitigation Measures

To control and contain any potential hydrocarbon and other harmful substances spillage by vehicles during construction, it is recommended where possible to refuel plant equipment off the development site, thus mitigating this potential effect by avoidance.

Despite the management of refuelling and fuel storage, there remains the risk of leakage from vehicles and plant equipment during construction activity. Plant equipment used on site will require regular mechanical checks and audits to prevent spillage of hydrocarbons on the exposed ground (during construction). Construction plant will be routinely checked by the Contractor for signs of leaks or damage, or unsatisfactory performance. All leaks identified from plant hydraulics, brakes lines, fuel lines will be promptly repaired, and any spillages will be dealt with accordingly with spill kits.

The risk of water quality impacts associated with works machinery, infrastructure and on-land operations (for example leakages/spillages of fuels, oils, other chemicals and waste-water) will be controlled through good site management and the adherence to codes and practice. The following measures will be implemented during construction:

Gerry cans with proper pouring nozzles will be used to move fuel around the site for the purposes of refuelling items of small plant on site.

Drip trays will be used under items of small plant during refuelling or any repair works which may lead to accidental spillage of hydrocarbons.

Any gas bottles will be stored in a caged area at a secure location on the site.

In the event of an accidental spill during the construction or operational phase of the Development, contamination occurrences will be addressed immediately, this includes the cessation of works in the area of the spillage until the issue is resolved. In this regard, appropriate spill kits must be provided across the site to deal with the event of a spillage and made available at all times. Spill kits will contain a minimum of; oil absorbent granules, oil absorbent pads, oil absorbent booms, and heavy-duty refuse bags (for collection and appropriate disposal of contaminated matter). Staff will be trained in their use and details of personnel and location and type of spill kits should be listed in the Pollution Incident Response Plan to be compiled by the Contractor. No materials contaminated or otherwise will be left on the Site. Suitable receptacles for hydrocarbon contaminated materials will also be at hand. Upon usage, spill kits must be promptly replaced.

Surface Water Contamination Materials Proposed Mitigation Measures

During the construction phase of the Development, the use of oil booms and, if necessary, a silt settlement tank will reduce the risk of contamination of surface water run-off.

Construction and Cementous Materials Proposed Mitigation Measures

Fresh concrete is very alkaline and can cause serious pollution in water bodies. It is essential to ensure that the use of wet concrete is carefully controlled so as to minimise the risk of any material entering the water.

- A washdown area will be provided on site, if necessary, for trucks to use after delivery of concrete or on return to the batching plant. This area will be adequately bunded to mitigate the risk of contaminated runoff to the site and surrounding area. Washdown runoff will be appropriately treated prior to discharge.

- Wash-out areas on site will be properly designed as an impermeable slab with a peripheral drain system

- Wash-out of vehicles shall not be located within 10 metres of any temporary or permanent drainage features

Wastewater or Sanitation Contaminants Proposed Mitigation Measures

During the construction phase potential contamination incidents arising from welfare facilities will be addressed in a similar manner to other contamination incidents whereby issues identified will be isolated and addressed in an efficient and timely manner. Site welfare facilities will connect to existing foul sewer system (in consultation with and authorized by Irish Water) or use bunded porta-loos.

Operation Phase

Increased Hydraulic Loading

Under the scope of this Development, and with consultation with NOD (2022) there are no proposed infilling works, and reprofiling of levels for roadways, footpaths and cycle paths are estimated to be minimum. Therefore, there is no overall increase in hardstanding area that existing and planning SuDS management cannot attenuate, reducing the risk of surface runoff flooding. According to NOD (2022), the use of SuDS ensure there will be no additional discharge to the existing surface water drains that would increase surface water runoff. Therefore, the baseline greenfield runoff rate (QBAR) will be maintained.

Surface Water Contamination

Before works commence a detailed survey of surface water/storm water drainage system is required.

Table 21.8: Monitoring Measures for Hydrology & Hydrogeology

Construction Phase
A Surface Water Management Plan (SWMP) is recommended for the proposed development to detail the site drainage that has been designed for the site using the following principles: • Sustainable Drainage Systems (SuDS) • Ecologically Sensitive Processes • Archaeological Sensitive Areas The SWMP will be drafted to incorporate the 'best practice' industry guidance using, for example, Department of Environmental Flood and Rural Affairs (DEFRA) (2010) 'Surface Water Management Plan Technical Guidance'. The Surface Water Management Plan is a live document and where there is a requirement for variation at the Site to provide more ecologically sensitive drainage during the construction phase, then the SWMP will be updated to reflect this. The SWMP will be updated by the appointed Contractor and changes to the document will be agreed with the Project Hydrologist, Environmental Clerk of Works (EnvCoW) and relevant stakeholders before drainage works commence. The SWMP aims to: • Identify environmental sensitives of the site and the associated buffer zones • Describe how the system will operate to minimise modification and disruption to the existing site hydrology • Outline the proposed maintenance regime and associated flood risks • Outline the proposed drainage management for the operational phase

Furthermore, surface water monitoring is proposed during construction of the development. Surface water samples from the River Boyne were collected at two locations; upstream and downstream of the Site to understand baseline conditions. This practice should be repeated regularly from the same upstream and downstream locations during the construction period.

Weekly sampling is proposed during the construction phase, given the close proximity of works to a receptor, as well as sampling following an event such as heavy rainfall or an accidental spillage. Analysis for total suspended solids, pH and total petroleum hydrocarbons would allow for the detection of sediment loading, concrete pollution or spillages of hydrocarbons.

Appropriate parameter thresholds will be established with a view to monitoring water quality and escalating emergency responses as necessary. This will include, as a minimum;

Total Suspended Solids (TSS) will be <25mg/L TSS.

Operation Phase

Monitoring during Operational Phase

Monitoring of the River Boyne will solely consist of existing monitoring carried out under the National River Monitoring Programme (EPA) as part of the Water Framework Directive (2000).

Mitigation and Monitoring Measures for Chapter 11 - Air Quality & Climate

Table 21.9: Mitigation Measures for Air Quality & Climate

Construction Phase

Fugitive Dust Emissions

The traffic effects of the proposed development during the construction phase will be limited to a relatively short period and will be along traffic routes employed by haulage/construction vehicles and workers. Any effects on air quality will be temporary i.e., during the construction period only and can be suitably controlled by the employment of mitigation measures (described below) and appropriate to the development project, including a construction logistics plan, and are therefore unlikely to materially impact on local air quality.

The dust emitting activities outlined in Table 11.9 (see Chapter 11) can be effectively controlled by appropriate dust control measures (described below) and any adverse effects can be greatly reduced or eliminated.

Prior to commencement of construction activities, it is anticipated that an agreement on the scope of a Dust Management Plan for the construction phase will be reached with the local authority to ensure that the potential for adverse environmental effects on local receptors is minimised. The Dust Management

Plan should include, inter alia, measures for controlling dust and general pollution from site construction operations, and include details of any monitoring scheme, if appropriate. Controls should be applied throughout the construction period to ensure that emissions are mitigated.

The dust risk categories identified have been used to define appropriate, site-specific mitigation methods. Site-specific mitigation measures are divided into general measures, applicable to all sites and measures specific to demolition, earthworks, construction and trackout. Depending on the level of risk assigned to each site, different mitigation is assigned. The method of assigning mitigation measures as detailed in the IAQM construction dust guidance has been used.

In this case, the 'medium risk' site mitigation measures have been applied, as determined by the dust risk assessment. For those mitigation measures that are general, the highest risk assessed has been applied. Two categories of mitigation measure are described in the IAQM construction dust guidance – 'highly recommended' and 'desirable', which are indicated according to the dust risk level identified in Table 11.9.

The mitigation measures described below will be used to control potential fugitive emissions from the construction project. Therefore, the measures listed below, whether cited as 'highly recommended' or 'desirable' in the IAQM construction dust guidance, should be applied on/around site.

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Display the name and contact details of people accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
- Display the head or regional office contact information.

Dust Management

Develop and implement a Dust Management Plan, which may include measures to control other emissions, to be approved by the Local Authority. The level of detail will depend on the risk and should include at a minimum the highly recommended measures. The desirable measures should be included as appropriate for the site. The Construction Environmental Management Plan may include monitoring of dust deposition, dust flux, real-time PM10 continuous monitoring and/ or visual inspections.

Site Management

Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.

Make the complaints log available to the local authority when asked.

Record any exceptional incidents that cause dust and/or air emissions, either on- or off site and the action taken to resolve the situation in the log book.

Preparing and maintaining the site

Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.

Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.

Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.

Avoid site runoff of water or mud.

Keep site fencing, barriers and scaffolding clean using wet methods.

Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.

Cover, seed, or fence stockpiles to prevent wind whipping.

Operating Vehicles/Machinery and Sustainable Travel

Ensure all vehicles switch off engines when stationary - no idling vehicles.

Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.

Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph on unsurfaced haul roads and work areas.

Produce a construction logistics plan to manage the sustainable delivery of goods and materials.

Implement a travel plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

Operations

Only use cutting, grinding, or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g., suitable local exhaust ventilation systems.

Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.

Use enclosed chutes and conveyors and covered skips.

Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.

Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

No bonfires or burning of waste material.

Specific to Demolition

Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).

Ensure effective water suppression is used during demolition operations. Hand-held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.

Avoid explosive blasting, using appropriate manual or mechanical alternatives.

Bag and remove any biological debris or damp down such material before demolition.

Specific to Construction

Avoid scabbling (roughening of concrete surfaces) if possible.

Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.

Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.

For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Specific to Trackout

Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site.

Avoid any dry sweeping of large areas.

Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.

Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.

Record all inspections of haul routes and any subsequent action in a site logbook.

Install hard surfaced haul route, which are regularly cleaned and damped down with fixed or mobile sprinkler systems, or mobile water bowsers.

Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.

Access gates to be located at least 10 m from receptors where possible.

Exhaust Emissions from Plant and Vehicles

The traffic effects of the proposed development during the construction phase will be limited to a relatively short period and will be along traffic routes employed by haulage/construction vehicles and workers. Any effects on air quality will be temporary i.e. during the construction period only and can be suitably controlled by the employment of mitigation measures and appropriate to the development project, including a construction logistics plan, and are therefore unlikely to materially impact on local air quality.

Any emissions from non-road mobile machinery (NRMM) can be reduced by ensuring that any plant used on-site comply with the NOx, particulate matter and carbon monoxide emissions standards specified in the EU Directive 97/68/EC and subsequent amendments as a minimum, where they have net power of between 37kW and 560kW. The emissions standards vary depending on the net power the engine produces. The Construction Environmental Management Plan will include these emissions controls.

Operation Phase

- It is considered unlikely that the development would introduce additional sensitive receptors into an area of known poor air quality and the development

is not anticipated to have a significant impact on local air quality. Therefore, no specific operational phase mitigation measure is considered to be required.

Table 21.10: Monitoring Measures for Air & Climate

Construction Phase
The appointed contractor will be required to monitor levels of dust during critical construction periods at nearby sensitive locations and/or development site boundaries. Tailored monitoring requirements as per IAQM guidance are summarised below: **Desirable monitoring measure:** Undertake regular on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of site boundary. **Highly recommended monitoring measure:** Carry out regular site inspections to monitor compliance with the dust management plan, record inspection results, and make an inspection log available to the local authority when asked. Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
Operation Phase
No additional monitoring is proposed for the operational phase of the proposed development.

Mitigation and Monitoring Measures for Chapter 12 – Noise & Vibration

Table 21.11: Mitigation Measures for Noise & Vibration

Construction Phase
With regard to construction activities, best practice control measures for noise and vibration from construction sites are found within BS 5228:2009+A1:2014 '*Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2*'. Whilst construction noise and vibration impacts are calculated to be within the criteria set out in this document for the majority of the time, the contractor will ensure that all necessary noise and vibration control measures

will be used, in order to ensure impacts to nearby residential noise sensitive locations are not significant.

The following mitigation measures are required during the construction of the proposed development:

- Where practical, use of a site hoarding, minimum height of 2m, where the distance of works is 30m or less to nearby noise sensitive locations ;
- Limiting the hours of construction to the following:
  - Monday to Friday 07.00 – 19.00
  - Saturday 07.00 – 13.00

In exceptional circumstances, and subject to agreement with the Local Authority, extended hours of operation may be applied for. In such instances an assessment of potential noise impacts shall be carried out in advance of works taking place, and submitted to the Local Authority, as part of the extended hours request.

- Monitoring levels of construction noise and vibration at the closest noise sensitive location;
- Maintaining site access roads so as to mitigate the potential for vibration from lorries;
- Selection of plant with low inherent potential for generation of noise and/ or vibration;
- Erection of barriers as necessary around items such as generators or high duty compressors;
- Situate any noisy plant as far away from sensitive properties as is reasonably practicable and the use of vibration isolated support structures where necessary;
- Establishing channels of communication between the contractor/developer, Local Authority and residents, and;
- Appointing a site representative responsible for matters relating to noise and vibration.

Operation Phase

Additional Road Traffic Noise on Public Roads

During the operational phase of the development, noise mitigation measures with respect to the traffic from the development are not deemed necessary.

Recreation/Pedestrian Noise from the proposed Site Operation

During the operational phase of the development, noise mitigation measures with respect to noise on site are not deemed necessary.

However, a noise management plan shall be prepared and implemented by the site operator to ensure that noise emissions from activity within Abbey Square, along the new sloped walkway and within other external walkway/terrace areas does not generate a noise nuisance to nearby noise sensitive locations.

Table 21.12: Monitoring Measures for Noise & Vibration

Construction Phase
The appointed contractor shall monitor levels of noise and vibration at the closest noise sensitive location to the proposed site during the development's construction phase.
Operation Phase
No additional monitoring is proposed for the operational phase of the proposed development.

Mitigation and Monitoring Measures for Chapter 13 - Material Assets (Waste)

Table 21.13: Mitigation Measures for Material Assets (Waste)

Construction Phase
Adherence to the waste hierarchy (prevention, minimisation, reuse, recycling, recovery and disposal of waste material generated during the construction and demolition phases of the proposed development) will be implemented. Should excess waste be generated from the enabling works be required to facilitate the construction phase, it is anticipated that there will be limited or no opportunities for reuse of this material onsite and it will require removal for offsite reuse, recovery, recycling and/or disposal. The contractor(s) will endeavour to ensure that material is reused or recovered off-site insofar as is reasonably practicable before considering disposal at an authorized facility. During the construction phase there will be a number of mitigation methods put in place including: • Onsite segregation of waste materials into concrete, rubble, Plasterboard, metals, glass, and timber. • Any hazardous wastes produced will be stored separately. • All waste materials will be stored in skips or other suitable receptacles and appropriately labelled.

- Reuse of left-over materials where possible (e.g. timber off cuts, broken concrete)

- A waste manager/site representative will be appointed to ensure waste management procedures are followed.

- All waste leaving the site will be reused, recycled, or recovered, where possible.

- All waste leaving the site will be recorded and accounted for with all relevant documentation maintained.

These mitigation measures will ensure that the waste arising from the construction and demolition phases of the development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations, the Litter Pollution Act 1997 and the EMR Waste Management Plan (2015 - 2021). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will encourage sustainable consumption of resources.

Operation Phase

During the Operational Phase of the proposed development, all waste materials will be segregated into appropriate receptacles and stored in appropriate bin containers throughout the regeneration project area.

During the operational phase there will be a number of mitigation methods put in place including:

- The segregation of waste materials including Organics, dry mixed recycling, mixed non-recycling, glass, WEEE and cleaning chemicals.

- All wastes will be stored in appropriate containers and colour coded.

- All applicable waste leaving the area will be reused, recycled, or recovered where possible.

- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted, or licensed facilities.

- All waste leaving the site will be recorded and copies of relevant documentation maintained.

These mitigation measures will ensure that the waste arising from the operation of the proposed development will be dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations, the Litter Pollution Act 1997 and the EMR Waste Management Plan (2015 - 2021). It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

Table 21.14: Monitoring Measures for Material Assets (Waste)

Construction Phase
It is important that during the construction phases of the development that the waste generation volumes are calculated, recorded, and compared to the targets outlined. A competent and trained waste manager/site representative should be appointed. It is recommended that it is their responsibility to monitor and track the waste volumes being generated. It is also their responsibility to ensure that all contractors and sub-contractors are segregating waste as required.
Operation Phase
It is important that during the operational phase of the development that the waste generation volumes are calculated, recorded and compared to the targets.

Mitigation and Monitoring Measures for Chapter 14 - Material Assets (Traffic & Transportation)

Table 21.15: Mitigation Measures for Material Assets (Traffic & Transportation)

Construction Phase
Construction Traffic Management Plan • A detailed Construction Traffic Management Plan, will incorporate the relevant traffic management measures identified in the Outline Construction Environmental Management Plan and will be finalised by the Contractor for the construction stage . This Plan will include the following transport-related measures: • Working hours that will avoid any significant staff trips during peak hours; • Appropriate amount of car parking for construction staff to mitigate any potential car parking overspill onto the surrounding residential areas; • Separation of construction traffic from general traffic where possible and necessary; • Management and marshalling of construction vehicles when required; • Contractor will be required to implement a Mobility Management Plan for construction staff, where travel by sustainable modes and car-pooling will be encouraged; and

- Contractor will ensure that the proposed works are carried out in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013).

The renewal and reconfiguration of street layouts will necessitate the excavation of the existing footpaths and pavements, formation of suitable subbase and levels, relocation of existing utilities, installation of new street surface paving, street furniture and lighting.

The phasing of the construction works shall be outlined in the detailed Construction & Environmental Management Plan (CEMP) prior to construction. The CEMP will be prepared by the appointed contractor and issued to TCC for agreement prior to works commencing and will be implemented for the duration of the works. Access to the approach roads and properties within the area will be maintained at all times during the construction phase. This may require limited night works for final surfacing and utility installation etc.

Scheduling of these activities will be addressed in the CEMP. The construction works will always allow one lane of traffic on any section of road under construction. The key streets and bus routes will be maintained through the town.

As construction works are standard in nature and well understood, there is a low probability that traffic accidents will occur. Normal good construction and traffic management practices are to be employed and will ensure that the risk of accidents will be low.

Contractor will ensure that the proposed works are carried out in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013).

Operation Phase

Development Proposals

The overall proposed scheme will include a number of measures that are deemed beneficial to improve the public realm, enhancing the pedestrian and cycle connectivity and road safety across the area. The measures which will be implemented as part of the overall development to influence the use of sustainable modes of transport and help minimise the need for private vehicle trips. The design and layout of the development will facilitate ease of access to public transport, support walking and cycling and meet the needs of people with disabilities and others whose mobility is impaired through adherence to current design guidelines.

The development proposals recognise opportunities to encourage use of sustainable modes of travel by promoting and providing, where possible, traffic free pedestrian and cycle routes, especially where they would facilitate more direct, safer, and pleasant alternatives to those used by the private car. These opportunities are achieved by the:

- Realignment and narrowing of the carriageway on Georges Square to accommodate proposed Active Travel Schemes, provided from the Railway Station to Rosehill Roundabout; and

- Creation of new urban civic spaces, streets, road junctions, pedestrian pavements, steps, and cycle routes to encourage active travel.

Please refer to Chapter 5 of this EIAR for a detailed description of the proposed development.

Active Travel Strategy

An 'Active Travel Strategy' is a strategy for managing multi-modal access to a site or development, focusing on promoting access by sustainable modes. The objective of national and local policy is to reduce reliance on the car for travel. Inducements and encouragement should be applied to influence change, and this can be achieved through the delivery of 'An Active Travel Strategy' for the area.

An Active Travel Strategy would encourage use of sustainable transport measures during the operational phase and should relate to all future developments within the area in order to form part of the wider mitigation measures (e.g., strategy highlighting the proximity of local services, public transport provision, schools and walking/cycle distances to same, etc). The proposed 'hard measures' that will facilitate safer pedestrian, cycle and public bus access will be provided as part of this application and could be further complimented by future works in the area.

The overarching ambition of this Active Travel Strategy is to: Make active travel an attractive and realistic choice for short journeys in the area. Delivering on this ambition will lead to more people walking and cycling, contributing to the following outcomes:

- Improved health through an increase in physical activity;

- Reduced congestion on the highway network by providing better travel choices; and

- Safer active travel.

These outcomes will be realised by delivering the following actions:

Action 1: Integrate active travel into planning: The strategy would influence the layout and design decisions and ensure active travel is prioritised in future planning processes. In addition, the strategy will encourage active travel to be better integrated with other types of transport e.g. walking to the bus stop or cycling to schools. This will be led by current commissioning guidance and best practice, existing policies and strategies with a commitment to encouraging active travel. These include:

- Inform the site layout and development in line with guidance and best practice;

- Support the policies to ensure that active travel is used to deliver sustainable growth and development within the planning applications;

- Ensure active travel routes are a priority, both within developments and linking sites to other services, community facilities and transport hubs making active travel an attractive and realistic choice for short journeys;

- Ensure sufficient areas within developments for green spaces and attractive routes and environments that encourage active travel; and

- Work with strategic transport providers to deliver infrastructure that supports active travel.

Action 2: Provide and maintain appropriate routes for active travel: The area will provide fit-for-purpose active travel routes that people want to use. The existing and proposed cycling and walking routes will be developed over time as the wider development allow. They will be continuous and direct where possible and serve important community services in the area, which means that some people who would like to actively travel can be. There is a need to provide facilities such as safe crossings along routes and secure cycle storage at the proposed residential development. It is also important that these routes are well maintained and designed to be as inclusive as possible. These include:

- Giving appropriate consideration to active travel within the proposed development in terms of pedestrian and cycle facilities and connections;

- Ensure active travel resources such as appropriate signage is provided to enable safe and effective active travel;

- Make reasonable adjustments to active travel route design to maximise the inclusivity and accessibility to all users; and

- Evaluate funding for active travel infrastructure and maintenance.

Action 3: Support active travel in the community: There is a need to encourage and promote active travel in the community. People need the skills, confidence, information and, most importantly, the motivation to make active travel their preferred choice. Initiatives needed to support this change include pedestrian and cycle training, road safety campaigns, projects to encourage active travel to schools and work and promotion of available routes and facilities. These include:

- Supporting initiatives including area wider travel planning and other active travel programmes.

- Promote active travel and provide support to increase levels of active travel within the proposed development

- Integrate walking and cycling for travel purposes into local services through the provision of safer facilities.
- Develop and maintain re creational routes as a means of introducing people to active travel.
- Support road safety initiatives for all road users, especially the most vulnerable such as cyclists and pedestrians
- Promote locally-based programmes to encourage walking and cycling, and integrate active travel as part of longer journeys involving public transport

Table 21.16: Monitoring Measures for Material Assets (Traffic & Transportation)

Construction Phase
A detailed Construction Traffic Management Plan will operate during construction of the proposals, and this will be monitored and amended where necessary during the works. The plan will be finalised for the construction stage of the project by the Contractor and will address all transport-related measures. Any construction access point, compounds, or other requirements necessary during the construction stage will be reinstated.
Operation Phase
The implementation of an Active Travel Strategy for the area, in conjunction with the proposed schemes for the wider town, would encourage use of sustainable transport measures during the operational phase and should relate to all future developments in order to form part of the wider mitigation measures. The proposed 'hard measures' that will facilitate safer pedestrian, cycle and public bus access will be provided as part of this application, in conjunction with the pending schemes.

Mitigation and Monitoring Measures for Chapter 15 – Material Assets (Site Services)

Table 21.17: Mitigation Measures for Material Assets (Site Services)

Construction Phase
Standard industry practice for construction works will ensure the safety of the workers and maintain the integrity and operational functions of any service, above or underground. Prior to construction, drainage networks, electrical cabling, gas pipelines, and telecommunications infrastructure will be recorded and incorporated into the detailed design of the scheme to avoid any clashes where possible.

Any service diversions required will be designed and constructed in accordance with the requirements and under the supervision of the relevant utility provider. Businesses and residents will be notified in advance of any service disruptions.

Contractors will be provided with service maps and the utility mapping survey prior to Construction. Services shall be traced on the ground with a cable avoidance tool (CAT) or similar by the Contractor. Where service locations are still not known or confirmed, the Contractor may be required to excavate trial pits to confirm locations and depths as necessary.

Wastewater

Implement sediment and erosion control measures to prevent construction-related sedimentation in nearby water bodies.

Use temporary sediment barriers and sediment traps to contain and filter runoff from construction sites.

Implement best management practices for construction activities near sewer lines to avoid damage and contamination.

Implement proper storage and handling of construction materials to prevent accidental spills or leaks that could impact wastewater quality.

Water Supply

Implement measures to protect water sources from construction-related contamination, such as using sediment barriers around water intake areas.

Schedule construction activities in a way that minimizes disruption to water supply infrastructure and ensures continuous service.

Implement erosion control measures to prevent sedimentation in water supply reservoirs or catchment areas.

Regularly inspect and maintain water supply infrastructure to address any damage or leaks during the construction process.

Electricity

Ensure that construction activities do not pose risks to existing electrical infrastructure, such as overhead power lines or substations.

Follow proper safety protocols and guidelines to prevent accidents, such as ensuring that workers have appropriate training and personal protective equipment.

Coordinate with electrical utility companies to safely carry out any necessary modifications or upgrades to the electrical grid.

Minimize disruption to electrical services during construction by implementing temporary power supply solutions if required.

Gas

Identify and locate underground gas pipelines before construction activities commence to prevent accidental damage.

Coordinate with gas utility companies to ensure safe work practices around gas infrastructure.

Implement proper excavation techniques and use equipment with underground utility detection capabilities to avoid damaging gas pipelines.

Maintain proper ventilation and monitoring during construction activities in confined spaces where gas pipelines are present.

Telecommunications

Coordinate with telecommunication service providers to ensure the protection of existing infrastructure during construction.

Implement safe digging practices to avoid damaging underground telecommunication cables.

Establish clear communication channels between the construction team and telecommunication service providers to address any issues or concerns promptly.

If necessary, provide temporary telecommunication solutions during construction to minimize disruptions to the community.

Lighting

Implement temporary lighting solutions to ensure adequate visibility and safety in construction areas, especially during night-time work.

Minimize light pollution during construction by using directional lighting and shielding fixtures to prevent unnecessary light spillage.

Coordinate with local authorities and stakeholders to ensure compliance with lighting regulations and community preferences.

Conduct regular inspections to ensure that lighting fixtures are properly installed, functioning correctly, and do not pose any safety hazards.

Operation Phase

No mitigation is required.

Table 21.18: Monitoring Measures for Material Assets (Site Services)

Construction Phase
Wastewater: Efforts will be made to closely monitor the wastewater management systems, ensuring that any potential impacts on the existing infrastructure are minimized. Regular monitoring of wastewater discharge and treatment processes will be conducted to maintain compliance with environmental regulations. Water Supply: Monitoring measures will be implemented to ensure the continuity and quality of the water supply during the construction phase. This may involve regular inspections of water sources, pipes, and connections to detect and address any issues promptly. Surface Water: Monitoring of surface water bodies, such as rivers, lakes, or ponds, will be carried out to assess any potential impacts from construction activities. Measures will be taken to prevent sediment runoff, erosion, and pollution of surface water, ensuring compliance with environmental standards. Minimal impact to the existing infrastructure to be made while resetting and replacing the existing drainage in line with the proposed development. Electricity: Monitoring measures will be put in place to oversee the electricity supply and usage during the construction phase. This may involve regular inspections of electrical infrastructure, connections, and equipment to ensure safety, efficiency, and compliance with electrical codes and regulations. Gas: Monitoring efforts will be undertaken to oversee the gas supply and infrastructure throughout the construction phase. This may include inspections of gas connections, meters, and appliances to ensure proper functioning and compliance with safety regulations. Telecommunications: Monitoring measures will be implemented to assess the performance and reliability of telecommunications systems during construction. Regular checks of connectivity, network infrastructure, and signal quality will be conducted to address any issues promptly and maintain uninterrupted communication services. Lighting: Monitoring will be conducted to ensure the proper functioning of lighting systems throughout the construction phase. This may involve regular inspections of lighting fixtures, connections, and energy consumption to optimize efficiency, address any malfunctions, and adhere to lighting standards.
Operation Phase
Wastewater: Continuous monitoring of wastewater management systems will be carried out to ensure proper treatment and disposal of wastewater. Regular inspections and sampling of wastewater discharge will be conducted to assess

compliance with environmental regulations and maintain the quality of water bodies.

Water Supply: Monitoring measures will be put in place to ensure the reliable and uninterrupted supply of water throughout the operational phase. Regular inspections of water sources, infrastructure, and distribution networks will be conducted to detect and address any leaks, pressure issues, or water quality concerns promptly. All measures to comply with Irish water standards.

Surface Water: Ongoing monitoring of surface water bodies will be undertaken to assess the impact of the operational phase on their quality and ecological health. Regular sampling and analysis of surface water will be conducted to identify any potential pollution sources and implement appropriate mitigation measures.

Electricity: Continuous monitoring will be carried out to ensure the reliable and efficient supply of electricity during the operational phase. Regular inspections of electrical infrastructure, meters, and energy consumption patterns will be conducted to optimize efficiency, identify potential faults, and ensure compliance with safety regulations.

Gas: Monitoring efforts will be implemented to oversee the gas supply and usage throughout the operational phase. Regular inspections of gas infrastructure, equipment, and safety measures will be conducted to detect and address any potential leaks, malfunctions, or compliance issues.

Telecommunications: Ongoing monitoring measures will be in place to ensure the seamless functioning of telecommunications systems. Regular checks of connectivity, network performance, and service quality will be conducted to address any issues promptly and ensure uninterrupted communication services.

Lighting: Monitoring will be undertaken to ensure the efficient operation of lighting systems throughout the operational phase. Regular inspections of lighting fixtures, energy consumption, and lighting levels will be conducted to optimize efficiency, address any malfunctions, and ensure compliance with lighting standards.

Mitigation and Monitoring Measures for Chapter 16 – Cultural Heritage and Archaeology

Table 21.19: Mitigation Measures for Cultural Heritage and Archaeology

Construction Phase
Prior to the commencement of works, a detailed measured photogrammetry survey will be carried out of the upstanding medieval fabric associated with the abbey. This will provide an accurate and measured record of all the existing built remains on site. All repair and conservation work to the Abbey of St Mary

d'Urso (LH024-041011) will require a detailed methodology to be produced in advance of the development proceeding. This will be produced by a Grade 1 Conservation Architect. The method statement and works detailed within, will require approval under Ministerial Consent as the structure is a National Monument. The method statement will also clearly state how the free-standing roof canopy will not affect the existing built fabric and include measures to protect the upstanding remains from inadvertent impacts during construction.

In addition, all ground disturbances relating to the resurfacing of Old Abbey Lane will be subject to archaeological monitoring. This will be carried out under Ministerial Consent, by a licence eligible archaeologist.

Prior to the commencement of works a detailed measured photogrammetry survey will be carried out of the upstanding town walls. This will provide an accurate and measured record of all the existing built remains. All repair and conservation work to the wall will require a detailed methodology to be produced in advance of the development proceeding. This will be produced by a Grade 1 Conservation Architect. The method statement and works detailed within, will require approval under Ministerial Consent as the structure is a National Monument. This may also require removal of vegetation by a suitably qualified contractor.

In addition, all ground disturbances (expected to be minimal) relating to the laying of the new footpath to the west of the wall and the insertion of a water feature channel and rainwater retention pond will be subject to archaeological monitoring. This will be carried out under Ministerial Consent, by a licence eligible archaeologist.

All excavations within the public realm area (with the exception of re-surfacing) will be subject to archaeological monitoring under licence, as issued by the National Monuments Service of the DoHLGH. If archaeological remains are identified, further mitigation may be required, such as preservation in situ or by record. Any further mitigation will require agreement from the DoHLGH.

Operation Phase

In order to ensure the ongoing conservation of the remains of the Abbey of St Mary d'Urso (LH024-041011), during its operation within the public realm area, a Conservation Management Plan will be produced by a Conservation Architect and archaeologist in order to ensure that the protection of the medieval fabric and archaeology is managed throughout the use of the public realm scheme.

In order to ensure the ongoing conservation of the c. 70m section of the medieval town walls, during its operation within the public realm area, a Conservation Management Plan will be produced by a Conservation Architect and archaeologist in order to ensure that the protection of the medieval fabric and archaeology is managed throughout the use of the public realm scheme. This will represent an update to the existing 2006 Conservation Plan for the walls in Drogheda.

Monitoring Measures for Cultural Heritage and Archaeology

Table 21.20: Monitoring Measures for Material Assets (Waste)

Construction and Operation Phases
• The mitigation measures detailed above would also function as a monitoring system during construction to allow the further assessment of the scale of the predicted impacts and the effectiveness of the recommended mitigation measures. Reinstatement is not applicable.

Mitigation and Monitoring Measures for Chapter 17 - Architectural Heritage

Table 21.21: Mitigation Measures for Architectural Heritage

Construction Phase
Where the Proposed Developments abuts the medieval ruins of the Old Abbey (St. Mary d'Urso), the design and details of the proposed developments have been conceived to avoid any direct physical impact to the adjacent structures. Additionally, the design team responsible for the detail design/tendering information, must be keenly aware of the potential for damage to the monuments during the construction stage of the works, and provide method statements and specifications that will guarantee that the required diligence will be practiced by the contractors on the project. A Grade 1 Conservation Architect will be required to produce a detailed methodology for all conservation repairs to the National Monument, and said method statement will require approval under Ministerial Consent. Of particular importance is the requirement to avoid any possibility of rust staining to the historic Abbey ruins, from the corten steel structure of the proposed canopy adjacent to the tower and east gable. The design team responsible for the detail design and detailing of the new canopy must make sure that there will be no runnoff of rust stained rainwater from the new canopy onto the adjacent ancient stone masonry. Where the Proposed Developments abut the medieval town walls, the design and details of the proposed developments have been conceived to avoid any direct physical impact to the adjacent structures. Additionally, the design team responsible for the detail design/tendering information, must be keenly aware of the potential for damage to the monuments during the construction stage of the works, and provide method statements and specifications that will guarantee that the required diligence will be practiced by the contractors on the project. A Grade 1 Conservation Architect will be required to produce a detailed methodology for all conservation repairs to the National Monument, and said method statement will require approval under Ministerial Consent. The resurfacing of the existing public realm footpaths, carriageways and other hard landscaping features has the potential for direct, negative and significant impacts to the fabric of the protected structures, monuments and otherwise significant heritage assets that stand adjacent to the public realm construction

activities. These impacts can be caused by the operation of heavy construction plant in close proximity to these heritage assets, causing vibration, abrasion or impact.

Operation Phase

A Conservation Management Plan will be produced by a suitably qualified Conservation Architect and Archaeologist, to ensure the long term conservation of the upstanding remains of the Old Abbey (St. Mary d'Urso 9LH024-041011)), during its use as part of the public realm in the Westgate Area. This plan will include measures for continuous assessment of the ongoing impact on the remains, from the use on the Public Realm of the Westgate Area, along with procedures for addressing any such impacts.

A Conservation Management Plan will be produced by a suitably qualified Conservation Architect and Archaeologist, to ensure the long term conservation of the upstanding remains of the medieval Town Wall, during its use as part of the public realm in the Westgate Area. This plan will include measures for continuous assessment of the ongoing impact on the remains, from the use on the Public Realm of the Westgate Area, along with procedures for addressing any such impacts.

Table 21.22: Monitoring Measures for Architectural Heritage

Construction Phase

At all areas of the Proposed Development, the design team responsible for the detail design/tendering information, must be keenly aware of the potential for damage to the monuments during the construction stage of the works, and provide method statements and specifications that will guarantee that the required diligence will be practiced by the contractors on the project. Of particular importance is the requirement to avoid any possibility of rust staining to the historic Abbey ruins, from the corten steel structure of the proposed canopy adjacent to the tower and east gable. The design team responsible for the detail design and detailing of the new canopy must make sure that there will be no unoff of rust stained rainwater from the new canopy onto the adjacent ancient stone masonry.

Where works are required to take place in close proximity to the National Monuments within the Project Area, in particular the medieval Town Wall and the medieval ruins of the Old Abbey (St. Mary d'Urso), all works must be monitored by a qualified archaeologist, and under license from the Minister.

Operation Phase

At the proposed developments in close proximity to the Town Wall and the Priory ruins, the design and details of the proposed developments have been conceived to avoid any direct physical impact to the adjacent structures. Additionally, the design team responsible for the detail design/tendering information, must be keenly aware of the potential for damage to the assorted

heritage assets during the construction stage of the works, and provide method statements and specifications that will guarantee that the required diligence will be practiced by the contractors on the project. Of particular importance is the requirement to avoid any possibility of rust staining to the historic Abbey ruins, from the corten steel structure of the proposed canopy adjacent to the tower and east gable. The design team responsible for the detail design and detailing of the new canopy must make sure that there will be no runnoff of rust stained rainwater from the new canopy onto the adjacent ancient stone masonry.

Monitoring measures at the above mentioned locations will include measurement of ground vibrations caused by the construction activities, particularly in relation to the movement of heavy construction vehicles, and the compaction of ground or granular sub-bases for paths or carriageways. All visible structures will be documented prior to the start of any works, and inspected daily to ensure that no damage has been incurred.

Mitigation and Monitoring Measures for Chapter 18 - Landscape & Visual Impact

Table 21.23: Mitigation Measures for Landscape & Visual Impact

Construction Phase
The key mitigation measures are those standard to best practice construction site management but the significance of effects can be limited by implementing the following strategies:- • All activities will be subject to pre-planned method statements in accordance with appropriate legislation in particular Construction Design and Management Regulations and Management of Health and Safety at Work Regulations; • Erection of temporary hoarding around construction areas to clearly delineate working areas and protect public from the works. Hoardings will be maintained in good condition throughout this stage; • Lighting will be maintained in good order and provided where necessary to ensure sufficient illumination. Precautions will be taken to ensure no shadows are cast by hoardings or building works onto pavement or road areas. Internal construction lighting will be angled so that it does not cause nuisance to adjacent properties or carriageways; • Careful siting of construction machinery, materials and welfare facilities to avoid unnecessary impacts on adjacent areas;

- Ensuring the streets or roads providing access to the work are maintained free of dust and mud as far as possible and that any damaged surfaces are made good; and

- To have effective site and litter management systems in place from the outset to ensure a clean, tidy and presentable image.

Operation Phase

The potential townscape and visual effects of the proposal in the operational phase have been classified as positive on the basis that the overriding nature of the project is to improve the townscape, public realm and visual amenity of this part of Drogheda. No negative effects have been identified and therefore no mitigation measures are required for townscape and visual effects.

Table 21.24: Monitoring Measures for Landscape & Visual Impact

Construction Phase

Monitoring and Reinstatement is not applicable to this chapter.

Operation Phase

No monitoring of townscape and visual effects is required other than the monitoring of soft landscape works after planting to ensure the health and viability of the plants. The management of landscape areas will initially be undertaken by an ACLI approved landscape contractor. There will be a five year guarantee after construction that all the proposed planting works still exists and has been established in line with landscape design expectations. This will ensure that no planting has been removed or damaged due to the subsequent construction or plant failure. A Landscape Management and Maintenance Plans will set out the objectives for management of external spaces or public realm areas for a 20 year period.

Regular monitoring will be undertaken to determine success of landscape operations and ensure they are behaving in the manner anticipated at design stage. If required, elements of the design can be adapted to accommodate changes required by actual field experience.

Comhairle Contae **Lú**
Louth County Council

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