Planning and Environmental Consultants

Appropriate Assessment Screening Report and Natura Impact Statement

Cleeves Riverside Quarter, Co. Limerick

DOCUMENT DETAILS

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1. INTRODUCTION

1.1 Background

MKO has been appointed to provide the information necessary to allow the competent authority to carry out a screening for Appropriate Assessment and, if required, to conduct an Appropriate Assessment in accordance with the provisions of Part XAB of the Planning and Development Act 2000, as amended, for the proposed development of Cleeves Riverside Quarter located on the northern bank of the River Shannon, in Limerick City, Co Limerick.

Screening for Appropriate Assessment is required under Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive). Where it cannot be excluded that a project or plan, either alone or in combination with other projects or plans, would have a significant effect on a European Site then same shall be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives. The current project is not directly connected with, or necessary for, the management of any European Site. Consequently, the project has been subject to the Appropriate Assessment Screening process.

This Natura Impact Statement (NIS) has been prepared in accordance with the following:

- Assessment of Plans and Projects in Relation to Natura 2000 sites: Methodological Guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission, 2021)
- Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2021)
- Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018)
- Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2010)
- Appropriate Assessment Screening for Development Management. Office of the Planning Regulator, Dublin 7, Ireland OPR (2021).

For the purposes of this AASR and NIS:

- Where the 'proposed development' is referred to, this encompasses the entirety of the Phase II development
- Where 'the Application site', or 'the site', is referred to, this relates to the primary red line boundary of the proposed development
- Where 'the Masterplan site' is referred to, this relates to the wider MS area which has been considered as part of the assessment.
- Zones of Influence" (ZoI) for individual ecological receptors refers to the zone within which potential effects are anticipated. ZoIs differ depending on the sensitivities of particular habitats and species and were assigned in accordance with best available guidance and through adoption of a precautionary approach.

1.2 Statement of Authority

This report has been prepared by David Mesarcik. David is an Ecologist with MKO, he holds a Bachelor of Science (BSc.) in Ecology and Evolutionary Biology and an Honours Degree (Hons.) in Ecology. David has over two years of experience in Ecological consultancy. The report is based on surveys and site visits undertaken at the site since 2021. This report has been reviewed by Sara Fissolo and Pat Roberts (B.Sc., M.Sc., MCIEEM). Sara is a Project Ecologist with MKO with over five years of professional consultancy experience. Pat has 20 years of experience in ecological assessment and management.

The baseline ecological surveys undertaken at the site were conducted by a number of MKO Ecologists. All surveyors have relevant academic qualifications and are competent in undertaking habitat and ecological assessments (Table 1-1). Preliminary ecological site visits in 2021 were carried out by Kevin McElduff and overseen by Colin Murphy. Further habitat ecological surveys were carried out by Rachel Minogue, Tom Peters, Sara Fissolo and David Mesarcik. Bird surveys were carried out by Kevin McElduff, Colin Murphy, Katy Beckett, Bronagh Boylan, Cora Twomey, Nora Szijarto and Sara Fissolo.

Table 1-1 MKO Surveyors

Surveyor	Academic Qualifications
Pat Roberts	B.Sc. (Environmental Science),BTEC N. Dip (Countryside Management), (MCIEEM).
Aoife Joyce	B.Sc. (Environmental Science), M.Sc. (Agribioscience).
Sara Fissolo	B.Sc. (Hons.) (Ecology and Environmental Biology), B.Sc. (Intercultural Communication)
Colin Murphy	B.Sc. (Hons.) (Ecology and Environmental Biology), M.Sc. (Ecosystem Science and Policy)
Rachel Minogue	B.Sc. (Hons.) (Environmental Science)
David Mesarcik	B.Sc. (Ecology and Evolutionary Biology), Hons. (Ecology)
Kevin McElduff	B.Sc. (Environmental Science)
Tom Peters	B.Sc. (Hons.) (Environmental and Geographical Sciences), M.Sc. (Hons.) (Applied Environmental Sciences)
Katy Beckett	B.A. (Environmental Science), M.Sc. (Biodiversity and Conservation)
Bronagh Boylan	B.Sc. (Environmental Science)
Cora Twomey	B.Sc. (Ecology and Environmental Biology)
Nora Szijarto	B.Sc. (Biology), M.Sc. (Behaviour, Evolution and Conservation)

1.3 Methodology

1.3.1 Appropriate Assessment Process

Screening - The purpose of the screening stage is to determine, on the basis of a preliminary assessment and objective criteria, whether a plan or project, either alone or in combination with other plans or projects, is likely to have significant effects on a European site in view of the site's conservation objectives.

There is no necessity to establish such an effect; it is merely necessary for the Competent Authority to determine that there may be such an effect. The need to apply the precautionary principle in making any key decisions in relation to the tests of Appropriate Assessment has been confirmed by the case law of the Court of Justice of the European Union (CJEU). Plans or projects that have no appreciable effect on a European site may be excluded. The threshold at this first stage is a very low one and operates as a trigger in order to determine whether Appropriate Assessment of a project is required. Therefore, where significant effects are likely, uncertain or unknown at screening stage, an AA of the project will be required.

Appropriate Assessment - This stage of the process is a focused and detailed examination, analysis and evaluation by the Competent Authority of the implications of the plan or project, either alone or in combination with other plans and projects, on the integrity of a European site in view of that site's conservation objectives. Case law has established that such an Appropriate Assessment, to be lawfully conducted must:

> (i) identify, in the light of the best scientific knowledge in the field, all aspects of the proposed project which may, by itself or in-combination with other plans or projects, affect the conservation objectives of the European site;
>
> (ii) contain complete, precise and definitive findings and conclusions and may not have lacunae or gaps; and
>
> (iii) may only include a determination that the proposed project will not adversely affect the integrity of any relevant European site where the competent authority decides (on the basis of complete, precise and definitive findings and conclusions) that no reasonable scientific doubt remains as to the absence of potential adverse effects. If adverse impacts can be satisfactorily avoided or successfully mitigated at this stage, so that no reasonable doubt remains as to the absence of the identified potential effects, then the process is complete. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must proceed to stage three (assessment of alternative) and, if necessary, stage four (IROPI[1]).

1.3.2 Ecological Survey Methodologies

The following sections describe the methodologies followed to establish the baseline ecological condition of the site and the surrounding area. The surveys undertaken informed both the Appropriate Assessment Screening, presented in Section 4, and the Natura Impact Statement.

1.3.2.1 Ecological Multidisciplinary Walkover Surveys

Comprehensive ecological walkover surveys of the entire Proposed Application Site were carried out on 15th December 2021, 5th November 2024, 15th February 2024 and 27th March 2025 by MKO

Ecologists, Rachel Minogue (B.Sc.), Tom Peters (B.Sc., M.Sc.), Sara Fissolo (B.Sc. (Hons.)) and David Mesarcik (B.Sc. Hons.). The walkover surveys are designed to detect the presence, or likely presence, of a range of protected species and invasive species.

The multidisciplinary walkover surveys were undertaken within the recognised optimum period for vegetation surveys/habitat mapping, i.e. April to September (Smith et al., 2011). All habitats recorded on site and described in this NIS have been classified in accordance with Fossitt (2000). Plant nomenclature for vascular plants follows 'New Flora of the British Isles' (Stace, 2010).

The multi-disciplinary walkover surveys comprehensively covered the entire study area and based on the survey findings, further detailed targeted surveys were carried out for features and locations of ecological significance. These surveys were carried out in accordance with NRA *Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna* on National Road Schemes (NRA, 2009).

1.3.2.2 Mammal Surveys

Terrestrial mammal surveys were conducted during the multidisciplinary ecological walkover surveys.

The surveys were designed to detect the presence, or likely presence, of protected mammal species, including otter (*Lutra lutra*). The survey included a search for mammal signs and areas of suitable habitat to support these species, potential features likely to be of significance to bats and additional habitat features for the full range of other protected species that are likely to occur in the vicinity of the proposed development. Surveys for badger and otter were carried out during multidisciplinary walkovers to determine the presence or absence of these species within the Masterplan Site. This involved a search for all otter signs (e.g. spraints, scat, prints, slides, trails, couches and holts), particularly around the Reservoir located within the Quarry Site and along the shore of the Shannon. The surveys were conducted adhering to best practice guidance (NRA, 2009b) and CIEEM best practice competencies for species surveys.

1.3.2.3 Wintering Bird Surveys

Wintering bird surveys were undertaken on the 15th December 2021, 12th January 2022, 15th February 2022, 14th March 2022, 15th February 2024, 5th November 2024 and 4th December 2024 to assess the presence and use of the Masterplan site by birds associated with the nearby SPA. The surveys were carried out within the Masterplan site, near the reservoir (Vantage Point ITM: X556880, Y657253) and along the area of shoreline within River Shannon and River Fergus Estuaries SPA, located at St Micheals Rowing Club (Vantage Point ITM: X557086, Y657070). The surveys were undertaken by appropriately qualified ornithologists. All observations were recorded, and detailed point data was gathered for each species observation, with all bird species denoted using standard British Trust for Ornithology (BTO) codes and with the number of each species recorded next to each registration. The target species for these surveys were those included as Special Conservation Interests of the adjacent Special Protection Area (SPA) and also covered by Irish Wetlands Bird Survey (I-WeBS) counts, i.e. all divers, grebes, cormorant, shag, herons, swans, geese, ducks, rails, crakes, waders, gulls and kingfisher.

The surveys were undertaken at high and low tide times to ensure information was gathered on how bird species may utilise the different habitats (i.e. mudflats and tidal river).

Methodology and results of the 2021/2022 wintering bird surveys are presented in Appendix 4 of this NIS Report.

Additionally, during the Multidisciplinary walkover survey carried out on the 15/02/2024 by Rachel Minogue (B.Sc) and Tom Peters (B.Sc., M.Sc.) of MKO all bird species recorded utilizing the site, the River Shannon; designated as part of the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA, and surrounding lands were also recorded.

1.3.2.4 Dedicated Habitat and Vegetation Composition Surveys

All habitats recorded on site and described in this NIS have been classified in accordance with 'A guide to Habitats in Ireland (Fossitt, 2000). Habitat mapping was undertaken in compliance with guidance set out in 'Best Practice Guidance for Habitat Survey and Mapping' (Smith et al., 2011). Botanical surveys of the Proposed Project site were undertaken throughout multidisciplinary walkover surveys carried out in 2024 and again in 2025.

1.3.2.5 Invasive Species Surveys

A series of walk-through inspections and surveys of the Application Site were carried out by Invasive Plant Solutions between February 2021 and May 2021. The purpose of these surveys was to determine the presence, and extent, of the identified Japanese Knotweed location at the north-western boundary of the reservoir within the site, as well as identifying the presence of a further Himalayan Knotweed stand located outside, but immediately adjacent to, the southern / south-western boundary of the shipyard site, itself located in the southern sector of the masterplan site.

An Invasive Species Management Plan (ISMP) was developed in 2021, with subsequent treatments occurring in May and October 2021, as well as July 2022.

During the multidisciplinary surveys in 2023 and 2024, a search for Invasive Alien Species (IAS), with a focus on those listed under the *First Schedule* of the *European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024),* was also conducted. The extents of any *First Schedule* Invasive Species recorded on site were mapped. An additional targeted invasive species survey was conducted on the 5th June 2025 by MKO Ecologists, Sara Fissolo (B.Sc. (Hons)) and David Mesarcik (B.Sc. Hons.) and the updated extents of invasives on site were mapped.

An updated Invasive Species Management Plan was prepared by MKO in 2025 and is provided in support of the planning application for the proposed development, as Appendix 7-3 of the EIAR. The 2021 ISMP is also included in the document.

1.3.3 Desk Study

The desk study undertaken for this assessment included a thorough review of the available ecological data associated with the screened-in European Sites within the Likely Zone of Influence of the Proposed Development. Sources of data consisted in the following:

- Review of NPWS Conservation Objectives supporting documents, site synopsis, standard data forms and supporting documents for European Designated Sites,
- Review of online web-mappers: National Parks and Wildlife Service (NPWS), Environmental Protection Agency (EPA),
- Review of requested Data; National Parks and Wildlife Service (NPWS), Environmental Protection Agency (EPA),
- Review of the publicly available National Biodiversity Data Centre (NBDC) web-mapper,
- Review of NPWS Article 17 metadata and GIS database.

1.3.4 Limitations

The information provided in this document accurately and comprehensively describes the baseline ecological environment; provides an accurate prediction of the likely ecological effects of the proposed development; prescribes mitigation as necessary; and describes the residual ecological impacts. The specialist studies, analysis and reporting have been undertaken in accordance with the appropriate

guidelines. No significant limitations in the scope, scale or context of the assessment have been identified.

1.4 Structure and Format of this Document

The points below set out the structure and format of this NIS:

- **Section 1** provides an introduction, background information, methodology and statement of authority for the AASR and NIS.
- **Section 2** provides a full description of all elements of the Proposed Development.
- In **Section 3**, the characteristics of the receiving environment are fully described.
- In **Section 4**, a Stage 1 Appropriate Assessment Screening is undertaken to identify any European Sites upon which there is a potential for a likely significant effect to occur either individually or in combination with other plans and projects as a result of the Proposed Development.
- **Section 5** provides a detailed consideration of the Screened In European Sites and identifies the relevant qualifying features and how they may be affected in light of their conservation objectives.
- **Section 6** provides an assessment of the potential for adverse effects on the identified European Sites as a result of the Proposed Development and in the absence of mitigation. This section also prescribes mitigation to robustly block any identified pathways for impact for effect.
- **Section 7** provides an assessment of residual effects taking into consideration the proposed mitigation.
- In **Section 8**, the potential in-combination effects of the Proposed Development on European Sites, when considered in combination with other plans and projects, is assessed.
- A concluding statement is provided in **Section 9**.

2. DESCRIPTION OF PROPOSED DEVELOPMENT

2.1 Site Location

The proposed works areas are located in the vicinity of the North Circular Road and O'Callaghan's Strand, on the western side of the River Shannon in Limerick City (Grid reference: R 56943 57199 & R 56989 57047). The proposed works areas are located approximately 0.7km to the west of Arthur's Quay Park, Co. Limerick and approximately 0.7km to the east of Westfields Wetlands Limerick.

The site, known locally as 'Cleeves Riverside Quarter' comprises the former industrial mill complex ('Cleeves') situated on the northern side of the River Shannon, Limerick City and occupies the area between; Stonetown Terrace Road to the northeast; O'Callaghan Strand to the southeast; Condell Road (R527) to the southwest; and, Salesian Primary School and the 'Fernhill' residential estate to the northwest and west respectively - all situated in the townland of Farranshone More in Limerick City. The site is dissected by North Circular Road where it extends between Shelborne Road Lower and O'Callaghan Strand. The site location of the Proposed Development is shown in Figure 2-1.

2.2 Characteristics of Proposed Development

2.2.1 Development Description

This assessment considers all elements of the proposed development including all works associated with its construction and operation. The proposed development comprises Phase II, of an overall Masterplan with four phases of development proposed. Phase II will commence subsequent to ongoing emergency stabilisation and repair of the Flaxmill protected structure (Phase I). Phase III is intended to comprise an educational campus, inclusive of the adaptive reuse of the Flaxmill Building as part of that development and will be subject to a future separate application. Phase IV comprising the Shipyard site will be the final phase of development. The EIAR Description Chapter is provided as Appendix 1.

Two structures within the site are designated protected structures; the Flaxmill Building (PS Ref no.264 & NIAH No. 21512053) and the octagonal brick chimney (PS Ref no.265 & NIAH No. 21512059), which are to be retained. The proposed development includes:

A. Demolition of a number of structures to facilitate development including (i) Salesians Secondary School and Fernbank House; (ii) 2 no. houses on North Circular Road; (iii) Residual piers from the basin of the reservoir; (iv) Upper Reservoir on Stonetown Terrace comprising 2 no. concrete water tanks, pump house and liquid storage tank; (v) 1960's lean-to building structures adjoining the Cold Store (former Weaving Mill); (vi) remaining fabric of c20th rear lean-to of the Flaxmill Building; (vii) c.1960s office building adjoining the Packing Store and Cheese Plant on North Circular Road; (viii) Cluster of buildings including altered part of the Linen Store, the former Linen Store, Storage Building, and Office/Lab building at O'Callaghan Strand / Stonetown Terrace with partial retention of existing stone wall; (ix) warehouse on the Shipyard site; and (x) partial removal of stone boundary wall defining the Cleeves site adjoining O'Callaghan Strand / Stonetown Terrace and around the Shipyard site.

B. Construction and phased delivery of:

   i. Residential Development in 4 development 'zones' within the site ranging in height from 3 – 7 storeys (with screened service plant at roof level) comprising; (a) 234 no. residential units; (b) 270 no. student bedspaces with ancillary resident services at ground floor level;

(c) 299sqm of commercial floorspace; and (d) a creche. The specific development details of each proposed development zone comprise the following:

- Salesians Zone – 1 no. building with 2 no. blocks extending to 6 and 7 storeys comprising 146 no. apartments (76 no. 1 bed; and 70 no. 2 bed); a creche; semi basement car and bicycle parking; reception area, plant rooms, and refuse storage, with screened external plant and photovoltaic panels at roof level; 20 no. 3 storey 3 bed triplexe units with photovoltaic panels at roof level; and 30 no. car parking spaces for the dedicated use of the adjoining Salesians Primary School.

- Quarry Zone – 1 no. Purpose Built Student Accommodation (PBSA) building with 3 no. blocks extending to 6 and 7 storeys comprising 270 no. bedspaces with study rooms, shared areas, exercise room, reception area, plant rooms, refuse storage and bicycle parking all at ground floor level and screened external plant and photovoltaic panels at roof level. Provision is made for telecommunication antennae on the roof top of one block. Consent is also sought for use of the PBSA accommodation, outside of student term time, for short-term letting purposes.

- Stonetown Terrace Zone – 1 no. building extending to 4 - 5 storeys comprising 38 no. apartments (6 no. studios; 12 no. 1 beds; and 20 no. 2 beds) with plant rooms and refuse storage at ground level, ancillary infrastructure at basement level at northern end of the block, with screened external plant and photovoltaic panels at roof level; 9 no. 3 storey 3 bed townhouses with photovoltaic panels at roof level; and a dedicated secure bicycle storage facility.

- O'Callaghan Strand Zone – 1 no. building extending to 4 / 5 storeys comprising 21 no. apartments (9 no. 1 bed and 12 no. 2 bed) with an open roof structure accommodating communal open space, plant and photovoltaic panels; and 299qm of commercial ground floorspace intended to accommodate Class 1, Class 2 and / or Class 3 uses, with provision for car parking in the undercroft.

ii. Dedicated mobility hub with canopy and photovoltaic panels including double stacker bicycle parking; and EV Charging spaces, within the Shipyard Zone. A dedicated pedestrian/cycle link connects North Circular Road with Condell Road. The remaining area of the zone shall accommodate temporary car parking and a temporary external event space to be used on a periodic basis as the need arises, pending future redevelopment proposals as detailed in the Masterplan (Stage IV).

iii. Extensive provision of Public Realm including creation of the Reservoir/Quarry Park, the Flaxmill Square and the Riverside Corridor. Significant areas of civic and green spaces are provided, incorporating formal and informal play space; nature based SuDs, permeability and access; and a riverside canopy with photovoltaic panels functioning as an outdoor event space and incorporating heritage interpretative panels

iv. 3 no. dedicated bat houses;

v. Telecommunication antennae on roof of Block 2A of the PBSA, including (a) 9 no. Support poles to support 2 no. antennae each; (b) 6 no. microwave dishes affixed to the plant screen; and (c) associated telecommunications equipment and cabinets (effectively screened). To facilitate technologically acceptable locations at the time of delivery, a micro-siting allowance of 3m is proposed on the roof top of Block 2A of the PBSA for the infrastructure.

vi. Provision of vehicular access/egress points including (a) utilisation of existing access points to the Salesians Zone, to the Flaxmill and Quarry Zones and to the Mobility Hub on the Shipyard Site Zone; (ii) reopening an existing (currently blocked) access point off

O'Callaghan Strand; (iii) new access points to the proposed undercroft carparking at Salesians from the North Circular Road and at the end of Stonetown Terrace road which provides access to the Stonetown Terrace Zone; and (iv) emergency access only from Stonetown Terrace to the Flaxmill Zone;

vii. Provision of 30 no. dedicated car parking spaces to serve the Salesians Primary School; and

viii. All ancillary site development works including (a) water services, foul and surface water drainage and associated connections across the site and serving each development zone; (b) attenuation proposals; (c) raising the level of North Circular Road between Fernhill and O'Callaghan Strand; (d) refuse collection store (e) car and bicycle parking to serve the development; (f) public lighting; (g) all landscaping works.; and (h) temporary construction measures including (i) construction access to the Quarry site including provision of a temporary access across the reservoir; and (ii) temporary use of onsite mobile crusher.

2.2.2 Site Drainage

The drainage strategy to be delivered as part of the proposed development is intended to service the Masterplan lands and the extent of development envisaged within the Masterplan, including the proposed TUS Educational Campus. All development zones will be treated separately, such that each site will have an independent set of surface water, foul and watermain networks (where possible) to enable phasing of the works.

An Engineering Services Report detailing the site drainage for the Proposed Development has been prepared by ARUP and accompanies the planning application. The Proposed Application Site drainage plans are summarised in the following sections, and the accompanying drainage layout drawings are shown in Appendix 2. Details of the proposed Wastewater and Stormwater systems and Watermain Layout can be found on Drawings CS-2100, CS-4200, CS-4201, and CS-4202.

2.2.2.1 Wastewater drainage

The design approach for foul water services from each zone will have individual connections to the adjacent *Uisce Eireann* foul sewers on North Circular Road, O'Callaghan Strand and on Stonetown Terrace. Confirmation of Feasibility has been received from *Uisce Eireann* and the proposed development has been designed to feed into the public system, which has capacity to accommodate the additional loading whilst operating in compliance with its licence.

The key strategies for the wastewater system are the use of gravity networks to avoid the need for pumping where possible, the use of the existing combined sewer to the southwest, and the implementation of demand reduction strategies such as the use of low-flow fixtures and fittings. The key objectives to achieve the strategy are:

Gravity Networks - The uniform sloping nature of the terrain generally supports the use of gravity sewer collection systems. These will be used where possible to avoid the need for pump stations and associated operating and maintenance costs.

Using Existing Outfall Sewer - The strategy is to connect the wastewater discharges to the existing public sewers along the North Circular Road.

Demand Reduction - Sewer discharge volumes are anticipated to reduce in proportion to the reduction in water demand. Some of the water conservation measures regarding this are:

- Reducing water demand through water saving technologies i.e. flow restrictors
- Low flow fixtures and fittings/Dual Flush Toilets - Low flow fixtures conserve water by using a high-pressure technique to produce a strong or equal flow of water with less water than more water-wasting fixtures. Dual flush toilets prevent the full contents of the cistern being discharged with every flush
- Education and Smart Metering - live recording of water consumption patterns to indicate in real time potential problems with the network; can include a user interface to encourage changes in water usage patterns; can support remote meter reading and billing

The use of techniques such as low flow fixtures and fittings and dual flush toilets combined with smart metering and education of the end users, could realistically achieve up to a 30% reduction in potable water consumption and wastewater discharge.

2.2.2.2 Stormwater Drainage

The drainage systems has been designed in accordance with Part H of the *Building Regulations, BS EN 752 Drain and Sewer Systems outside Buildings*, the Limerick Development Plan 2022 to 2028 and *Uisce Eireann* requirements.

Surface water will be managed in accordance with the CIRIA SuDS Manual and discharges from the site will be restricted to 2 litres/second/hectare in accordance with the *Greater Dublin Strategic Drainage Study (GDSDS)* and Limerick Development Plan 2022-2028.

The overall strategy is to promote the use of Sustainable Urban Drainage Systems (SuDS) to minimise final discharge rate and mitigate flood risk on each site. The reservoir will be used as an attenuation facility to be an extra storage facility over and above the SuDS. Excess runoff from sites and SuDS is routed to the reservoir for attenuation. Surface water calculations prove that there is sufficient capacity in the reservoir to attenuate excess runoff for a 1:100 year storm (plus 30% climate change and 10% urban creep) from adjacent sites. The water level will rise from 2.0m to 2.8m ODM, leaving 2m freeboard up to Ground Level at PBSA (4.8m ODM).

A discharge pipe from the reservoir will be laid through Flaxmill site. It will route controlled runoff to an existing discharge pipe to the Shannon River. There is no work proposed to the existing outfall. The existing deep manhole at the southern end of the site is in very poor condition so will be reconstructed and fitted with a *TideFlex* non-return valve to protect the site from flooding via the outfall pipe. A combination of SuDS and petrol interceptors will be used to treat the surface water runoff on site before it is discharged to the Shannon River.

Salesians Zone
The site's surface water will be managed through three independent catchments discharging to the reservoir using SuDS measures including green roofs (20% coverage), rain gardens (250m³ attenuation), porous paving, and a piped gravity system.

Quarry Zone
The Quarry site adopts a drainage strategy similar to the Salesians site, with surface water attenuated in the reservoir via SuDS measures including green roofs covering 32% of roof area and adjacent raingardens providing 107 m³ of attenuation.

Stonetown Terrace Zone
Green roofs covering over 35% of roof area, porous paving, and raingardens, collectively attenuate approximately 25% of the site's total runoff volume of 288 m³. Residual surface water is conveyed via a gravity-fed piped system to the reservoir, with supplementary storage provided by surrounding landscaped areas. A water feature, integrated into the elevation drop between Stonetown Terrace and the Quarry site, facilitates flow to a hydraulically compact bioretention zone, from which water is captured in an underground network before final discharge to the reservoir.

Flaxmill Zone including O'Callaghan Strand Zone
The Flaxmill Plaza site comprises two distinct surface water catchments. The major catchment draining southeast incorporates SuDS features including tree pits and rain gardens, which attenuate up to 400 m³ of roof runoff. Residual flows are directed to a 300 m³ attenuation tank located at the southeast corner, with controlled discharge to the Shannon River via an existing outfall. The minor catchment drains northwest to the reservoir through a separate gravity-fed network for attenuation.

Shipyard Zone
The Shipyard site is a unique case, as the surface water is fully attenuated by SuDS measures. Swales are lined on the peripheries of the site, and porous paving in the parking areas attenuates the remaining runoff.

2.2.3 Water Supply

The design approach for the provision of potable water to each site comprises individual ring mains for each site, with separate metered connections to the existing *Uisce Eireann* (UE) mains adjacent to each site.

All new developments to be supplied via a ring main system connected to the existing campus network with new sluice valves and hydrants located to meet the requirements of the current Part B Building Regulations and the Local Fire Officer. Any storage or pressure boosting required for use within the new buildings will be designed as part of the MEP scope for each building.

The key objectives for the water supply are:

- Resilience - Consider options to supply the development on a ring main system fed from more than one source. Sizing assets to ensure current and future demands can be met
- Demand Reduction strategies to reduce the reliance on potable water, e.g. the use of well water or rainwater harvesting.
- Affordability - Consider spatial planning and density of development to ensure a more compact and easier to maintain network and to reduce the infrastructure cost per square metre

2.2.4 Flood Risk Assessment

A flood risk assessment report was prepared by ARUP, which accompanies the planning application and is included in Appendix 3.

The main risk of flooding to the site is tidal from the River Shannon. Based on the results of the flood risk assessment, most of the site lies in areas at low risk of flooding (<0.1%AEP), which is defined by the DEHLG's *The Planning System and Flood Risk Management* Guidelines as Flood Zone C.

The Shipyard site and Infiltration Galleries lie in an area at high risk of flooding, during the 1 in 100 year flood event (1% AEP), defined as Flood Zone A. The Quarry lies within an area at moderate risk of flooding, during the 1 in 1000-year flood event (0.1% AEP), defined as Flood Zone B.

The Stonetown Terrace, Salesian and Quarry Site could potentially be at risk of flooding from overland flows originating from the adjacent residential development to the north.

Due to proximity of the site to the Shannon River, there is potential risk of groundwater flooding to basements or underground services. Based on groundwater level monitoring within the site, there is no evidence of a strong tidal influence on the groundwater levels.

An inlet valve has been identified under the Infiltration Gallery. The inlet allows water ingress from the River Shannon to the Reservoir on a rising tide, and vice versa on a falling tide. When the river levels are very high, there could potentially be a low-to-moderate risk of flooding to areas around the reservoir, noting that the flow and volumes passing through the network into and out of the reservoir appear low – this is evident in a muted tidal signal within the reservoir which matches neither the peak nor the ebb of the river's tidal signal.

On this basis, the proposed development was designed to include a variety of flood mitigation measures. These include but are not limited to building floor raising, flood resilient and resistant measures and raising of North Circular Road (NCR) to provide safe access and egress.

Map Legend

Application Site

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Drawing Title

Site Location

Project Title	Cleeves Riverside Quarter
Drawn By: SF	Checked By: PR
Project No.: 211052-a	Drawing No.: Figure 2-1
Scale: 1:50,000	Date: 15.08.2025

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3. CHARACTERISTICS OF THE RECEIVING ENVIRONMENT

3.1 Description of the Baseline Ecological Environment

3.1.1 Habitats Present on the Site and Surrounding Area

The majority of the site comprises of paved surfaces and buildings, categorised as **Buildings and Artificial Surfaces (BL3)**. There are 16 buildings in total within the site boundary, including old industrial buildings in the centre of the site associated with the Flaxmill factory building (Plate 3-1) a school and convent in the Salesians Site (Plate 3-2); derelict warehouses and offices near O'Callaghan Strand (Plate 3-3Carparks, roads, and other paved surfaces are also categorised as **BL3** (Plate 3-4).

A water reservoir built during the Cleeves Factory operations is located in the centre of site, in the Quarry Site, and is categorised as **Reservoir (FL8)** (Plate 3-5). Site investigation works described in the accompanying Flood Risk Assessment Report have established that water from the reservoir within the Quarry Site discharges to the River Shannon, but that "the flow and volumes that are passing through the network into and out of the reservoir appear low". The reservoir is partially located underneath one the buildings lining NCR, and is exposed by nine archways supporting the buildings, which are also categorised as **BL3**. The reservoir is not considered a significant supporting habitat for aquatic species as through the years of surveys carried out within the site it was noted to vary in water levels, water clarity and algal vegetation, at times being significantly overgrown and stagnant.

The reservoir is bordered on three sides by **Scrub (WS1)** habitat, with species recorded including Ivy (*Hedera hibernica*), Nettle (*Urtica dioica*), Ragwort (*Senecio jacobea*), Common marsh bedstraw (*Galium palustre*), Bramble (*Rubus fructicosus agg.*), and Cranesbill (*Geranium sanguineum).* Various low and medium impact invasive species were recorded, including Winter heliotrope (*Petasites pyrenaicus*), Butterfly bush (*Buddleja davidii),* and Old man's beard (*Clematis vitalba)* (Plate 3-6). Japanese Knotweed was also recorded, as described in section 3.1.2.1 below. Scrub habitat is also found along NCR and in the disused back gardens of the two residential buildings in this areas. Here, the scrub has overgrown and includes semi-mature trees including ash (*Fraxinus excelsior*) and sycamore (*Acer pseudoplatanus).* A single mature holm oak (*Quercus ilex*) is also present along NCR.

Vegetation growing along the quarry walls, primarily ivy and old man's beard, contributes to this habitat but has been classified as **Hedgerows (WL1)** due to its linearity (Plate 3-7). The quarry walls are mostly overgrown, with limited exposed rock habitat remaining along the northern boundary (Plate 3-8). This can be classified as **Exposed Calcareous Rock (ER2).**

Spoil and bare ground (ED2), including rubble heaps, was recorded within the quarry (Plate 3-9). The area is actively used for the storage of construction materials.

Areas of **Recolonising Bare Ground (ED3) / Dry Meadows and Grassy Verges (GS2)** were recorded in small patches throughout the site. Stonetown Terrace, to the north of the site, consists of imported materials, primarily from historical works within the Cleeves Factory site, which have recolonised into a low diversity meadow (Plate 3-10). Recolonising bare ground is found along existing paved tracks. These habitats were also encountered to the southeast of the site, in the Shipyard. Species recorded within these areas include Ivy, Nettle, Ragwort, Common marsh bedstraw, Cranesbill, Dandelion (*Taraxacum off. agg.*), Meadow Buttercup (*Ranunculus acris*), Common Vetch (*Vicia sativa ssp. Segetalis*), Common field Speedwell (*Veronica persica*), Red fescue (*Festuca rubra agg),* Coltsfoot (*Tussilago farfara*), Cinquefoil (*Potentilla reptans*), Alder (*Alnus glutinosa*), Goat willow (*Salix caprea*), Ash saplings (*Fraxinus excelsior*), Sorrel (*Rumex acetosa),* Ribwort plantain (*Plantago lanceolata*), and Figwort (*Scrophularia nodosa*) (Plate

3-11). Finally, small areas of dry meadows were recorded within the Salesians, in the school front and back yards. The front yard included a more diverse mix of grasses, including Yorkshire fog (*Holcus lanatus*), cock's foot (*Dactylis glomerata*), false oat grass (*Arrhenatherum elatius*), sweet meadow grass (*Anthoxanthum odoratum*), perennial ryegrass (*Lolium perrene*), red fescue (*Festuca rubra*), creeping bent (*Agrostis stolonifera*) and Italian ryegrass (*Lolium multiflorum*) (Plate 3-11). This patch of grassland was lined along the southern boundary by a short **Hedgerow (WL1)** consisting of an ornamental cypress and hawthorn (*Crataegus monogyna*).

The River Shannon flows adjacent to the site, to the south east, along a short section of the development boundary and is categorised as a **Tidal River (CW2)** (Plate 3-12). This area of the Shannon is mapped as Annex I habitats Estuaries (1130) and Tidal mudflats and sandflats (1140) and is part of the Lower River Shannon SAC. The site does not include any habitats associated with the SAC and is confined to the public infrastructure along the riverfront.

Stone Walls and Other Stone works (BL1) form the boundary walls of the Flaxmill Site and the Shipyard (Plate 3-13). These were built in different phases and have been extensively altered, repointed and fixed through the years.

*Plate 3-1: Main Cleeves factory categorised as **Buildings and Artificial Surfaces (BL3).***

*Plate 3-2: Existing Buildings at Salesians site classified as **Buildings and Artificial Surfaces (BL3)**.*

*Plate 3-3 Existing Buildings on site classified as **Buildings and Artificial Surfaces (BL3)**.*

Plate 3-4: Habitats at the centre of the Cleeves Site seen from the quarry.

*Plate 3-5: **Reservoir (FL8)** habitat within the site, including **tunnels (BL3)** and **surrounding scrub (WS1)** within the centre of the site*

*Plate 3-6: **Scrub (WS1)** habitat bordering the reservoir with species recorded including Ivy, Nettle, Ragwort, Common marsh bedstraw and Cranesbill, with Winter heliotrope, Butterfly bush, and Old man's beard.*

*Plate 3-7: **Spoil and bare ground (ED2),** including rubble heaps recorded to the western parcel of the site, associated with construction activities on site. Overgrown quarry walls visible behind the rubble classified as **Hedgerow (WL1)**.*

Plate 3-8: The Quarry Wall, which is overgrown by Ivy and Old man's Beard, is classified as ***Hedgerow (WL1)*** *due to its linearity wth areas of exposed rock habitat.*

Plate 3-9: ***Spoil and bare ground (ED2),*** *including rubble heaps recorded to the northern parcel of the site, associated with construction activities on site.*

*Plate 3-10: Area of **Recolonising Bare Ground (ED3) / Dry Meadows and Grassy Verges (GS2)** recorded in Stonetown Terrace.*

*Plate 3-11: **Dry Meadows and Grassy Verges (GS2)** recorded at the Salesians, with **Hedgerow (WL1)** to the south.*

Plate 3-12: The River Shannon flowing to the southeast section of the site, outside of the development boundary, categorised as a ***Tidal River (CW2).***

Plate 3-13: ***Stone Walls and Other Stone works (BL1)*** *were recorded on the site in the form of existing boundary stone walls along NCR..*

3.1.2 Wintering Bird Surveys

A summary of all surveys undertaken is presented in Table 3-1. Results of the 2021/2022 wintering bird are presented in Appendix 4

Most of the bird species listed above were recorded outside the Masterplan site, either feeding on the River Shannon or roosting on the riverbank, on the nearby boat ramp and in the water. Non-target species recorded during the surveys along the River Shannon include feral pigeons, grey wagtail, hooded crow, rook, chaffinch, blackbird, goldfinch, magpie and wood pigeon.

No SCI species associated with the River Shannon and Fergus SPA were recorded within the site. Cormorants were the only species associated with the SPA which were observed flying east to west above the site. The site does not provide significant supporting habitat for any SCI species of the River Shannon and Fergus SPA.

Table 3-1 Bird Species Recorded within the Masterplan Site and the area of shoreline within River Shannon and River Fergus Estuaries SPA from 2021-2024.

Species	No.	Date Recorded
Target Species Recorded along the River Shannon *species associated with the River Shannon and River Fergus Estuaries SPA		
Mute Swan (*Cygnus olor)*	• 8	• 15/12/2021
	• 8	• 12/01/2022
	• 8	• 15/02/2022
	• 14	• 14/03/2022
	• 13	• 15/02/2024
	• 2	• 05/11/2024
	• 7	• 04/12/2024
Cormorant (*Phalacrocorax carbo*)*	• 4	• 15/12/2021
	• 15	• 12/01/2022
	• 110	• 15/02/2022
	• 9	• 14/03/2022
	• 6	• 15/02/2024
	• 2	• 05/11/2024
	• 4	• 04/12/2024
Mallard (*Anas platyrhynchos*)	• 6	• 15/12/2021
	• 6	• 12/01/2022
	• 5	• 15/02/2022
	• 11	• 14/03/2022
	• 5	• 15/02/2024
	• 7	• 05/11/2024
	• 15 (1 domestic/hybrid)	• 04/12/2024
Black-headed gull (*Larus ridibundus)* *	• 100	• 15/12/2021
	• 250	• 12/01/2022
	• ~1,250	• 15/02/2022
	• 200	• 14/03/2022
	• 50	• 15/02/2024
	• 50	• 05/11/2024
	• 127	• 04/12/2024
Lesser black-backed gull (*Larus fuscus)*	• 16	• 15/12/2021
	• 6	• 12/01/2022
	• 15	• 15/02/2022
	• 25	• 14/03/2022
Heron (*Ardea cinerea)*	• 4	• 12/01/2022
	• 1	• 05/11/2024
Redshank (*Tringa totanus*)	• 1	• 12/01/2022
Oystercatcher (*Haematopus ostralegus)*	• 19	• 12/01/2022

	• 75	• 15/02/2022
Common gull (*Larus Canus)*	• 2	• 05/11/2024
Herring gull (*Larus argentatus*)	• 3	• 05/11/2024
	• 2	• 04/12/2024
Target Species Recorded Within the Cleeves Masterplan Site		
Cormorant (*Phalacrocorax carbo*) *	• 4 (Flying East to West overhead)	• 15/02/2024
Herring gull (*Larus ridibundus)*	• 1 (Flying overhead)	• 04/12/2024
Black-headed gull (*Larus argentatus*) *	• 1 (Flying overhead)	• 04/12/2024

3.1.3 Potential for Qualifying Interest Species/Habitats

The walkover surveys were designed to detect the presence, or likely presence, of a range of protected species including those qualifying interest (QI) species potentially associated with European sites. A search for signs of otter (spraint, holts, couches, feeding remains) was conducted throughout the Proposed Application Site and along the section of riverbank of the River Shannon directly adjacent to the Proposed Site during the walkover surveys.

The reservoir, located in the centre of the site, provides suitable aquatic habitat for otter, including prey availability, however it is poorly connected to the River Shannon or other more suitable habitats, as it is fully surrounded by an urban network. No signs of otter activity were recorded within the Proposed Application Site during the targeted surveys undertaken.

No evidence of QI species associated with any SAC and no SCI species associated with the River Shannon and Fergus SPAs were recorded within the site. Cormorant and black-headed gull were the only species associated with the SPA which were observed flying above the site. The site does not provide significant supporting habitat for any SCI species of the River Shannon and Fergus SPA. Furthermore, no Annex I habitats were recorded within the site.

3.1.3.1 Invasive Species

A number of invasive species listed on the *First Schedule* of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024) were recorded within the Proposed Application Site boundary. A large, mature stand of Japanese Knotweed (*Reynoutria japonica syn. Fallopia japonica*), located on the northwestern edge of the reservoir, was previously identified in 2021 during a targeted invasive species survey carried out by Invasive Plant Solutions. This stand had been treated and dead canes were visible at the time of survey. An additional invasive species survey was carried out on 05/06/2025 by MKO Ecologists, and new growth was recorded outside the original extent of the infestation. A number of new canes were recorded within a patch of dense bramble and clematis scrub on the steep bank of the reservoir.

Himalayan Knotweed (*Impatiens glandulifera*) was previously identified during the invasive species survey carried out by Invasive Plant Solutions in 2021. A series of healthy Himalayan Knotweed plants were recorded growing in a linear strip of vegetation at the southwestern boundary of the carpark at the Shipyard Site and the pedestrian path which leads up from the northern bank of the River Shannon onto the Condell road above. These plants had been treated and no Himalayan Knotweed was identified during the survey carried out on 05/06/2025.

Various other low and medium impact species, not listed on the *First Schedule* of the European Union (Invasive Alien Species) Regulations 2024 (S.I. 374 of 2024), were recorded, including winter heliotrope (*Petasites pyrenaicus*), butterfly bush (*Buddleja davidii*), wall cotoneaster (*Cotoneaster horizontalis*), and old man's beard (*Clematis vitalba*).

3.2 Local Hydrology and Water Quality

The EPA web-mapper [1] was consulted on the 02/07/25 regarding the water quality and status of waterbodies that are located downstream of the Proposed Application Site. A Water Framework Directive assessment has also been prepared and is provided separately for the application.

The site is located within the Lower Shannon Catchment (hydrometric area number 27). The site of the Proposed Development is located within the Shannon [Lower]_SC_100 hydrological sub-catchment, the North Ballycannan_010 hydrological sub-basin and is also located in the Limerick City Northwest groundwater catchment (IE_SH_G_140). The downstream receiving water body for Limerick Dock is the transitional water body Upper Shannon Estuary (IE_SH_060_0800), while the upstream inputting surface water bodies for Limerick Dock are North_Ballycannan_010 and SHANNON (LOWER)_060. Limerick Dock is the immediate adjacent watercourse to the proposed Project and thus is the primary water body considered.

The River Shannon, considered under the Limerick Dock (IE_SH_060_0900) Transitional Waterbody WFD is classified as "At Risk" (EPA) and has a status of "Poor" (WFD Status 2016-2021). The proposed development is set-back from the river edge and there are no direct, in-channel works or further riverbank modifications. In addition, the proposed development does not propose or require any further alteration to the riverbed, banks or flow regime. There is not likely to be hydromorphological impacts on WFD water bodies as a result of this project

The groundwater waterbody risk is 'Not at risk' and the groundwater status of this catchment is assigned a status of 'Good' in the Water Framework Directive (WFD) groundwater monitoring programme.

The site is hydrologically connected to the Limerick Dock WFD transitional waterbody of the River Shannon. A discharge pipe connects the reservoir on site with an outfall to the River Shannon at Limerick Dock. The Limerick Dock waterbody flows into the Upper Shannon Estuary and also has the potential to impact the upstream Shannon Lower WFD river body due to the tidal nature of the Shannon Estuary. Immediately downstream of the site is the River Shannon and River Fergus Estuaries SPA, a WFD registered SPA with Water Dependent Habitats/Species.

Additionally, the site is adjacent to the Westfields Wetland, which has connectivity to the Limerick Dock transitional waterbody with input from Limerick Dock during high tide. Westfields Wetland is part of the Lower River Shannon SAC (002165), a WFD-registered SAC with Water Dependent Habitats / Species. Westfields serves as a popular local amenity, attracting a diverse range of wildlife, including migrating wildfowl. A spring is located in the Eastern Wetland. The spring is reported to have been used by the Cleeves Factory as a water source until the 1950's when it was capped with a steel plate. However, this is unconfirmed. The wetland is connected to the River Shannon via a pipe that flows into the wetland at high tide and out at low tide. Connectivity of the site itself to the wetland has not been established, but cannot be discounted without further investigation.

[1] *https://gis.epa.ie/EPAMaps/*

4. APPROPRIATE ASSESSMENT SCREENING

4.1 Data Sources Informing the Assessment

In preparation of the report, the below sources were consulted to inform the assessment, and last accessed on 2nd July 2025. Multidisciplinary ecological surveys were also carried out on 15th December 2021, 5th November 2024, 15th February 2024 and 27th March 2025 by MKO Ecologists.

- Review of NPWS Site Synopses, Conservation Objectives for the European Sites
- Review of 2019, 2013 and 2007 EU Habitats Directive (Article 17) Reports.
- Review of online web-mappers: National Parks and Wildlife Service (NPWS), Teagasc, EPA, Water Framework Directive (WFD), Geological Survey of Ireland (GSI), Inland Fisheries Ireland (IFI), Irish Wetland Bird Survey I-WeBS & Geohive online Environmental Sensitivity Mapping tool
- Review of specially requested records from the NPWS Rare and Protected Species Database for the hectads which overlap with the study area.
- Review of Bird Atlases: (Sharrock, 1976; Lack, 1986; Gibbons et al., 1993; Balmer et al., 2013).
- Review of other plans and projects within the area. National Planning Application Map Viewer, Myplan.ie.

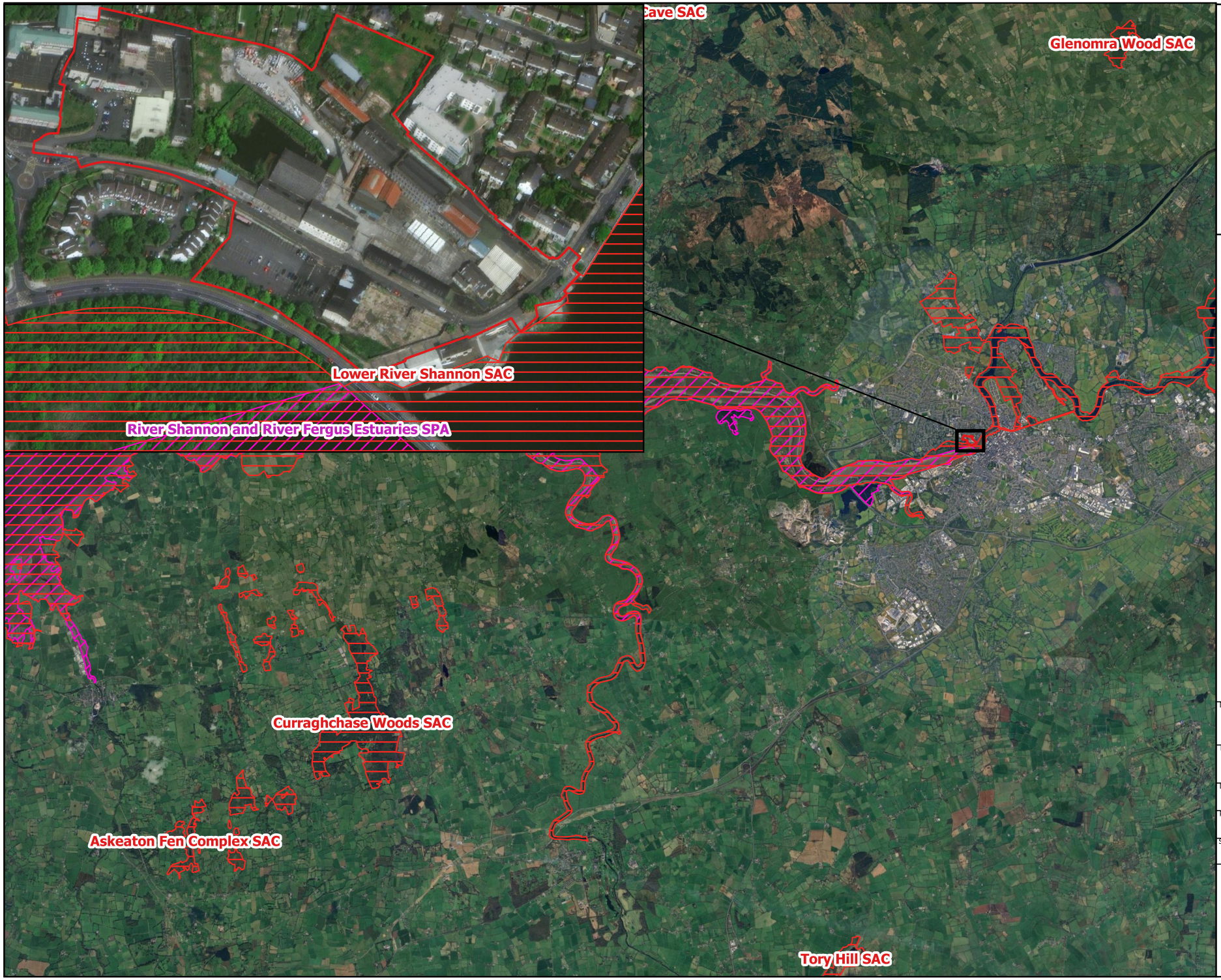
4.2 Identification of the European Sites within the Likely Zone of Influence.

The following methodology was used to establish any European Sites upon which there is a potential for a likely significant effect to occur either individually or in combination with other plans and projects as a result of the proposed development:

- Initially the most up to date GIS spatial datasets for European designated sites and water catchments were downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie) on the 02/07/25.
- All European Sites that could potentially be affected were identified using a source-pathway-receptor model, which examined the potential for effect to occur via pathways including surface water, habitat connectivity and suitability, and disturbance distances. These considerations took into account the nature and scale of the proposed development and the conservation objectives of the European sites. To provide context for the assessment, European Sites surrounding the Application Site are shown on **Figure 4-1**. Information on these sites according to the site-specific conservation objectives is provided in Table 4-1. Sites that were further away from the proposed development were also considered and no complete source-pathway-receptor chain for significant effect was identified for any other European site.
- The catchment mapping was used to establish or discount potential hydrological connectivity between the site of the proposed development and any European Sites. The hydrological catchments are shown in **Figure 4-2**.
- In relation to Special Protection Areas, in the absence of any specific European or Irish guidance in relation to such sites, the Scottish Natural Heritage (SNH) Guidance, '*Assessing Connectivity with Special Protection Areas* (SPA)' (2016) was consulted. This document provides guidance in relation to the identification of connectivity between proposed development and Special Protection Areas. The guidance takes into consideration the distances species may travel beyond the

boundary of their SPAs and provides information on dispersal and foraging ranges of bird species which are frequently encountered when considering plans and projects.

- Table 4-1, provides details of all relevant European Sites as identified in the preceding steps and assesses the potential for likely significant effects on each.
- The assessment considers any potential direct or indirect impacts of the proposed development, both alone and in combination with other plans and projects, on European Sites by virtue of criteria including the following: size and scale, land-take, distance from the European Site or key features of the site, resource requirements, emissions, excavation requirements, transportation requirements and duration of construction, operation and decommissioning were considered in this assessment.
- The site synopses and conservation objectives of these sites, as per the NPWS website (www.npws.ie), were consulted and reviewed at the time of preparing this report 02/07/25.
- Where potential pathways for Likely Significant Effect are identified, the site is included within the Likely Zone of Influence and further assessment is required within the NIS.
- The potential for the proposed development to result in cumulative impacts on any European Sites in combination with other plans and projects was considered in the assessment that is presented in Table 4-1.



Map Legend

- Application Site
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)

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Drawing Title
European Designated Sites within the Likely Zone of Influence

Project Title
Cleeves Riverside Quarter

Drawn By	Checked By
SF	PR
Project No.	Drawing No.
211052-a	Figure 4-1
Scale	Date
1:130,000	15.08.2025

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Map Legend

- Application Site
- WFD Hydrological Catchments
- WFD Hydrological Subcatchments
- WFD River Waterbodies

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Drawing Title: Hydrological Catchments

Project Title: Cleeves Riverside Quarter

Drawn By	Checked By
SF	PR
Project No.	Drawing No.
211052-a	Figure 4-2
Scale	Date
1:30,000	15.08.2025

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Table 4-1 Identification of European Sites within the Likely Zone of Influence

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie.	Conservation Objectives[2]	Identification of Source-Pathway-Receptor chain and potential for Likely Significant Effects (LSE's).
Special Areas of Conservation (SAC)			
Lower River Shannon SAC [002165] **Distance:** 0km (directly adjacent to the Proposed Development Boundary, with minor overlap)	› [1110] Sandbanks which are slightly covered by sea water all the time › [1130] Estuaries › [1140] Mudflats and sandflats not covered by seawater at low tide › [1150] Coastal lagoons › [1160] Large shallow inlets and bays › [1170] Reefs › [1220] Perennial vegetation of stony banks › [1230] Vegetated sea cliffs of the Atlantic and Baltic coasts › [1310] *Salicornia* and other annuals colonising mud and sand › [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) › [1410] Mediterranean salt meadows (*Juncetalia maritimi*) › [3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation › [6410] *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) › [91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) › [1029] *Margaritifera margaritifera* (Freshwater Pearl Mussel) › [1095] *Petromyzon marinus* (Sea Lamprey) › [1096] *Lampetra planeri* (Brook Lamprey)	Detailed, valid, and up to date conservation objectives for this site, (Version 1, August 2012), were reviewed as part of the assessment available online.	Whilst the footprint of the proposed works slightly overlaps with the SAC in one section, no QI habitat or supporting habitat for any QI species for which the SAC has been designated was recorded within this overlap, which is confined to existing artificial surfaces and does not extend into the river or associated habitats. There will be no direct effects on this SAC. The potential for indirect effects was considered. **Habitat Degradation (Surface water):** The Lower River Shannon SAC is located directly adjacent to the Proposed Application Site boundary. Potential for Likely Significant Effects was identified in relation to the deterioration of water quality (and associated indirect effects on QI species) via direct overland run off during construction in the absence of mitigation. A pathway for potential impacts during construction and operation in the absence of mitigation was also identified through the existing reservoir on the site and its direct hydrological connectivity via underground pipes to the River Shannon and

[2] https://www.npws.ie/protected-sites/conservation-management-planning/conservation-objectives

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie.	Conservation Objectives[2]	Identification of Source-Pathway-Receptor chain and potential for Likely Significant Effects (LSE's).
	› [1099] *Lampetra fluviatilis* (River Lamprey) › [1106] *Salmo salar* (Salmon) › [1349] *Tursiops truncatus* (Common Bottlenose Dolphin) › [1355] *Lutra lutra* (Otter)		potentially Westfield wetlands, which are both part of the SAC. The potential for indirect effects as a result of flooding of sections of the site was also identified. Potential for likely significant effects on surface waters within the SAC during operation as a result of the production of foul sewage was considered. However, it is noted that Uisce Eireann have issued a confirmation of feasibility in respect of the project and as such it is considered that the public treatment system has adequate capacity and capability to accommodate any arisings from the proposed development. Therefore, there is no potential for the foul sewage arising from the proposed development to result in Likely Significant Effects on the Lower River Shannon SAC. **Habitat Degradation (Groundwater):** The Lower River Shannon SAC is located within the same ground water body as the Proposed Development (Limerick City Northwest: IE_SH_G_140). Taking a precautionary approach, there is potential for impacts on this SAC through a deterioration in groundwater quality during construction if groundwater was encountered during excavation works. **Disturbance:** The potential for disturbance to otter associated with the SAC was considered. Although no signs of otter on the Proposed Development Site were recorded, otter are known to use the River

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie.	Conservation Objectives[2]	Identification of Source-Pathway-Receptor chain and potential for Likely Significant Effects (LSE's).
			Shannon for commuting and foraging, which runs adjacent to the application site. Works on the Riverfront have the potential to disturb otter during the construction phase of the Proposed Development. **Potential for likely significant effects on this European site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, further assessment required.**
Glenomra Wood SAC [001013] **Distance:** 10.46 km	› [91A0] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles	Detailed, valid, and up to date conservation objectives for this site, (Version 1, June 2018), were reviewed as part of the assessment.	There will be no direct effects on this SAC as the Proposed Development site is located entirely outside the European site. The SAC is designated for a terrestrial QI habitat. There is no potential for indirect effects on this QI habitat due to the terrestrial nature of the QI, and the intervening distance from the proposed development. An absence of a complete source-pathway-receptor chain as a result of the proposed development was identified. No further assessment is required. **No potential for likely significant effects on this European site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects, and the site is not considered further.**

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie.	Conservation Objectives[2]	Identification of Source-Pathway-Receptor chain and potential for Likely Significant Effects (LSE's).
Tory Hill SAC [000439] **Distance:** 13.30 km	› [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) › [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* › [7230] Alkaline fens	Detailed, valid, and up to date conservation objectives for this site, (Version 1, August 2018), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects on this SAC as the Proposed Application Site is located entirely outside the European site. There is no surface water connectivity between the Proposed Application Site and this SAC. Further, the Proposed Application Site is also underlain by a different groundwater body than this SAC. As such, due to the distance of approx. 13.30 km, and the lack of a hydrological connection, there is no potential for indirect impacts in the form of water/ habitat deterioration to the aquatic or groundwater influenced QI habitats and species associated with this SAC. **No potential for likely significant effects on this European site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects, and the site is not considered further.**
Special Protection Area (SPA)			
River Shannon and River Fergus Estuaries SPA	› [A017] Cormorant (*Phalacrocorax carbo)* › [A038] Whooper Swan (*Cygnus cygnus*) › [A046] Light-bellied Brent Goose (*Branta bernicla hrota*) › [A048] Shelduck (*Tadorna tadorna*) › [A050] Wigeon (*Anas penelope*) › [A052] Teal (*Anas crecca*)	Detailed, valid, and up to date conservation objectives for this site, (Version 1, September 2012), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects as the project footprint is located entirely outside the European site. The potential for indirect effects was considered.

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie.	Conservation Objectives[2]	Identification of Source-Pathway-Receptor chain and potential for Likely Significant Effects (LSE's).
Distance: 18.35 m	› [A054] Pintail (*Anas acuta*) › [A056] Shoveler (*Anas clypeata)* › [A062] Scaup (*Aythya marila*) › [A137] Ringed Plover (*Charadrius hiaticula*) › [A140] Golden Plover (*Pluvialis apricaria*) › [A141] Grey Plover (*Pluvialis squatarola)* › [A142] Lapwing (*Vanellus vanellus*) › [A143] Knot (*Calidris canutus*) › [A149] Dunlin (*Calidris alpina*) › [A156] Black-tailed Godwit (*Limosa limosa*) › [A157] Bar-tailed Godwit (*Limosa lapponica*) › [A160] Curlew (*Numenius arquata*) › [A162] Redshank (*Tringa totanus*) › [A164] Greenshank (*Tringa nebularia*) › [A179] Black-headed Gull (*Chroicocephalus ridibundus*) › [A999] Wetland and Waterbirds		**Habitat Loss/ loss of supporting habitat:** No significant supporting habitat was identified within the Proposed Application Site, as such no potential for significant ex situ effects was found. There will be no loss of habitat with the potential to support SCI species. **Habitat Degradation (Surface water**): River Shannon and River Fergus Estuaries SPA is located approximately 18.35m from the Proposed Application Site boundary. Potential for Likely Significant Effects was identified in relation to the deterioration of water quality (and associated indirect effects on QI species) via direct overland run off during construction in the absence of mitigation. A pathway for potential impacts during construction and operation in the absence of mitigation was also identified through the existing reservoir on the site and its direct hydrological connectivity via underground pipes to the River Shannon and potentially Westfield wetlands, which are both part of the SPA. The potential for indirect effects as a result of flooding of sections of the site was also identified. Potential for likely significant effects on surface waters within the SPA during operation as a result of the production of foul sewage was considered. However, it is noted that Uisce Eireann have issued a confirmation of feasibility in respect of the project

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie.	Conservation Objectives[2]	Identification of Source-Pathway-Receptor chain and potential for Likely Significant Effects (LSE's).
			and as such it is considered that the public treatment system has adequate capacity and capability to accommodate any arisings from the proposed development. Therefore there is no potential for the foul sewage arising from the proposed development to result in Likely Significant Effects on the SPA. **Habitat Degradation (Groundwater):** The River Shannon and River Fergus Estuaries SPA is located within the same ground water body as the Proposed Development (Limerick City Northwest: IE_SH_G_140). Taking a precautionary approach, there is potential for impacts on this SPA through a deterioration in groundwater quality during construction if groundwater was encountered during excavation works. **Collision:** The proposed development relates to the construction of high-rise apartment buildings in proximity to the SPA, as such potential effects related to collision of SCI during operation was considered. However, the extensive bird surveys that were undertaken, did not identify the Cleeves site being on a regular or important flightpath for any bird species, with only one SCI species recorded flying high overhead. In addition, when presented with an obstacle in the landscape, birds will take evasive action to avoid a collision. A prominent, large, stationary object like the proposed development is predicted to pose a negligible risk of collision and

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie.	Conservation Objectives[2]	Identification of Source-Pathway-Receptor chain and potential for Likely Significant Effects (LSE's).
			given the low levels of avian activity on the site, likely significant effects are not anticipated. **Disturbance:** The potential for disturbance to SCI species was considered. Birds associated with the SPA were recorded along the River Shannon, which runs adjacent to the application site, however none were recorded using the application site. Construction works on the riverfront have the potential to disturb the bird assemblages associated with the River Shannon, including birds associated with the SPA. However, it should be taken into account that the riverfront site is located in the middle of Limerick City and is already subject to high levels of human activity. The majority of the species associated to the SPA recorded during the surveys undertaken were limited to species usually associated with urban environments (e.g. mute swan, mallard, cormorant, black-headed gulls). **Potential for likely significant effects on this European site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects. Therefore, further assessment required.**

4.3 Stage 1 Appropriate Assessment Screening Conclusion

It cannot be excluded beyond reasonable scientific doubt, in view of best scientific knowledge, on the basis of objective information and in light of the conservation objectives of the relevant European sites, that the Proposed Development, individually or in-combination with other plans and projects, would be likely to have a significant effect on the following European sites:

- Lower River Shannon SAC [002165]
- River Shannon and River Fergus Estuaries SPA [004077]

As a result, an Appropriate Assessment (AA) of the Proposed Development is required. Information to enable the Competent Authority to carry out an AA of the Proposed Development is presented in Sections 5 – 9 of this report.

5. INFORMATION TO INFORM APPROPRIATE ASSESSMENT

The potential for likely significant effects on the following European Sites in the absence of any mitigation, individually or in-combination with other plans or projects, was identified in the preceding section:

- Lower River Shannon SAC [002165]
- River Shannon and River Fergus Estuaries SPA [004077]

The following sections consider these European Sites further to:

1. Determine which individual qualifying features have the potential to be adversely affected by the Proposed Development.
2. Provide information with regard to the Conservation Objectives and site-specific pressures and threats for those qualifying features that have the potential to be adversely affected.

5.1 Identification of relevant Qualifying Interests and Special Conservation Interests

5.1.1 Lower River Shannon SAC [002165]

The potential for impacts on this SAC were identified in Section 4.3 above. The identified pathways for effect include the following:

- Deterioration of water quality and habitat degradation on the aquatic qualifying interest (QI) habitats associated with the Lower River Shannon SAC arising from run-off or percolation of pollutants to surface and/or groundwater during the construction and operational phases of the Proposed Development.
- Disturbance to the QI species, Otter (*Lutra lutra*).

Table 5-1 below lists the Qualifying Interests of this European Site and determines, in the light of their Conservation Objectives, whether there is any complete source-pathway-receptor chain, by which adverse effects may occur.

5.1.1.1 Identification of Individual Qualifying Interests with the Potential to be Affected

Table 5-1 Assessment of Qualifying interest s potentially affected.

Qualifying interest	Valid and Up to Date Conservation Objective (NPWS, Version 1.0, August 2012[3])	Rationale	Potential for Adverse Effects Y/N
› [1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*)	To restore the favourable conservation condition of Freshwater	The only *Margaritifera margaritifera* recorded and suitable Habitat within this SAC is along the Cloon River, which flows into the Shannon Estuary - and is not hydrologically connected to the site of the Proposed Development. Therefore, there is no downstream connectivity	**No**

[4]*NPWS (2012) Conservation Objectives Lower River Shannon SAC 002165. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.*

Qualifying interest	Valid and Up to Date Conservation Objective (NPWS, Version 1.0, August 2012[3])	Rationale	Potential for Adverse Effects Y/N
	Pearl Mussel in the Lower River Shannon SAC.	between the Proposed Development and this QI. There is no potential for indirect effects on this QI habitat. **No complete source- pathway- receptor chain for any effect on this habitat as a result of the proposed development was identified. No further assessment is required.**	
› [1095] Sea Lamprey (*Petromyzon marinus*)	To restore the favourable conservation condition of Sea Lamprey in the Lower River Shannon SAC.	There is a potential pathway for indirect effects on the aquatic dependent QI including Sea lamprey associated with construction and operation of the Proposed Development in the form of deterioration of water quality if pollutants and sediment laden run-off from the site discharged into this SAC. This pollution may adversely impact this aquatic QI species in the absence of mitigation. **A complete source-pathway-receptor chain for adverse effects on this QI species was identified and it is assessed further in this NIS**	**Yes**
› [1096] Brook Lamprey (*Lampetra planeri*)	To maintain the favourable conservation condition of Brook Lamprey in the Lower River Shannon SAC.	There is a potential pathway for indirect effects on the aquatic dependent QI including Brook lamprey associated with construction and operation of the Proposed Development in the form of deterioration of water quality if pollutants and sediment laden run-off from the site discharged into this SAC. This pollution may adversely impact this aquatic QI species in the absence of mitigation. **A complete source-pathway-receptor chain for adverse effects on this QI species was identified and it is assessed further in this NIS**	**Yes**

Qualifying interest	Valid and Up to Date Conservation Objective (NPWS, Version 1.0, August 2012[3])	Rationale	Potential for Adverse Effects Y/N
› [1099] River Lamprey (*Lampetra fluviatilis*)	To maintain the favourable conservation condition of River Lamprey in the Lower River Shannon SAC.	There is a potential pathway for indirect effects on the aquatic dependent QI including River lamprey associated with construction and operation of the Proposed Development in the form of deterioration of water quality if pollutants and sediment laden run-off from the site discharged into this SAC. This pollution may adversely impact this aquatic QI species in the absence of mitigation. **A complete source-pathway-receptor chain for adverse effects on this QI species was identified and it is assessed further in this NIS**	**Yes**
› [1106] Atlantic Salmon (*Salmo salar*) (only in fresh water)	To restore the favourable conservation condition of Salmon in the Lower River Shannon SAC.	There is a potential pathway for indirect effects on the aquatic dependent QI including Atlantic Salmon associated with construction and operation of the Proposed Development in the form of deterioration of water quality if pollutants and sediment laden run-off from the site discharged into this SAC. This pollution may adversely impact this aquatic QI species in the absence of mitigation. **A complete source-pathway-receptor chain for adverse effects on this QI species was identified and it is assessed further in this NIS**	**Yes**
› [1110] Sandbanks which are slightly covered by sea water all the time	To maintain the favourable conservation condition of Sandbanks which are slightly covered by sea water all the time in the Lower River Shannon SAC.	There is no potential for indirect effects on this QI habitat: Sandbanks which are slightly covered by seawater all the time. This habitat is situated at the mouth of the River Shannon and is over 80km from the project site. Development would not have the potential to undermine any of the conservation objectives for this QI habitat given nature, scale and location of the Proposed Development (separation distance of over 80km) along with the attenuating and diluting property of the intervening waterbody.	**No**

Qualifying interest	Valid and Up to Date Conservation Objective (NPWS, Version 1.0, August 2012[3])	Rationale	Potential for Adverse Effects Y/N
		No complete source- pathway- receptor chain for any effect on this habitat as a result of the proposed development was identified. No further assessment is required.	
› [1130] Estuaries	To maintain the favourable conservation condition of Estuaries in the Lower River Shannon SAC.	There is potential for indirect effects on this QI habitat as it is an aquatically influenced habitat which could be impacted by the deterioration of water quality, if pollutants and sediment laden run-off from the Proposed Development enter the aquatic environment. This pollution may adversely impact this aquatic habitat in the absence of mitigation. **A complete source-pathway-receptor chain for adverse effects on this habitat as a result of the proposed development was identified and it is assessed further in this NIS.**	**Yes**
› [1140] Mudflats and sandflats not covered by seawater at low tide	To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in the Lower River Shannon SAC.	The Proposed Application Site is directly adjacent to an area of mapped Mudflats and sandflats habitat. Therefore, a hydrological connection exists between this QI habitat and the Proposed Application Site. There is potential for indirect effects on this QI habitat as it is an aquatically influenced habitat which could be impacted by the deterioration of water quality, if pollutants and sediment laden run-off from the Proposed Development enter the aquatic environment. This pollution may adversely impact this aquatic habitat in the absence of mitigation. **A complete source-pathway-receptor chain for adverse effects on this habitat as a result of the proposed development was identified and it is assessed further in this NIS.**	**Yes**
› [1150] Coastal lagoons	To restore the favourable conservation condition of Coastal	The Proposed Application Site although hydrologically linked to the SAC, has a weak hydrological connection to this QI habitat which is located over >50km downstream of the Proposed Application Site, any changes in water quality as a result of the Proposed	**No**

Qualifying interest	Valid and Up to Date Conservation Objective (NPWS, Version 1.0, August 2012[3])	Rationale	Potential for Adverse Effects Y/N
	lagoons in the Lower River Shannon SAC.	Development would not have the potential to undermine any of the conservation objectives for this QI habitat given nature, scale and location of the Proposed Development (separation distance of over >50km) along with the attenuating and diluting property of the intervening waterbody. **No potential for adverse effects was identified. No further assessment is required.**	
› [1160] Large shallow inlets and bays	To maintain the favourable conservation condition of Large shallow inlets and bays in the Lower River Shannon SAC.	The Proposed Application Site although hydrologically linked to the SAC, has a weak hydrological connection to this QI habitat which is located over >50km downstream of the Proposed Application Site, any changes in water quality as a result of the Proposed Development would not have the potential to undermine any of the conservation objectives for this QI habitat given nature, scale and location of the Proposed Development (separation distance of over >50km) along with the attenuating and diluting property of the intervening waterbody. **No potential for adverse effects was identified. No further assessment is required.**	**No**
› [1170] Reefs	To maintain the favourable conservation condition of Reefs in the Lower River Shannon SAC.	The Proposed Application Site although hydrologically linked to the SAC, has a weak hydrological connection to this QI habitat which is located over >50km downstream of the Proposed Application Site, any changes in water quality as a result of the Proposed Development would not have the potential to undermine any of the conservation objectives for this QI habitat given nature, scale and location of the Proposed Development (separation distance of over >50km) along with the attenuating and diluting property of the intervening waterbody. **No potential for adverse effects was identified. No further assessment is required.**	**No**
› [1220] Perennial vegetation of stony banks	To maintain the favourable conservation condition of Perennial	There is no potential for indirect effects on this QI habitat due to the terrestrial nature of the QI, and the absence of a complete source-pathway-receptor chain.	**No**

Qualifying interest	Valid and Up to Date Conservation Objective (NPWS, Version 1.0, August 2012[3])	Rationale	Potential for Adverse Effects Y/N
	vegetation of stony banks in the Lower River Shannon SAC.	**No complete source- pathway- receptor chain for any effect on this habitat as a result of the proposed development was identified. No further assessment is required.**	
› [1230] Vegetated sea cliffs of the Atlantic and Baltic coasts	To maintain the favourable conservation condition of Vegetated sea cliffs in the Lower River Shannon SAC.	There is no potential for indirect effects on this QI habitat due to the terrestrial nature of the QI, and the absence of a complete source-pathway-receptor chain. **No complete source- pathway- receptor chain for any effect on this habitat as a result of the proposed development was identified. No further assessment is required.**	**No**
› [1310] *Salicornia* and other annuals colonizing mud and sand	To maintain the favourable conservation condition of Salicornia and other annuals colonizing mud and sand in the Lower River Shannon SAC.	There is no potential for indirect effects on this QI habitat due to the terrestrial nature of the QI, and the absence of a complete source-pathway-receptor chain. **No complete source- pathway- receptor chain for any effect on this habitat as a result of the proposed development was identified. No further assessment is required.**	**No**
› [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	To restore the favourable conservation condition of Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) in the Lower River Shannon SAC.	The Proposed Application Site although hydrologically linked to the SAC, has a weak hydrological connection to this QI habitat which is located over >50km downstream of the Proposed Application Site, any changes in water quality as a result of the Proposed Development would not have the potential to undermine any of the conservation objectives for this QI habitat given nature, scale and location of the Proposed Development (separation distance of over >50km) along with the attenuating and diluting property of the intervening waterbody. **No potential for adverse effects was identified. No further assessment is required.**	**No**
› [1349] Bottlenose Dolphin(*Tursiops truncates*)	To maintain the favourable conservation condition of Bottlenose	There is a potential pathway for indirect effects on the aquatic dependent QI including Bottlenose Dolphin associated with construction and operation of the Proposed Development	**Yes**

Qualifying interest	Valid and Up to Date Conservation Objective (NPWS, Version 1.0, August 2012[3])	Rationale	Potential for Adverse Effects Y/N
	Dolphin in the Lower River Shannon SAC.	in the form of deterioration of water quality if pollutants and sediment laden run-off from the site discharged into this SAC. This pollution may adversely impact this aquatic QI species in the absence of mitigation. **A complete source-pathway-receptor chain for adverse effects on this QI species was identified and it is assessed further in this NIS**	
› [1355] Otter (*Lutra lutra*)	To restore the favourable conservation condition of Otter in the Lower River Shannon SAC.	There is a potential pathway for indirect effects on the supporting habitat for Otter, in the form of deterioration of water quality, if pollutants and sediment laden run-off from the development enter the aquatic environment. This pollution may adversely impact this aquatic QI species in the absence of mitigation. There is also a potential for adverse effects on otter via disturbance as a result of the Proposed Development, as the site is located adjacent to the River Shannon. **A complete source-pathway-receptor chain for adverse effects on this QI species was identified and it is assessed further in this NIS.**	**Yes**
› [1410] Mediterranean salt meadows (*Juncetalia maritimi*)	To restore the favourable conservation condition of Mediterranean salt meadows (*Juncetalia maritimi*) in the Lower River Shannon SAC.	The Proposed Application Site although hydrologically linked to the SAC, has a weak hydrological connection to this QI habitat which is located over >50km downstream of the Proposed Application Site, any changes in water quality as a result of the Proposed Development would not have the potential to undermine any of the conservation objectives for this QI habitat given nature, scale and location of the Proposed Development (separation distance of over >50km) along with the attenuating and diluting property of the intervening waterbody.	**No**

Qualifying interest	Valid and Up to Date Conservation Objective (NPWS, Version 1.0, August 2012[3])	Rationale	Potential for Adverse Effects Y/N
		No potential for adverse effects was identified. No further assessment is required.	
› [3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	To maintain the favourable conservation condition of Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation in the Lower River Shannon SAC.	An area of this QI Habitat type is mapped from the proposed Development Site. Therefore, a potential pathway for adverse indirect effects on this aquatic QI habitat exists via the deterioration of water quality and habitat degradation arising from run-off or percolation of pollutants to surface and/or ground water during the construction and operational phases of the Proposed Development. This pollution may adversely impact this aquatic habitat in the absence of mitigation. **A complete source-pathway-receptor chain for adverse effects on this habitat as a result of the proposed development was identified and it is assessed further in this NIS.**	**Yes**
› [6410] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)	To maintain the favourable conservation condition of Molinia meadows on calcareous, peaty or clayey-silt laden soils (*Molinion caeruleae*) in the Lower River Shannon SAC.	There is no potential for indirect effects on this QI habitat due to the terrestrial nature of the QI, and the absence of a complete source-pathway-receptor chain. **No complete source- pathway- receptor chain for any effect on this habitat as a result of the proposed development was identified. No further assessment is required.**	**No**
› [91E0] *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)	To restore the favourable conservation condition of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) in the Lower River Shannon SAC.	This QI habitat is located upstream of the Proposed Application Site. Therefore, there is no potential for indirect effects on this QI habitat. No complete source- pathway- receptor chain for any effect on this habitat as a result of the proposed development was identified **No complete source- pathway- receptor chain for any effect on this habitat as a result of the proposed development was identified. No further assessment is required.**	**No**

5.1.1.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to impact on the European Site were reviewed and considered in relation to the Proposed Development. These are provided in the table below.

Table 5-2 Site-specific threats, pressures and activities

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
Medium	E01	Urbanised areas, human habitation	Outside
Medium	K02.03	Eutrophication (natural)	Outside
Medium	J02.01.02	Reclamation of land from sea, estuary or marsh	Outside
Low	C01.01.02	Removal of beach material	Inside
Low	F01	Marine and freshwater aquaculture	Inside
Medium	E03	Discharges	Outside
Medium	E03	Discharges	Inside
Low	J02.10	Management of aquatic and bank vegetation for drainage purposes	Inside
Medium	A08	Fertilisation	Outside
Medium	H04	Air pollution, air-borne pollutants	Outside
Medium	A08	Fertilisation	Inside
Low	F03.01	Hunting	Inside
Medium	A04	Grazing	Inside
Low	B	Sylviculture, forestry	Inside
Low	J02.12.01	Sea defense or coast protection works, tidal barrages	Inside
Low	G01.01	Nautical sports	Inside
Medium	J02.01.01	Polderisation	Inside
Low	D01.01	Paths, tracks, cycling tracks	Inside
Low	C01.03.01	Hand cutting of peat	Inside
Low	I01	Invasive non-native species	Inside

Potential pathways for effect with regard to site-specific threats, pressures and activities have been identified in relation to 'Discharges'.

5.1.1.3 QI Species Specific Information

5.1.1.3.1 *Sea Lamprey (Petromyzon marinus)*

According to the site-specific conservation objectives, adult sea lamprey at sea as external parasites on host fish or marine mammals grow in length from 60 to 100 cm before migrating in spring into freshwater to excavate redds or spawning nests in gravelled areas of large rivers. Artificial barriers can block lampreys' upstream migration, such as is present in the upper extent of the SAC including at River Fergus, Mulkear and Feale. Lampreys require clean gravels to spawn. However, despite observed spawning activity, sampling for ammocoetes consistently fails to find these in many sampling stations. The sea lamprey is listed in the most recent Irish Red Data Book as Near Threatened. This assessment was primarily based on (a) the limited access to freshwater due to impassable anthropogenic barriers in the lower reaches of numerous large rivers and (b) the very limited degree to which juvenile sea Lamprey were occurring in catchment-wide surveys in systems where spawning was known to occur. The low level of occurrence may be due to profligacy in spawning, with reports indicating up to 75% of gametes lost or washed out of the spawning nest, or due to competition for occupancy of sedimented areas by already-resident brook and/or river lamprey. Barriers to upstream migration (e.g. weirs), which limit access to spawning beds and juvenile habitat, are considered the major impediment to good conservation status for sea lamprey. According to the Article 17 Report (NPWS 2019), the conservation status for Sea Lamprey has been assessed as 'Bad' and the conservation trend as 'Stable'.

Targets and Attributes

Table 5-4 Targets and attributes associated with the conservation objective for Sea Lamprey

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Distribution: extent of anadromy	Greater than 75% of main stem length of rivers accessible from estuary	No (Proposed Project will not result in any barriers to movement)
Population structure of juveniles	At least three age/size groups present	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Juvenile density in fine sediment	Juvenile density at least 1/m²	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Availability of juvenile habitat	More than 50% of sample sites positive	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.1.3.2 *Brook Lamprey (Lampetra planeri)*

According to the site-specific conservation objectives, the brook lamprey (*Lampetra planeri*) is the smallest of the three lampreys recorded in Ireland, typically reaching no more than 15-18cm in length. Unlike the sea lamprey (*Petromyzon marinus*) and the river lamprey (*Lampetra fluviatilis*), the brook

lamprey is non-parasitic and non-migratory as an adult, living its entire life in freshwater. Adults spawn in spring, excavating shallow nests in relatively small-sized gravels in areas of reduced flow. After hatching, the larvae ('ammocoetes') drift or swim downstream to areas of riverbed or margins with fine silt deposits. Juveniles burrow in areas of fine sediment in still water. They burrow into this substrate and live as filter feeders over a period of years before transforming into young adult fish. For brook lamprey in Ireland there are extensive areas of suitable habitat and no significant pressures impacting this species. According to the Article 17 Report (NPWS 2019), the conservation status for Brook Lamprey has been assessed as 'Favourable' and the conservation trend as 'Stable'.

Targets and Attributes

Table 5-52 Targets and attributes associated with the conservation objective for Brook Lamprey

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Distribution	Access to all water courses down to first order streams	No (Proposed Project will not result in any barriers to movement)
Population structure of juveniles	At least three age/size groups of brook/river lamprey present	**Yes -** deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Juvenile density in fine sediment	Mean catchment juvenile density of brook/river lamprey at least 2/m²	**Yes -** deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	**Yes -** deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Availability of juvenile habitat	More than 50% of sample sites positive	**Yes -** deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.1.3.3 *River lamprey (Lampetra fluviatilis)*

According to the site-specific conservation objectives, the river lamprey (*Lampetra fluviatilis*) breeds in freshwater rivers and streams. Adults spawn in spring, excavating shallow nests in riverine sections comprising fine gravels and small stones. After hatching, the larvae or 'ammocoetes' drift or swim downstream to areas of river bed or margins with fine silt deposits. They burrow into this bed material where they live as filter feeders over a period of years before transforming into young adult fish and migrating downriver to estuarine and marine habitats. For adults and juveniles there are extensive areas of suitable habitat; however the presence of barriers to migration within river systems can, depending on timing of arrival and flow conditions, undoubtedly influence their distribution. The inability to distinguish between *L. fluviatilis* and *L. planeri* larvae, and the challenges associated with sampling for adult river lamprey, means that an evaluation of their actual range and population size cannot be undertaken and status has been assessed as unknown for the current reporting period. However, this knowledge gap is not expected to affect the robustness of the assessment in relation to the proposed development.

Targets and Attributes

Table 5-63 Targets and attributes associated with the conservation objective for River Lamprey

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Distribution	Access to all water courses down to first order streams	No (Proposed Project will not result in any barriers to movement)
Population structure of juveniles	At least three age/size groups of brook/river lamprey present	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Juvenile density in fine sediment	Mean catchment juvenile density of brook/river lamprey at least 2/m²	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Availability of juvenile habitat	More than 50% of sample sites positive	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.1.3.4 *Atlantic Salmon (Salmo salar)*

According to the site-specific conservation objectives, artificial barriers block salmons' upstream migration, thereby limiting the species to lower stretches and restricting access to spawning areas. The large hyrdo-electric station at Ardnacrusha and the Parteen regulating weir present considerable obstructions to upstream passage of salmon on the Shannon main channel. While both have fish passes installed, upstream migration of salmon is still problematical. Further weirs upstream on the Shannon also restrict access to spawning habitat. No such obstacles, causing significant fish passage issues for salmon are present on the Feale and Mulkear rivers. Salmon spawn in clean gravels. Artificial barriers are currently preventing salmon from accessing suitable spawning habitat on the Shannon main channel. It is a target of the conservation objective for Salmon in the Lower River Shannon SAC to attain a water quality status of Q4 at all EPA sampling sites. According to the Article 17 Report (NPWS 2019), the conservation status for Atlantic Salmon has been assessed as 'Inadequate' and the conservation trend as 'Stable'.

Targets and Attributes

Table 5-7 Targets and attributes associated with the conservation objective for Atlantic Salmon

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Distribution: extent of anadromy	100% of river channels down to second order accessible from estuary	No (Proposed Project will not result in any barriers to movement)

Adult spawning fish	Conservation Limit (CL) for each system consistently exceeded	**Yes -** deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Salmon fry abundance	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value.	**Yes -** deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Out-migrating smolt abundance	No significant decline	**Yes -** deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Number and distribution of redds	No decline in number and distribution of spawning redds due to anthropogenic causes	**Yes -** deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Water quality	At least Q4 at all sites sampled by EPA	**Yes -** deterioration in water as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.1.3.5 *Bottlenose Dolphin (Tursiops truncates)*

According to the site-specific conservation objectives for Bottlenose Dolphin species range within the site should not be restricted by artificial barriers, and critical areas representing habitat used preferentially by Bottlenose Dolphin should be maintained in natural condition. According to the Article 17 Report (NPWS 2019), the conservation status has been assessed as 'Favourable' and the conservation trend as 'Stable'.

Targets and Attributes

Table 5-8 Targets and attributes associated with the conservation objective for Bottlenose Dolphin

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Access to suitable habitat	Species range within the site should not be restricted by artificial barriers to site use. See map 16 for suitable habitat	No (barriers to access of suitable habitat as a result of the Proposed Development will not occur)
Habitat use: critical areas	Critical areas, representing habitat used preferentially by bottlenose dolphin, should be maintained in a natural condition	**Yes -** deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target (reduced prey availability)
Disturbance	Human activities should occur at levels that do not adversely affect the bottlenose dolphin population at the site	No (no significant disturbance as a result of the Proposed Development will occur)

5.1.1.3.6 *Otter (Lutra lutra)*

The conservation objective for this QI is:

'To restore the favourable conservation condition of Otter in the Lower River Shannon SAC, which is defined by the following list of attributes and targets:'

According to the Article 17 Report (NPWS 2019), the conservation status has been assessed as 'Favourable' and the conservation trend as 'Improving'.

Targets and Attributes

Table 5-94 Targets and attributes associated with the conservation objective for Otter

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Distribution	No significant decline	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target (reduced prey availability)
Extent of terrestrial habitat	No significant decline.	No (Proposed Project will not result in any reduction in otter habitat)
Extent of marine habitat	No significant decline.	No (Proposed Project will not result in any reduction in otter habitat)
Extent of freshwater (river) habitat	No significant decline.	No (Proposed Project will not result in any reduction in otter habitat)
Extent of freshwater (lake/lagoon) habitat	No significant decline.	No (Proposed Project will not result in any reduction in otter habitat)
Couching sites and holts	No significant decline.	No (Proposed Project will not result in any loss of couching or resting sites)
Fish biomass available	No significant decline.	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target (reduced prey availability)
Barriers to connectivity	No significant increase.	No (Proposed Project will not result in any barriers to connectivity)

5.1.1.3.7 *Estuaries*

According to the Site-Specific Conservation Objectives, the area of this habitat within the SAC was calculated at 24,273ha. According to the Article 17 Report (NPWS 2019), an estuary is the downstream part of a river valley, subject to the tide and extending from the limit of brackish waters. River estuaries are coastal inlets where, unlike 'Large shallow inlets and bays', there is generally a significant freshwater influence. According to the Article 17 Report (NPWS 2019), the conservation status has been assessed as 'Inadequate' and the conservation trend as 'Deteriorating'.

Targets and attributes

Table 5-11 Targets and attributes associated with the conservation objective for Estuaries

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Habitat area	The permanent habitat area is stable or increasing, subject to natural processes.	No (Proposed Project will not result in any change to habitat area)
Community distribution	Conserve the following community types in a natural condition: Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex; Estuarine subtidal muddy sand to mixed sediment with gammarids community complex; Subtidal sand to mixed sediment with *Nucula nucleus* community complex; Subtidal sand to mixed sediment with *Nephtys* spp. community complex; Fucoid-dominated intertidal reef community complex; Faunal turf-dominated subtidal reef community; and Anemone-dominated subtidal reef community.	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.1.3.8 *Mudflats and sandflats not covered by seawater at low tide*

According to the Site-Specific Conservation Objectives, the habitat area within the SAC has been mapped at 8,808ha. According to the Article 17 Report (NPWS 2019), over-enrichment of large shallow inlets and bays as a result of agricultural intensification, wastewater discharge, commercial forestry and aquaculture, alone and in combination, appear to be the most significant pressures acting on Mudflats and sandflats not covered by seawater at low tide. The overall Conservation Status for this species is 'Inadequate' and the overall Conservation Trend is 'Deteriorating'.

Targets and Attributes

Table 5-12 Targets and attributes associated with the conservation objective for Mudflats and sandflats not covered by seawater at low tide

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Habitat area	The permanent habitat area is stable or increasing, subject to natural processes.	No (Proposed Project will not result in any change to habitat area)
Community distribution	Conserve the following community types in a natural condition: Intertidal sand with *Scolelepis squamata* and *Pontocrates* spp. community; and Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex.	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.1.3.9 *Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation*

According to the Site-Specific Conservation Objectives, three sub-types of high conservation value are known to occur in the site. Although many of the high-conservation- value sub-types are dominated by coarse substrata, for certain sub-types, notably triangular club-rush (*Schoenoplectus triqueter*) and opposite-leaved pondweed (*Groenlandia densa*), fine substrata are required. According to the NPWS Article 17 Report, the habitat has a broad definition, covering from upland, flashy, oligotrophic, bryophyte- and algal-dominated rivers, to tidal reaches dominated by higher plants. In Ireland, the highest conservation interest is associated with lowland depositing and tidal rivers and unmodified, fast-flowing, low-nutrient rivers. Crow-footed dominated reaches typically have low species diversity and generally indicates poor condition and damage. The main problems for river habitats in Ireland are damage through hydrological and morphological change, eutrophication and other water pollution. Agriculture and municipal and industrial discharges are the most significant sources of nutrient and organic pollution. The overall Conservation Status for this habitat is 'Inadequate' and the Conservation Trend is 'Deteriorating'.

Targets and Attributes

Table 5-185 Targets and attributes associated with the conservation objective for Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation

Attribute	Target	Potential for Proposed Project to Undermine Conservation Objective Target
Habitat area	Area stable or increasing, subject to natural processes	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Habitat distribution	Maintain appropriate hydrological regimes	No (Proposed Project will not result in any change to hydrological regimes)
Hydrological regime: tidal influence	Maintain natural tidal regime	No (changes to hydrological regime as a result of the Proposed Project will not occur).
Hydrological regime: freshwater seepages	Maintain appropriate freshwater seepage regimes	No (changes to hydrological regime as a result of the Proposed Project will not occur).
Substratum composition: particle size range	The substratum should be dominated by the particle size ranges, appropriate to the habitat sub-type (frequently sands, gravels and cobbles)	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Water quality: nutrients	The concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Vegetation composition: typical species	Typical species of the relevant habitat sub-type should be present and in good condition	No (changes to vegetation composition as a result of the Proposed Project will not occur).

Floodplain connectivity	The area of active floodplain at and upstream of the habitat should be maintained	No (changes to floodplain connectivity as a result of the Proposed Project will not occur).
Riparian habitat	The area of riparian woodland at and upstream of the bryophyte-rich sub-type should be maintained	No (changes to riparian habitat as a result of the Proposed Project will not occur).

5.1.2 River Shannon and River Fergus Estuaries SPA [004077]

The potential for impacts on this SPA were identified in Section 4.3 above. The identified pathways for effect include the following:

- Deterioration of water quality via pollutants directly entering the River Shannon and River Fergus Estuaries SPA.
- Disturbance of SCIs.

Table 5-20 below lists the Qualifying Interests of this European Site and determines, in the light of their Conservation Objectives, whether there is any complete source-pathway-receptor chain, by which adverse effects may occur.

5.1.2.1 Identification of Individual Qualifying Interests with the Potential to be Affected

Table 5-20 Assessment of Qualifying interest s potentially affected.

Qualifying interest	Valid and Up to Date Conservation Objective (NPWS, Version 1, September 2012[4]),	Rationale	Potential for Adverse Effects Y/N
› [A017] Cormorant (*Phalacrocorax carbo*)	To maintain the favourable conservation condition of Cormorant in the River Shannon and River Fergus Estuaries SPA	The Proposed Development is hydrologically connected to the SPA and taking a precautionary approach, it was considered that the Proposed Development has the potential to undermine the favourable conservation status of the SCI species through a deterioration of water quality during the construction and operational phases of the Proposed Development. A deterioration of water quality has the potential to result in habitat degradation and reduced prey availability which could have overall implications for maintaining or restoring favourable conversation status for these SCI species.	**Yes**
› [A038] Whooper Swan (*Cygnus cygnus*)	To maintain the favourable conservation condition of Whooper Swan in the River Shannon and River Fergus Estuaries SPA		

[4] *NPWS (2012) Conservation Objectives: River Shannon and River Fergus Estuaries SPA 004077. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.*

Qualifying interest	Valid and Up to Date Conservation Objective (NPWS, Version 1, September 2012[4]),	Rationale	Potential for Adverse Effects Y/N
› [A046] Light-bellied Brent Goose (*Branta bernicla hrota*)	To maintain the favourable conservation condition of Light-bellied Brent Goose in the River Shannon and River Fergus Estuaries SPA	In addition, the potential for disturbance on the SCIs recorded in proximity of the site was identified as a result of noise associated with the proposed construction works. **Therefore, a complete source-pathway-receptor chain for adverse effects on the SCIs of the SPA was identified, and it is assessed further in this NIS.** Potential for adverse effects on supporting wetland habitat for relevant waterbird species is considered under the SCI wetlands [A999] in the row below.	
› [A048] Shelduck (*Tadorna tadorna*)	To maintain the favourable conservation condition of Shelduck in the River Shannon and River Fergus Estuaries SPA		
› [A050] Wigeon (*Anas penelope*)	To maintain the favourable conservation condition of Wigeon in the River Shannon and River Fergus Estuaries SPA		
› [A052] Teal (*Anas crecca*)	To maintain the favourable conservation condition of Teal in the River Shannon and River Fergus Estuaries SPA		
› [A054] Pintail (*Anas acuta*)	To maintain the favourable conservation condition of Pintail in the River Shannon and River Fergus Estuaries SPA		
› [A056] Shoveler (*Anas clypeata*)	To maintain the favourable conservation condition of Shoveler in		

Qualifying interest	Valid and Up to Date Conservation Objective (NPWS, Version 1, September 2012[4]),	Rationale	Potential for Adverse Effects Y/N
	the River Shannon and River Fergus Estuaries SPA		
› [A062] Scaup (*Aythya marila*)	To maintain the favourable conservation condition of Scaup in the River Shannon and River Fergus Estuaries SPA		
› [A137] Ringed Plover (*Charadrius hiaticula*)	To maintain the favourable conservation condition of Ringed Plover in the River Shannon and River Fergus Estuaries SPA		
› [A140] Golden Plover (*Pluvialis apricaria*)	To maintain the favourable conservation condition of Golden Plover in the River Shannon and River Fergus Estuaries SPA		
› [A141] Grey Plover (*Pluvialis squatarola*)	To maintain the favourable conservation condition of Grey Plover in the River Shannon and River Fergus Estuaries SPA		
› [A142] Lapwing (*Vanellus vanellus*)	To maintain the favourable conservation condition of Lapwing in the River Shannon and River Fergus Estuaries SPA		

Qualifying interest	Valid and Up to Date Conservation Objective (NPWS, Version 1, September 2012[4]),	Rationale	Potential for Adverse Effects Y/N
› [A143] Knot (*Calidris canutus*)	To maintain the favourable conservation condition of Knot in the River Shannon and River Fergus Estuaries SPA		
› [A149] Dunlin (*Calidris alpina*)	To maintain the favourable conservation condition of Dunlin in the River Shannon and River Fergus Estuaries SPA		
› [A156] Black-tailed Godwit (*Limosa limosa*)	To maintain the favourable conservation condition of Black-tailed Godwit in the River Shannon and River Fergus Estuaries SPA		
› [A157] Bar-tailed Godwit (*Limosa lapponica*)	To maintain the favourable conservation condition of Bar-tailed Godwit in the River Shannon and River Fergus Estuaries SPA		
› [A160] Curlew (*Numenius arquata*)	To maintain the favourable conservation condition of Curlew in the River Shannon and River Fergus Estuaries SPA		
› [A162] Redshank (*Tringa totanus*)	To maintain the favourable conservation condition of Redshank		

Qualifying interest	Valid and Up to Date Conservation Objective (NPWS, Version 1, September 2012[4]),	Rationale	Potential for Adverse Effects Y/N
	in the River Shannon and River Fergus Estuaries SPA		
› [A164] Greenshank (*Tringa nebularia*)	To maintain the favourable conservation condition of Greenshank in the River Shannon and River Fergus Estuaries SPA		
› [A179] Black-headed Gull (*Chroicocephalus ridibundus*)	To maintain the favourable conservation condition of Black-headed Gull in the River Shannon and River Fergus Estuaries SPA		
› [A999] Wetland and Waterbirds	To maintain the favourable conservation condition of the wetland habitat in the River Shannon and River Fergus Estuaries SPA as a resource for the regularly-occurring migratory waterbirds that utilise it	A potential pathway for indirect effects on supporting wetland habitat for SCI species was identified. In the absence of mitigation, there is potential for adverse effects on wetland habitat due to deterioration of water quality if pollutants and sediment laden run-off is discharged from the site. **A complete source-pathway-receptor chain for adverse effects on this habitat was identified and it is assessed further in this NIS.**	**Yes**

5.1.2.2 Site Specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to impact on the European Site were reviewed and considered in relation to the Proposed Development. These are provided in the table below.

Table 5-61 Site-specific threats, pressures and activities

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
Medium	G01.01	Nautical sports	Inside
Medium	D03.02	Shipping lanes	Inside
High	E03	Discharges	Inside
High	E01	Urbanised areas, human habitation	Outside
High	A08	Fertilisation	Outside
High	E02	Industrial or commercial areas	Outside
Medium	F01	Marine and freshwater aquaculture	Inside

Potential pathways for effect with regard to site-specific threats, pressures and activities have been identified in relation to 'Discharges'.

5.1.2.3 Special Conservation Interest (SCI) Specific Information

5.1.2.3.1 *Wetland and Waterbirds*

The wetland habitats contained within the River Shannon and River Fergus Estuaries SPA are identified to be of conservation importance for non-breeding (wintering) migratory waterbirds. According to the site-specific conservation objectives, the wetland habitat area was estimated as 32,261ha.

Taking a precautionary approach, there is potential for the deterioration of this supporting habitat for species within the SPA to occur downstream of the Proposed Development, resulting in potential for adverse effects on this SCI.

Targets and Attributes

Table 5-72 Targets and attributes associated with the conservation objective for [A999] Wetlands and waterbirds

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Wetland habitat area	No significant loss to wetland habitat within the SPA, other than that occurring from natural patterns of variation	No (changes to wetland habitat area as a result of the Proposed Development will not occur)

Wetland habitat quality and functioning	No significant impact on the quality or functioning of the wetland habitat within the SPA, other than that occurring from natural patterns of variation	**Yes -** deterioration in water quality and habitat degradation as a result of pollutants and sediment-laden surface and groundwater run-off could undermine this target.

5.1.2.3.2 *Cormorant (Phalacrocorax carbo)*

As per the conservation objectives supporting document for the SPA, during winter the SPA regularly supports 1% or more of the all-Ireland population of Cormorant (*Phalacrocorax carbo*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 245 individuals. Recent data indicates that numbers have decreased within the SPA to 237 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality. In addition, potential for disturbance on this species was considered as it was recorded in proximity of the site.

Targets and Attributes

Table 5-23 Targets and attributes associated with the conservation objective for Cormorant

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Breeding population abundance: apparently occupied nests (AONs)	No significant decline	No (changes to breeding site abundance as a result of the Proposed Development will not occur)
Productivity rate	No significant decline	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution: breeding colonies	No significant decline	No (disturbance on breeding colonies as a result of the Proposed Development will not occur)
Prey biomass available	No significant decline	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Barriers to connectivity	No significant increase	No (no barriers to connectivity as a result of the Proposed Development will not occur)
Disturbance at the breeding site	Human activities should occur at levels that do not adversely affect the	No (disturbance as a result of the Proposed Development will not occur)

	breeding cormorant population	
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by cormorant other than that occurring from natural patterns of variation	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target. Disturbance as a result of construction works could cause displacement.

5.1.2.3.3 *Whooper Swan (Cygnus cygnus)*

As per the conservation objectives supporting document for the SPA, during winter the SPA regularly supports 1% or more of the all-Ireland population of the Annex I species Whooper Swan (*Cygnus cygnus*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 118 individuals. Recent data indicates that numbers have increased within the SPA to 269 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality.

No likelihood for significant adverse effects on this SCI as a result of disturbance was identified.

Targets and Attributes

Table 5-84 Targets and attributes associated with the conservation objectives for Whooper Swan

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by whooper swan other than that occurring from natural patterns of variation	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.2.3.4 *Light-bellied Brent Goose (Branta bernicla hrota)*

As per the conservation objectives supporting document for the SPA, during winter the SPA regularly supports 1% or more of the biogeographical population of Light-bellied Brent Goose (*Branta bernicla hrota*). The mean peak number of this species within the SPA during the baseline period (1995/96 –

1999/00) was 494 individuals. Recent data indicates that numbers have decreased within the SPA to 176 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality.

No likelihood for significant effects on this SCI as a result of disturbance was identified.

Targets and Attributes

Table 5-25 Targets and attributes associated with the conservation objective for Light-bellied Brent Goose

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by light-bellied brent goose other than that occurring from natural patterns of variation	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.2.3.5 *Shelduck (Tadorna tadorna)*

As per the conservation objectives supporting document for the SPA, during winter the SPA regularly supports 1% or more of the all-Ireland population of Shelduck (*Tadorna tadorna*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 1,025 individuals. Recent data indicates that numbers have decreased within the SPA to 291 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality.

No likelihood for significant effects on this SCI as a result of disturbance was identified.

Targets and Attributes

Table 5-26 Targets and attributes associated with the conservation objective for Shelduck

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden

	areas by shelduck other than that occurring from natural patterns of variation	run-off and other pollutants could undermine this target.

5.1.2.3.6 *Wigeon (Anas Penelope)*

As per the conservation objectives supporting document for the SPA, during winter the SPA regularly supports 1% or more of the all-Ireland population of Wigeon (*Anas penelope*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 3,761 individuals. Recent data indicates that numbers have decreased within the SPA to 1,821 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality.

No likelihood for significant effects on this SCI as a result of disturbance was identified.

Targets and Attributes

Table 5-27 Targets and attributes associated with the conservation objective for Wigeon

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by wigeon other than that occurring from natural patterns of variation	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.2.3.7 *Teal (Anas crecca)*

As per the conservation objectives supporting document for the SPA, during winter the SPA regularly supports 1% or more of the all-Ireland population of Teal (*Anas crecca*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 2,260 individuals. Recent data indicates that numbers have decreased within the SPA to 812 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality.

No likelihood for significant effects on this SCI as a result of disturbance was identified.

Targets and Attributes

Table 5-28 Targets and attributes associated with the conservation objective for Teal

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by teal other than that occurring from natural patterns of variation	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.2.3.8 *Pintail (Anas acuta)*

As per the conservation objectives supporting document for the SPA, Pintail (*Anas acuta*) was recorded in numbers of all-Ireland importance during the baseline period (1995/96 – 1999/00), at 62 individuals. Recent data indicates that numbers have decreased within the SPA to 30 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality.

No likelihood for significant effects on this SCI as a result of disturbance was identified.

Targets and Attributes

Table 5-29 Targets and attributes associated with the conservation objective for Pintail

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by pintail other than that occurring from natural patterns of variation	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.2.3.9 *Shoveler (Anas clypeata)*

As per the conservation objectives supporting document for the SPA, Shoveler (*Anas clypeata*) was recorded in numbers of all-Ireland importance during the baseline period (1995/96 – 1999/00), at 107 individuals. Recent data indicates that numbers have decreased within the SPA to 45 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality.

No likelihood for significant effects on this SCI as a result of disturbance was identified.

Targets and Attributes

Table 5-309 Targets and attributes associated with the conservation objective for Shoveler

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by shoveler other than that occurring from natural patterns of variation	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.2.3.10 *Scaup (Aythya marila)*

As per the conservation objectives supporting document for the SPA, Scaup (*Aythya marila*) was recorded in numbers of all-Ireland importance during the baseline period (1995/96 – 1999/00), at 102 individuals. Recent data indicates that numbers have decreased within the SPA to 24 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality.

No likelihood for significant effects on this SCI as a result of disturbance was identified.

Targets and Attributes

Table 5-101 Targets and attributes associated with the conservation objective for Scaup

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by scaup other than that occurring from natural patterns of variation	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.2.3.11 *Ringed Plover (Charadrius hiaticula)*

As per the conservation objectives supporting document for the SPA, during winter the SPA regularly supports 1 % or more of the all-Ireland population of Ringed Plover (*Charadrius hiaticula*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 223 individuals. Recent data indicates that numbers have decreased within the SPA to 92 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality.

No likelihood for significant effects on this SCI as a result of disturbance was identified.

Targets and Attributes

Table 5-32 Targets and attributes associated with the conservation objective for Ringed Plover

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by ringed plover other than that occurring from natural patterns of variation	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.2.3.12 *Golden Plover (Pluvialis apricaria)*

As per the conservation objectives supporting document for the SPA, during winter the SPA regularly supports 1% or more of the all-Ireland population of the Annex I species Golden Plover (*Pluvialis apricaria*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 5,664 individuals. Recent data indicates that numbers have decreased within the SPA to 1,929 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality.

No likelihood for significant effects on this SCI as a result of disturbance was identified.

Targets and Attributes

Table 5-33 Targets and attributes associated with the conservation objective for Golden Plover

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by golden plover other than that occurring from natural patterns of variation	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.2.3.13 *Grey Plover (Pluvialis squatarola)*

As per the conservation objectives supporting document for the SPA, during winter the SPA regularly supports 1% or more of the all-Ireland population of Grey Plover (*Pluvialis squatarola*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 558 individuals. Recent data indicates that numbers have decreased within the SPA to 69 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality.

No likelihood for significant effects on this SCI as a result of disturbance was identified.

Targets and Attributes

Table 5-34 Targets and attributes associated with the conservation objective for Grey Plover

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by grey plover other than that occurring from natural patterns of variation	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.2.3.14 *Lapwing (Vanellus vanellus)*

As per the conservation objectives supporting document for the SPA, during winter the SPA regularly supports 1% or more of the all-Ireland population of Lapwing (*Vanellus vanellus*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 15,126

individuals. Recent data indicates that numbers have decreased within the SPA to 2,012 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality.

No likelihood for significant effects on this SCI as a result of disturbance was identified.

Targets and Attributes

Table 5-35 Targets and attributes associated with the conservation objective for Lapwing

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by lapwing other than that occurring from natural patterns of variation	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.2.3.15 *Knot (Calidris canutus)*

As per the conservation objectives supporting document for the SPA, during winter the SPA regularly supports 1% or more of the all-Ireland population of Knot (*Calidris canutus*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 2,015individuals. Recent data indicates that numbers have decreased within the SPA to 2,012 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality.

No likelihood for significant effects on this SCI as a result of disturbance was identified.

Targets and Attributes

Table 5-36 Targets and attributes associated with the conservation objective for Knot

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden

	areas by knot other than that occurring from natural patterns of variation	run-off and other pollutants could undermine this target.

5.1.2.3.16 *Dunlin (Calidris alpina)*

As per the conservation objectives supporting document for the SPA, during winter the SPA regularly supports 1% or more of the biogeographic population of Dunlin (*Calidris alpina*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 15,131 individuals. Recent data indicates that numbers have decreased within the SPA to 2,012 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality.

No likelihood for significant effects on this SCI as a result of disturbance was identified.

Targets and Attributes

Table 5-37 Targets and attributes associated with the conservation objective for Dunlin

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by dunlin other than that occurring from natural patterns of variation	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.2.3.17 *Black-tailed Godwit (Limosa limosa)*

As per the conservation objectives supporting document for the SPA, during winter the SPA regularly supports 1% or more of the biogeographical population of Black-tailed Godwit (*Limosa limosa*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 2,035 individuals. Recent data indicates that numbers have decreased within the SPA to 2,012 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality.

No likelihood for significant effects on this SCI as a result of disturbance was identified.

Targets and Attributes

Table 5-38 Targets and attributes associated with the conservation objective for Black-tailed Godwit

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by black-tailed godwit other than that occurring from natural patterns of variation	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.2.3.18 *Bar-tailed Godwit (Limosa lapponica)*

As per the conservation objectives supporting document for the SPA, during winter the SPA regularly supports 1% or more of the all-Ireland population of the Annex I species Bar-tailed Godwit (*Limosa lapponica*). The mean peak number within the SPA during the baseline period (1995/96 – 1999/00) was 460 individuals. Recent data indicates that numbers have decreased within the SPA to 2,012 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality.

No likelihood for significant effects on this SCI as a result of disturbance was identified.

Targets and Attributes

Table 5-39 Targets and attributes associated with the conservation objective for Bar-tailed Godwit

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by bar-tailed godwit other than that occurring from natural patterns of variation	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.2.3.19 *Curlew (Numenius arquata)*

As per the conservation objectives supporting document for the SPA, during winter the SPA regularly supports 1% or more of the all-Ireland population of Curlew (*Numenius arquata*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 2,396 individuals. Recent data indicates that numbers have decreased within the SPA to 2,012 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality.

No likelihood for significant effects on this SCI as a result of disturbance was identified.

Targets and Attributes

Table 5-40 Targets and attributes associated with the conservation objective for Curlew

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by curlew other than that occurring from natural patterns of variation	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.2.3.20 *Redshank (Tringa totanus)*

As per the conservation objectives supporting document for the SPA, during winter the SPA regularly supports 1% or more of the all-Ireland population of Redshank (*Tringa totanus*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 2,645 individuals. Recent data indicates that numbers have decreased within the SPA to 2,012 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality.

In addition, potential for disturbance on this species was considered as it was recorded in proximity of the site.

Targets and Attributes

Table 5-41 Targets and attributes associated with the conservation objective for Redshank

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by redshank other than that occurring from natural patterns of variation	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target. Disturbance as a

		result of construction works could cause displacement.

5.1.2.3.21 Greenshank (Tringa nebularia)

As per the conservation objectives supporting document for the SPA, during winter the SPA regularly supports 1% or more of the all-Ireland population of Greenshank (*Tringa nebularia*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 61 individuals. Recent data indicates that numbers have decreased within the SPA to 2,012 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality.

In addition, potential for disturbance on this species was considered as it was recorded in proximity of the site.

Targets and Attributes

Table 5-42 Targets and attributes associated with the conservation objective for Greenshank

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by greenshank other than that occurring from natural patterns of variation	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.

5.1.2.3.22 Black-headed Gull (Chroicocephalus ridibundus)

As per the conservation objectives supporting document for the SPA, Black-headed Gull (*Chroicocephalus ridibundus*) was recorded in numbers of all-Ireland importance during the baseline period (1995/96 – 1999/00), at 2,681 individuals. Recent data indicates that numbers have decreased within the SPA to 1,303 individuals (2006/07 – 2010/11).

Taking a precautionary approach there is potential for the deterioration of foraging aquatic habitat for this species within the SPA to occur downstream of the Proposed Development resulting in potential for adverse effects on this species via a deterioration in water quality.

In addition, potential for disturbance on this species was considered as it was recorded in proximity of the site.

Targets and Attributes

Table 5-43 Targets and attributes associated with the conservation objective for Black-headed Gull

Attribute	Target	Potential for Proposed Development to Undermine Conservation Objective Target
Population trend	Long term population trend stable or increasing	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target.
Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by black-headed gull other than that occurring from natural patterns of variation	**Yes** - deterioration in water quality and habitat degradation as a result of silt-laden run-off and other pollutants could undermine this target. Disturbance as a result of construction works could cause displacement.

6. ASSESSMENT OF POTENTIAL EFFECTS & ASSOCIATED MITIGATION

This section of the NIS assesses the potential effects of the Proposed Development on the identified relevant Qualifying Interests and Special Conservation Interests. This assessment is undertaken in the absence of any mitigation and in respect of the Conservation Objectives of the relevant European Site:

- Lower River Shannon SAC [002165]
  www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002165.pdf
- River Shannon and River Fergus Estuaries SPA [004077]
  www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf

Following the initial impact assessment, mitigation is prescribed where necessary to avoid adverse effects on the relevant European Site in view of the site's Conservation Objectives. This is presented in a schedule of mitigation that is also listed underneath the effect that it mitigates.

6.1 Potential for Direct Effects on the European Sites

Whilst the footprint of the proposed works slightly overlaps with the SAC in one section, no QI habitat or supporting habitat for any QI species for which the SAC has been designated was recorded within this overlap, which is confined to existing artificial surfaces and does not extend into the river or associated habitats.

The proposed development lies within 20 m of the River Shannon and River Fergus Estuaries SPA. There are no works proposed within the SPA. Therefore, there is no potential for direct effects on these European sites.

6.2 Potential for Indirect Effects on the European Sites

6.2.1 Deterioration in Water Quality

A potential for indirect adverse effects on the following European Sites and relevant aquatic Qualifying Interests was identified in the form of deterioration of water quality during both construction and operation.

The potential pathways by which this effect may occur include:

- Direct overland run off to river
- Overland run off to reservoir – which has a connection to the river and potentially to the Westland Wetlands
- Discharge to groundwater
- Inundation with flood waters

Potential sources of pollution to surface and ground waters as a result of the construction works were considered and consist of:

- Run off of soil, sediment and other particulate material either overland or into the reservoir
- Release of chemicals, including hydrocarbons, from onsite machinery, concrete and other cement-based products either overland, into the reservoir or to groundwater within the site.
- Release of hazardous material such as asbestos to the reservoir, surface or groundwater during demolition and construction.
- Discharge of untreated surface waters to the River Shannon via the surface water drainage system during operation of the proposed development. These may contain silt and hydrocarbons from the trafficked areas and run off of pollutants associated with emergency fire response.

6.2.1.1 Construction Phase Impacts

The construction of the Proposed Development will involve piling, excavations and earth moving which could create the potential for pollution in various forms, i.e. the generation of suspended solids and the potential for spillage of fuels associated with the refuelling of excavation machinery.

There is a risk of overland surface water runoff from bare soil and soil storage areas during construction and landscaping works. Sediments (silt and clay), hydrocarbons (fuels, lubricants) from machinery and concrete and cement wash water have the potential to accumulate in the reservoir and flow into the River Shannon via the above pathways.

Further, there is potential for the contamination of groundwaters with hydrocarbons, cementitious material and other pollutants during construction. This could potentially flow diffusely into the River Shannon.

The majority of the Proposed Application site lies in areas at low risk of flooding, in Flood Zone C. However, the Shipyard site and Infiltration Galleries lie in an area at high risk of flooding, in Flood Zone A, and the Quarry lies within an area at moderate risk of flooding, Flood Zone B. These flood-prone areas face the risk of temporary inundation from the River Shannon overflow. During a flood event, water may wash over the construction site, picking up and spreading contaminants across a wide area. Floodwaters can act as a vector for rapid and widespread pollution, carrying pollutants from the site directly into the River Shannon or its floodplain wetlands. This can degrade water quality and affect sensitive habitats downstream.

Additionally, there is a risk of further pollution due to the presence of asbestos and other chemical contamination in soil in the Proposed Application Site. A Phase 2 site environmental assessment undertaken in 2015 identified the presence of asbestos in soils, on the ground and in building materials (roof tiles) in existing structures on the site. Additionally, an asbestos refurbishment/demolition (formerly type 3) survey of the proposed development site carried out by *Phoenix Environmental* in November 2024 identified asbestos-containing materials (ACMs) in numerous existing buildings throughout the site. Asbestos contamination is a risk of pollution during construction, asbestos-containing materials (ACMs) can release hazardous fibers into the environment when disturbed through construction works. These fibers can contaminate surface water, particularly during demolition, excavation, or site clearance.

In the absence of mitigation, the works have the potential to impact on water quality within the identified European Sites.

6.2.1.1.1 *Mitigation*

Mitigation is described in detail below and is also included in the CEMP, which is provided as Appendix 5.

Overland Flow to River and Reservoir

There will be no in-water works permitted at the River Shannon (Limerick Dock waterbody, Lower River Shannon SAC, and River Shannon & River Fergus Estuaries SPA).

The mitigation that is set out below will be employed during the construction phase of the proposed development to prevent impacts on water quality. This mitigation is specifically designed to block all potential pathways for adverse water quality impacts.

- Temporary silt fencing will be erected around the onsite reservoir and any other areas where there is potential for run off to the River Shannon prior to the commencement of any onsite works.
- A buffer zone of 20m will be implemented around the onsite Reservoir, where no onsite storage or use of fuels / chemicals or stockpiled materials (including soils, C&D waste) will be permitted. This will be strictly monitored and enforced by the Contractor and Employers Representative.
- To facilitate the removal of the concrete piers from the reservoir, surface drainage will be temporarily redirected from the reservoir to allow it to be drained. During the draining of the reservoir, the existing water will be temporarily pumped and will discharge via. the existing discharge outfall (as per the existing baseline scenario). All surface water outlets from Salesians, Stonetown Terrace and the Quarry will be connected directly to the discharge pipe from the reservoir to the River Shannon.
- When the reservoir is empty, a comprehensive survey will be conducted of any exposed pipework/ infrastructure which may indicate the presence of the reported historic connection to the Westfield Wetlands Spring, or any additional discharge points to the River Shannon. If viable historic pipeline connections to the Westfield Wetlands / River Shannon are uncovered, these will be further evaluated to understand the extent of the historic pipework, and if deemed suitable following assessment, such pipework will be decommissioned and sealed.
- During the temporary infilling of the onsite Reservoir to facilitate the construction works, clean imported material will be used which have been double washed at source. This will be confirmed by the supplier and regular visual checks will be carried out during the works to verify this.
- A Stockpile Management Plan will be developed by the Contractor(s), and provided to the Client and Employers Representative, in advance of commencement of construction. Stockpiled materials will not be located immediately adjacent to the onsite Reservoir, onsite drains, or any temporarily exposed groundwater (in the event that groundwater is encountered). Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination. Movement of material will be minimised to reduce the degradation of soil structure and generation of dust.
- The creation of steep slopes will be avoided to prevent runoff from precipitation.

Groundwater Pollution Mitigation

- As part of the asbestos management strategy, mitigation specific measures as proposed by Phoenix Environmental Safety Ltd in their 2025 Asbestos Survey Report will be implemented.
- Demolition material that is deemed hazardous will be treated at an authorised facility either in Ireland or abroad.
- Any contaminated material will be classified, managed, transported and disposed of offsite in accordance with the requirements of the Waste Management Act 1996, as amended, the Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste and any relevant subsequent waste management legislation.
- Any identified contaminated soil will be excavated and removed for offsite disposal during the enabling works phase, and in advance of the excavation of foundations. This is to mitigate the potential risk of groundwater impacts via. existing onsite contamination.

- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations and mobilisation of contaminants.
- Excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours and sampling. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.
- Heavy discharges of water onto the soil will be avoided.
- There will be no over-watering of loose areas for dust suppression.
- Site traffic will be restricted to designated routes.
- Regular leak monitoring and maintenance of dewatering pipes will be undertaken
- The recommended maximum vehicle weightings will be maintained to avoid destabilization and subsequent erosion of soil surface
- Disturbed land or stockpiles will be progressively rehabilitated by establishing temporary or permanent vegetation supported by irrigation.
- Excess work areas will be covered with geotextile type liners.
- Collection systems will be provided under machinery or equipment during wash down to prevent erosion from runoff.
- Flow attenuation - mechanisms to control run off of precipitation such as temporary structures to slow running water to facilitate pollutant removal and infiltration and reduce runoff will be installed.
- Sediment traps will be placed on all drainage lines such as geotextile lining.
- Collection channels capable of collecting all runoff water during storms if it contains fine clay particles will be constructed.
- A contained control facility will be used for concrete washout.
- Runoff water from reservoir will be treated and discharged at a controlled flow rate through storm water discharge network (subject to agreement with LCCC).
- Collection channels and reservoir will be inspected and cleaned on a regular basis to prevent sediment build up.
- The site will be stabilised as soon as possible after construction
- Regular inspections/audits of hazardous materials usage, handling and storage areas and regular/thorough maintenance of vehicles and hydraulic systems and inspections of sanitary facilities and disposal will be carried out by contractors.
- All contractors handling hazardous materials will keep appropriate spill clean-up material adjacent to storage and maintenance areas.
- The amount of diesel, oil, paint, thinners and other chemicals stored on site that pose potential spillage environmental hazards will be minimised. Materials that minimise environmental impact such as lead-free paints, asbestos free materials etc. will be used.
- Collection systems will be provided/bunded if necessary, under machinery or equipment that may leak hydrocarbons/hazardous substances.
- The contractor shall be responsible for training all staff in the procedures for handling spills and shall provide all staff with appropriate personal protective equipment.
- The contractor shall provide all staff with appropriate personal protective equipment.
- Impacting adjacent sites will be avoided by ensuring all contractors activities, equipment and waste storage is confined to the allocated site boundary.
- Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound which will be away from the onsite Reservoir, surface water gulleys or drains with a minimum 20 m buffer zone. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area.
- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area.
- Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of

110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.

- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage. All drums to be quality approved and manufactured to a recognised standard. If drums are to be moved around the Site, they will be secured and on spill pallets; and drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.
- In the event of a spill, the following procedure will be followed:
    - Identify and stop the source of the spill and alert people working in the vicinity;
    - Notify the Environmental Manager immediately giving information on the location, type and extent of the spill so that they can take appropriate action;
    - If applicable, eliminate any sources of ignition in the immediate vicinity of the incident;
    - Contain the spill using spill control materials, track mats or other materials as required. Do not spread or flush away the spill;
    - Cover or bund off any vulnerable areas where appropriate such as the onsite Reservoir, drains, watercourses and/or sensitive habitats;
    - Clean up as much as possible using the spill control materials;
    - Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with appropriate permits so that further contamination is limited;
    - The Environmental Manager shall inspect the site as soon as practicable and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring;
    - The Environmental Manager will notify the appropriate stakeholders such as Limerick City &County Council, National Parks and Wildlife Service and/or the EPA.

Flood Risk Mitigation

To mitigate flood risk during the construction period, the contractor will employ the following mitigation measures as part of the site preparation for the construction phase (ARUP, 2025):

- Temporary flood protection measures will be implemented within the extent of the flood zone at the Shipyard site – these measures are detailed within the CEMP (AtkinsRealis, 2025) submitted as part of this planning application. The Contractor(s) will adhere to all temporary flood management measures as per the CEMP, for the full duration of the demolition and construction works.
- Elevating the site compound / site storage areas at the Shipyard site via fill placement to an appropriate level (i.e. 5.7m AOD based on the outcome of the FRA (ARUP, 2025).
- Constructing and/or implementing temporary flood defences at the Shipyard site (i.e. civil works and/or proprietary flood defence products, or a combination of both) to an appropriate level (i.e. 5.7m AOD based on the outcome of the FRA (ARUP, 2025).
- In the event of a tidal flood warning, materials stored in the Shipyard site compound will be removed immediately to avoid the risk of flooding to neighbouring properties.
- Storage areas (for diesel, oil, paint, thinners and other chemicals stored on site) will be located at all times away from the identified flood zone at the Shipyard site.
- A Flood Emergency Response Plan for Construction Phase (FERP-CP) will be developed by the Contractor(s) for the proposed development.

6.2.1.2 Operational Phase

The operational phase of the Proposed Development has the potential to result in the deterioration in water quality of the River Shannon as a result of surface water run-off from the hardstanding areas associated with the Proposed Development. There is also the potential for impacts of pollutants associated with the operation (such as hydrocarbons) of the development to impact on groundwaters.

Another potential effect on water quality via both ground and surface water run off is that of pollution associated with a potential emergency response to a fire, which may use large volumes of water/foam etc. and associated chemicals.

The production of foul sewage was also considered and it is noted that Uisce Eireann have issued a confirmation of feasibility in respect of the project and as such it is considered that the public treatment system has adequate capacity and capability to accommodate any arisings from the proposed development. Therefore, there is no potential for the foul sewage arising from the proposed development to result in any adverse effect on any European Site in this regard. The wastewater network will be gravity operated. In order to reduce pressure on the public sewage network water saving technologies will be included in the design, for example, low flow fixtures and dual flush toilets. Combining these technologies with smart metering and continued education of the water users, it is possible to achieve up to a 30% reduction in potable water consumption and wastewater discharge.

6.2.1.2.1 *Mitigation*

Attenuation and Treatment of Surface Waters

SuDS methods have been designed for the development with the aim to minimise the final discharge rate, mitigate flood risk, and to ensure that the final discharge flow rate does not exceed the current levels. Additionally, SuDS will help to maintain or improve runoff water quality and minimise the use of buried attenuation tanks.

SuDS measures included in the plans are green roofs, planters, swales, porous paving and rain gardens. The effect of the SuDS measures will be a form primary treatment, interception of rainwater, and attenuation of surface water. Piped networks collecting surface runoff will include petrol interceptors to protect the water quality of the receiving water body.

Excess runoff from sites and SuDS will be routed to the reservoir for attenuation. Surface water calculations prove that there is sufficient capacity in the reservoir to attenuate excess runoff for a 1:100 year storm (plus 30% climate change and 10% urban creep) from adjacent sites.

The design of the surface water drainage systems, including the use of SuDS, attenuation tanks, and the reservoir as an attenuation facility, is intended to achieve a rate of flow discharge from the site that does not exceed the current levels. The implementation of SuDS measures means that, once operational, and with the mitigation measures in place, the impact of the development will be low in terms of water quality and quantity.

Groundwater

Once operational, the site drainage system will accommodate all surface water without impact to groundwater levels, or infiltration of contamination. The underground attenuation tanks will be sealed. There will be no material change to existing infiltration rates, groundwater flow patterns or the existing hydrogeological regime.

Emergency Fire response

In the (highly unlikely) event of an emergency / fire, discharge of the fire water runoff will be prevented from entering the Lower River Shannon SAC through the surface water drainage network by operation of a shut-off valve on the discharge pipe at the exit from the reservoir. An Emergency Water Management Plan will be prepared and implemented during the operational phase, with a named Facilities Manager who will be contactable 24/7 and a deputy contact. Both personnel will be fully briefed on emergency procedures to manually shut off the discharge valve to the River Shannon immediately in the event of an emergency / fire.

6.2.2 Disturbance to Birds

6.2.2.1 Construction Phase

The construction phase of the proposed development will involve the use of machinery with the potential to generate high levels of noise. A Noise and Vibration chapter has been prepared to inform the EIAR for the proposed development, expecting average noise levels of 79dB at 10m from the works closest to the River Shannon (i.e. Stage 3 – Flood Protection Works). Works have the potential to meet noise threshold at source for redshank, the most sensitive of the species recorded during the surveys undertaken (Cutts *et al.,* 2013), however they are expected to generate acceptable noise levels (70dB) based on observed waterbird responses within 28m from the source.

No works are proposed within the SPA or on supporting habitats to these birds. It was taken into account that the riverfront site is located in the middle of Limerick City and is already subject to high levels of human activity and vehicular traffic, and the Shannon Bridge separates the Application Site from the SPA boundary. The birds utilising the River Shannon in proximity to the Application Site are considered habituated to visual and noise disturbance, are therefore unlikely to be significantly affected by the proposed works.

The potential for adverse effects on the integrity of the avian populations associated with River Shannon and River Fergus SPA as a result of noise disturbance from the construction phase of the Proposed Development can be excluded.

In addition, best practice measures set out in BS 5228-1 and BS 5228-2 (BSI 2019) will be complied with, and are expected to further reduce expected noise by 5 to 10dB. These best practice measures are presented below as described in the Noise and Vibration Chapter of the EIAR accompanying the application.

6.2.2.1.1 *Mitigation*

Selection of Quiet Plant

The potential for any item of plant to result in exceedance of construction noise thresholds will be assessed prior to the item being brought onto the site. The least noisy item of plant will be selected wherever practicable (e.g. plant items with sound attenuation incorporated). Should a particular item of plant already on the site be found to exceed the construction noise thresholds, the first action will be to identify whether the item can be replaced with a quieter alternative.

The appointed contractor will evaluate the choice of excavation, breaking, piling or other working method taking into account various ground conditions and site constraints. Where alternative lower noise generating equipment are available that will provide equivalent structural / excavation / breaking results, these will be selected to control noise within the relevant thresholds, where it is practicable to do so.

The decision regarding the type of excavation technique or other construction activity to be used on a site will normally be governed by a range of engineering and environmental constraints. In these instances, it may not be possible for technical reasons to replace an item of plant with a quieter alternative. In some instances, the adoption of a quieter method may prolong the overall process, with the net result being that the overall disturbance to the community will not necessarily be reduced.

Noise Control at Source

The following measures will be implemented, if required, by the appointed contractor to control noise at source. These measures relate to specific site considerations:

- For mobile plant items such as dump trucks, cranes, excavators and loaders, the installation of an acoustic exhaust, utilising an acoustic canopy to replace the normal engine cover and / or maintaining enclosure panels closed during operation can reduce noise levels by up to 10 dB;
- For percussive tools such as pneumatic breakers and tools a number of noise control measures include fitting a muffler or sound reducing equipment to the breaker 'tool' and ensuring any leaks in the air lines are sealed;
- Use of rotary drills and 'bursters' activated by hydraulic or electrical power to facilitate quieter methods for excavation of hard material.
- Removal of larger sections of demolished buildings by lifting out and breaking at areas away from noise sensitive boundaries;
- For piling plant, noise reduction can be achieved by enclosing the driving system in an acoustic shroud. For steady continuous noise, such as that generated by diesel engines, it is possible to reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover;
- Mobile and stationary plant will be switched off or throttled back to a minimum when not in use (engines, motors and generators). Lorries, trucks and concrete vehicles will not be permitted to queue outside site compounds with engines left idling;
- Where compressors, generators and pumps are located in proximity to NSLs and have the potential to exceed the construction noise thresholds, these will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation;
- Resonance effects in panel work or cover plates can be reduced through stiffening or the application of damping compounds, while other noise nuisance can be controlled by fixing resilient materials in between the surfaces in contact;
- For all materials handling, ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials;
- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures;
- Where practicable, equipment powered by mains electricity or battery shall be used in preference to equipment powered by internal combustion engines or locally generated electricity; and
- Plan the site layout to ensure that reversing is kept to a minimum.

Screening

Screening is an effective method of reducing construction noise levels at a receiver location and can be used successfully as an additional measure to other forms of noise control. The effectiveness of a noise screen will depend on the height and length of the screen, its mass, and its position relative to both the source and receiver. BS 5228–1 states that on level sites the screen should be placed as close as possible to either the source or the receiver. The construction of the barrier will be such that there are no gaps or openings at joints in the screen material.

The site will incorporate a solid site hoarding line of minimum 2.4m in height around its perimeter which will be maintained in situ for the duration of the construction phase. Where necessary, this hoarding height will be increased in height to assist in reducing noise levels at adjacent noise sensitive buildings.

Erection of localised demountable enclosures or screens will be used around breakers or drill bits when in operation in proximity to NSLs with the potential to exceed the construction noise thresholds. Annex B of BS 5228–1 (Figures B1, B2 and B3) provide typical details for temporary and mobile acoustic screens, sheds and enclosures that can be constructed on-site from standard materials. A well placed and designed mobile temporary screen around a breaker or excavation can effectively reduce noise emissions by 10 dB(A).

In addition, careful planning of the construction site layout will also be considered. The placement of site buildings such as offices and stores between the site and sensitive locations can provide a good level of noise screening.

Hours of Work

Standard construction working hours are between 07:00 to 18:00 hrs Monday to Friday inclusive and between 08:00 and 14:00 hrs on Saturdays. However, it is possible that the contractor may wish to carry out certain operations outside these hours i.e. Sunday or evening hours during long summer days etc. Such occurrences will be kept to a minimum and take place over a short timeframe and as such are unlikely to cause excessive disturbance. Deviation from these times will only take places when written approval is granted by LCCC in exceptional circumstances.

Monitoring

During the construction phase, the contractor will carry out noise and vibration monitoring at representative sensitive locations to evaluate and inform the requirement and / or implementation of noise and vibration management measures.

6.2.2.2 Operational Phase

The operational phase of the Proposed Development will be permanent, therefore there may be increased anthropogenic activity within the site. However, no breeding or resting sites for the SCI birds associated with the SPA were identified within the site, and the Proposed Development is not expected to result in a significant change in the nature of the activity along the banks of the River Shannon, or a significant increase in noise levels. Therefore, the operational phase of the Proposed Development is unlikely to result in any significant increase in disturbance to the local bird populations.

6.2.3 Disturbance to Otter

6.2.3.1 Construction Phase

Although no breeding or rest sites for otter were recorded during the site visits, the River Shannon which flows directly adjacent to the Proposed Application Site, provides suitable foraging and commuting habitat for otter, (a QI species of Lower River Shannon SAC). As construction works are proposed directly adjacent to the River Shannon, taking a precautionary approach, there is potential for disturbance to otter during the construction phase of the Proposed Development.

In relation to disturbance, Otter are predominantly crepuscular in nature and construction activity will be confined to daytime hours, thus minimizing potential disturbance related impacts to the species.

Irish Wildlife Manual No 76 (National Otter Survey of Ireland 2010/2012) notes that the occurrence of Otter was unaffected by perceived levels of disturbance at the survey sites. It also notes that there is little published evidence demonstrating any consistent relationship between Otter occurrence and human disturbance (Mason & Macdonald 1986, Delibes et al. 1991; Bailey &Rochford, 2006).

Irish Wildlife Manual No 23 (National Otter Survey of Ireland 2004/2005) found no significant relationship between disturbance and otter occurrence. It also states “the lowest percentage occurrence was found at the sites with the lowest recorded disturbance”.

Channin P (2003) provides a literary review with regard to anthropogenic disturbance and refers to several reports which have found that disturbance is not detrimental to Otters (Jefferies (1987), (Durbin 1993). (Green & Green 1997). The report also describes successful breeding in towns, under ferry

terminals and under the jetties of one of Europe's largest oil and gas terminals at Sullom Voe in North Scotland.

Based on the above review of scientific literature, the potential for adverse effects on the integrity of the Otter population associated with Lower River Shannon SAC as a result of the construction phase of the Proposed Development can be excluded.

6.2.3.1.1 *Mitigation*

The mitigation outlined in Section 6.2.2.1.1 above and the following measures listed below will be adhered to during the works. In addition, on a precautionary basis, pre-commencement confirmatory otter surveys of the proposed development will be undertaken prior to any construction works, in particular around the river sections adjacent to the Proposed Development area.

- All plant and equipment for use will comply with S.I. No. 632/2001 - European Communities (Noise Emission by Equipment For Use Outdoors) Regulations, 2001.
- Operating machinery will be restricted to the proposed works site area.
- The use of artificial lighting will be avoided during construction works. Any unavoidable artificial lighting used to facilitate works will be blocked from spilling onto the River Shannon, using directional accessories or physical barriers.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
- Compressors will be of the "sound reduced" models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machines which are used intermittently will be shut down or throttled back to a minimum during those periods when they are not in use.
- Any plant such as generators or pumps which are required to work outside of normal working hours will be surrounded by an acoustic enclosure.

6.2.3.2 Operational Phase

The operational phase of the Proposed Development will be permanent, therefore there may be increased anthropogenic activity within the site. However, no otter breeding or resting sites were identified during the site visits and the Proposed Development is not expected to result in a significant change in the nature of the activity along the banks of the River Shannon, or a significant increase in noise levels. Therefore, the operational phase of the Proposed Development is unlikely to result in any significant increase in disturbance to local otter populations.

7. ASSESSMENT OF RESIDUAL ADVERSE EFFECTS

The potential for residual adverse effects on each of the individual relevant Qualifying Interests and Special Conservation Interests of the Screened In European Sites following the implementation of mitigation, is assessed in this section of the report.

Based on the above, in view of best scientific knowledge, on the basis of objective information, there is no potential for adverse effect on the identified QIs or SCIs and their associated targets and attributes, or on any European Site. Potential pathways for effect have been robustly blocked through measures to avoid impacts and the incorporation of best practice/mitigation measures into the project design.

Taking cognisance of measures to avoid impacts and best practice/mitigation measures incorporated into the project design which are considered in the preceding section, the Proposed project will not have an adverse effect on the integrity of any European Site.

The Proposed Development will not prevent the QIs of the Lower River Shannon SAC or the SCIs of the River Shannon and River Fergus Estuaries SPA from achieving/maintaining favourable conservation status in the future as defined in Article 1 of the EU Habitats Directive. A definition of Favourable Conservation Status is provided below:

> *'conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory referred to in Article 2; The conservation status will be taken as 'favourable' when:*
>
> - *Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and*
> - *The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and*
> - *There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.'*

Based on the above, it can be concluded in view of best scientific knowledge, on the basis of objective information that the Proposed Development will not adversely affect the Qualifying Interests associated with the Lower River Shannon SAC or Special Conservation Interests associated with the River Shannon and River Fergus Estuaries SPA.

8. IN-COMBINATION ASSESSMENT

The Proposed Development was considered in combination with other plans and projects in the area that could result in in-combination impacts on the Qualifying Interest/ Special Conservation Interests identified in Section 5 of this report. A review of all permitted planning applications was undertaken within a 1km radius of the site, over the last five years. The material was gathered through a search of the National Planning Application Map Viewer, Myplan.ie.

8.1 Masterplan

The masterplan development has been reviewed, based on available information. There is the potential for in-combination effects on water quality to arise as a result of the masterplan development, during construction and operation. It is noted that the proposed development has been designed to ensure future proofing of the overall masterplan development strategy, particularly when considering the demolition strategy, construction phasing, landscape design, lighting designs and drainage. The ecological surveys and all incorporated mitigations for this Phase II development have considered the previous and future phases of the masterplan, and no significant cumulative or in-combination adverse effects are anticipated on the conservation objectives of any European Site, when considered in combination with the previous or remaining phases of the masterplan.

8.2 Assessment of Plans

The following plans have been reviewed and taken into consideration as part of this assessment:

- Limerick County Development Plan 2022-2028
- 4th National Biodiversity Action Plan 2023-2027

The review focused on policies and objectives that relate to designated sites for nature conservation, biodiversity and protected species. Policies and objectives relating to the conservation of Annex I habitats were also reviewed. The plans were also searched for references to the protection of bats, in particular the lesser horseshoe bat. This species is present in the county but is considered of particular concern due to risk of isolation and the fragmentation of corridors between Cork and Clare populations. An overview of the search results with regard to plans is provided in Table 8-1 below.

Table 8-1: Plans

Plans	Key Policies/Issues/Objectives Directly Related To European Sites, Biodiversity and Sustainable Development In The Zone of Influence	Assessment of development compliance with policy
4th National Biodiversity Action Plan 2023-2027	**Objective 2:** Meet Urgent Conservation and Restoration Needs **Outcome 2A:** The protection of existing designated areas and species is strengthened and conservation and restoration within the existing protected are network are enhanced 29 **Outcome 2B:** Biodiversity and ecosystem services in the wider countryside are conserved 32 18 27 Navigation **Outcome 2C:** All freshwater bodies are of at least 'Good Ecological Status' as defined under the EU Water Framework Directive 36	The objectives set out in the NBAP aim to protect and enhance and promote biodiversity, nature restoration on the Island of Ireland and also contribute to International biodiversity initiative. Mitigation measures as outlined NIS for the Proposed Development also aim to protect biodiversity as such **no potential for in-combination effects were identified upon review of the Plan in conjunction with the Proposed Development.**

Limerick County Development Plan 2022-2028	**Policy EH P1: Protection of Natural heritage and Biodiversity** It is a policy of the Council to: a) Protect and conserve Limerick's natural heritage and biodiversity, in particular, areas designated as part of the European Sites Natura 2000 network, such as Special Protection Areas (SPAs) and Special Areas of Conservations (SACs), in accordance with relevant EU Directives and national legislation and guidelines. b) Maintain the conservation value of all Natural Heritage Areas and proposed Natural Heritage Areas (pNHAs) for the benefit of existing and future generations. **Policy EH P2: Sustainable Management and Conservation** It is a policy of the Council to ensure the sustainable management and conservation of areas of natural environmental and geological value within Limerick and to protect, enhance, create and connect, where ecologically suitable, natural heritage, green spaces and high-quality amenity areas for the benefit of biodiversity. **Policy EH 01: Designated Sites and Habitats Directive** It is an objective of the Council to ensure that projects/plans likely to have significant effects on European Sites (either individually or in combination with other plans or projects) are subject to an appropriate assessment and will not be permitted under the Plan unless they comply with Article 6 of the Habitats Directive. The Council, will through the planning enforcement process where applicable, seek to restore the ecological functions of designated sites, where they have been damaged through inappropriate development. The following Objective was found in relation to the conservation of the lesser horseshoe bat: **Objective EH O2:** It is an objective of the Council to require all developments in areas where there may be Lesser Horseshoe Bats, to submit an ecological assessment of the effects of the development on the species. The assessment shall include mitigation measures to ensure that feeding, roosting or hibernation sites for the species are maintained. The assessment shall also include measures to ensure that landscape features are retained and that the development itself will not cause a barrier or deterrent effect on the species.	The overall aim of the policies and objectives set out in the County Development plan in relation to Biodiversity aim to protect and enhance biodiversity within the county. The AA Screening for the Limerick County Development Plan identified potential for likely significant effects on the **Lower River Shannon SAC** and the **River Shannon and River Fergus Estuaries SPA**. As such the potential for cumulative impacts were identified in-combination with the Proposed Development specifically in relation to this SAC. However, with the implementation of mitigation measures outlined within the NIS for the Proposed Development and the mitigation measures outlined within the NIS for the County Development plan **no potential for significant in-combination effects are predicted.**

	The following Objective was found in relation to the conservation of other Irish bat species: **Objective EH O3:** It is an objective of the Council to require all developments where there are species of conservation concern, to submit an ecological assessment of the effects of the development on the site and nearby designated sites, suggesting appropriate mitigation measures and establishing, in particular, the presence or absence of the following species: Otter, badger, bats, lamprey and protected plant species such as the Triangular Club Rush, Opposite Leaved Pond Weed and Flora Protection Order Species generally. **Objective EH O4: Creation of new habitats** It is an objective of the Council to: a) Seek the creation of new habitats by encouraging wild green areas and new water features such as, pools and ponds in new developments. b) Encourage management plans for green areas to use the minimum of pesticides and herbicides. c) The creation of areas that are not subject to public access in order to promote wildlife use is strongly encouraged. **Objective EHO5: New Infrastructure Projects** It is an objective of the Council to require new infrastructure and linear developments in particular, to demonstrate at design stage sufficient measures to assist in the conservation of and dispersal of species and to demonstrate a high degree of permeability for wildlife, to allow the movement of species and to prevent the creation of barriers to wildlife and aquatic life in the wider countryside. **Objective EH O8: Roosting Habitats** It is an objective of the Council to require the provision of alternative roosting or settlement facilities for species, such as bird or bat boxes, swift boxes, artificial holts (for otters), or other artificially created habitats in proposed developments, where considered appropriate. **Objective EH 01: Invasive Species** It is an objective of the Council to: a) Work with and facilitate the work of agencies addressing the issue of terrestrial and aquatic invasive alien species (IAS), by implementing biosecurity measures, selected control measures and surveys, where appropriate.	

	b) Address the presence of invasive alien species on derelict sites under the provisions of the Derelict Sites Act through the preparation of a management and eradication plan for these species. c) Require the submission of a control and management program for the particular invasive species as part of the planning process, if developments are proposed on sites where invasive species are present. d) Employ biosecurity measures to prevent the spread of invasive alien species and disease and to insist that all such measures are employed on all development sites.	

8.3 Assessment of Projects

A search of relevant online Planning Registers, reviews of ecology-related documents, planning application details and planning drawings, and served to identify past and future projects, their activities, and their environmental impacts. Given the location of the site in the city centre, a substantial quantum of applications comprises a change of use, or minor works. Further, some of the permissions identified in the last five years have already been delivered on site. The relevance of the projects was considered on a case by case basis, depending on the interaction and likelihood of in combination impacts on European Sites arising from identified effects such as degradation in water quality.

All relevant data was reviewed (e.g., individual EISs/EIARs, layouts, drawings etc.) for all relevant projects where available. The following projects have been selected as having potential for in-combination impacts on the basis of their nature and scale, or their close proximity to the site:

- **Planning Ref: 201203:** Permission for the construction of a new single storey extension to the rear of the existing house to include the alteration of the roof finish to existing single storey extension to the side and rear of the existing house, modifications to the front porch glazing, repair plaster finish to the existing side and rear elevation, new windows on ground floor and all ancillary works. Application granted on the 24/02/2021. Approximate distance from proposed development: Less than 50m. The relevant application documents were consulted, and it was determined that the Proposed Development combined with this project would not have the potential to result in any significant in-combination effects on any European site.
- **Planning Ref: 201404:** Permission is sought for the construction of a new two storey escape stairwell and associated modifications o the existing building elevations and site boundary. Application was granted on the 30/03/2021. The planners report was consulted, and it was determined that the Proposed Development combined with this project would not have the potential to result in any significant in-combination effects on any European site. Approximate distance from proposed development: Less than 100m.
- **Planning Ref: 21855:** Revisions to development permitted under planning register reference number 17/550(the parent permission) comprising a minor revision to the position of the new footprint of Kilmoyle House on the site, revisions to the design of the extensions to the house consisting of a single storey extension to the rear(west) elevation and a part single storey, part two storey courtyard extension to the rear(west) and side(north) elevations with two storey glazed link to the main dwelling, omission of courtyard outbuildings as permitted and construction of a new single storey outbuilding in lieu, revised internal driveways, new landscape design, revised storm water drainage system, revised foul drainage network and connection to existing services & all ancillary site development works and excavation works above and below ground. Kilmoyle House is on the National Inventory of Architectural Heritage (NIAH Schedule Reference No. 21511009). Application granted on 05/08/2021. The

relevant application documents were consulted, and it was determined that the Proposed Development combined with this project would not have the potential to result in any significant in-combination effects on any European site. Approximate distance from proposed development: ~370 m.

- **Planning Ref: 221186:** Permission for the redevelopment of the existing school and its grounds at Sexton Street, Limerick. The overall development will consist of Classrooms, Specialist Teaching spaces, Social spaces, Multi-Purpose Halt, Special Education Needs Unit, Reception Offices and Ancillary accommodation. Services to include Roof mounted photovoltaic panels, Boiler, ESB Substation Kiosk and Gas compound, proposed attenuation tank, underground fire fighting storage tank and public lighting. Application granted on 16/05/2023. The Appropriate Assessment Screening Report was consulted, and it was determined that the Proposed Development combined with this project would not have the potential to result in any significant in-combination effects on any European site. Approximate distance from proposed development: ~950 m.
- **Planning Ref: 221087:** Permission for the installation of Photovoltaic Panels to the roof levels of the Strand Hotel Limerick, and all associated works. Application granted on the 03/01/2023. The relevant application documents were consulted, and it was determined that the Proposed Development combined with this project would not have the potential to result in any significant in-combination effects on any European site. Approximate distance from proposed development: ~240 m.
- **Planning Ref: 228014:** Permission for development works from TUS Moylish Campus to the City. Segregated cycle lanes and footpath upgrades along Cratloe Road, Sexton Street North and High Road with a number of dedicated pedestrian and cycle crossing facilities. Upgrade of the traffic signals and junction layout at Hassett's Cross, Cross Road and Belfield Court Junctions to provide a protected junction arrangement for cyclists & bus priority measures of public transport. An inbound bus lane extending along Cratloe Road from Moylish Roundabout to Hassett's Cross. Traffic calming measures on Belfield Court and Belfield Gardens such as raised table junctions and build out with cycle by-pass. Upgrade works to bus stops, side road junctions and new road surfacing. Installation of LED public lighting. Surface water drain works. Landscaping works including tree removal & tree planting and all associated site works. Application was granted on the 12/12/2022. The Appropriate Assessment Screening Report was consulted, and it was determined that the Proposed Development combined with this project would not have the potential to result in any significant in-combination effects on any European site. Approximate distance from proposed development: ~286 m
- **Planning Ref: 228018:** Permission for development works that will consist of: (a) Segregated cycle lanes, shared carriageway and footpath upgrades/reconstruction commencing on the R526 (north-east of Ballykeefe Roundabout), along South Circular Rd, Henry St and terminating at Mill Lane in Limerick City Centre, with dedicated pedestrian and cycle crossing facilities throughout. (b) Traffic calming measures including raised table junctions, upgrade of junctions, reduced carriageways, changes to speed limits, and insertion of traffic signals at the Ashbourne Ave/New Street and Henry St/Mallow St junctions. (c) Removal of and redistribution of on-street parking bays to facilitate cycle lanes along the length of scheme. (d) Traffic restrictions to include vehicular access from the SCRd to City Centre diverted to Ballinacurra Road, removal of right turn from Ballinacurra Road to SCRd, Lifford Ave to SCRd, removal of left turn from Boreen a Tobair to SCRd, extension of existing one way system on SCRd to junction with Clontarf Place, and creation of one way streets to include Quin Street, St Gerard Street, and Mill Lane. (e) Infill car parking area to include 10 spaces on corner of South Circular Road and Laurel Hill Avenue. (f) Road resurfacing, road markings, colored surfacing, surface water and foul drainage works, public lighting, services, and landscaping works including removal of one tree at junction of South Circular Road/Lifford Avenue. (g) The proposed works are located within Architectural Conservation Areas 1 and 2 and adjacent to, but not within, the curtilages of a number of protected structures. (h) All associated site works. Application was granted on the 20/02/2023. The Appropriate Assessment Screening Report was consulted, and it was determined that the Proposed Development combined with this project would not have the potential to result in any significant in-

combination effects on any European site. Approximate distance from proposed development: 190m across the river.

- **Planning Ref: 23557:** Permission for a Large-Scale Residential Development (LRD) at this site: Ardhu House, Ennis Road, Roses Avenue and North Circular Road, Limerick. Ardhu House is a Protected Structure, RPS Reg. No. 3281 (Former Limerick Ryan Hotel, Ennis Road, Roses Avenue). The application site includes an area of public road/footpaths to facilitate a watermain diversion via North Circular Road, Roses Avenue and Ennis Road. The development site area and watermain diversion works provide a total planning application site area of 2.19 hectares approx. Application was granted on the 19/04/2024. The Natura Impact Assessment was consulted, and it was determined that the Proposed Development combined with this project would not have the potential to result in any significant in-combination effects on any European site. Approximate distance from proposed development: 667m.
- **Planning Ref: 2360345:** Permission for (i) The demolition of an existing two-storey residential dwelling located on James' Street (58 sq.m), (ii) Development of an eight-storey building, over basement level, comprising of 21 no. residential units, communal areas and commercial space, including: (a) Basement level communal area (73.5 sq.m) and ground level communal area (68.5 sq. m), (b) Ground floor commercial space (87.25 sq.m), (c) 3 no. Studio apartments, 15 no. 1-bed apartments and 3 no. 2-bed apartments from first to eight storeys, (iii) The provision of internal cycle storage, bin storage, plant room, and lighting and heating system, (iv) The provision of external visitor cycle parking, (v) The provision of foul and surface water drainage, attenuation, and blue roof, (vi) All other associated and ancillary works, as required. Application was granted on the 17/07/2023. The Appropriate Assessment Screening Report was consulted, and it was determined that the Proposed Development combined with this project would not have the potential to result in any significant in-combination effects on any European site. Approximate distance from proposed development: 650m
- **Planning Ref: 316523:** Permission for the demolition of existing single storey extension and shed to the rear of existing dwelling. The construction of an extension to the rear of existing dwelling and all associated works. Permission is also being sought for the construction of a single storey garage and store room within the private open space to the rear of the existing dwelling. Application refused permission on the 17/05/2023. Less than 50m. The relevant application documents were consulted, and it was determined that the Proposed Development combined with this project would not have the potential to result in any significant in-combination effects on any European site.

8.4 Assessment of In-Combination Effects

The residual construction and operation impacts of the Proposed Development are considered cumulatively with other plans and projects as described in Sections 8.1 and 8.2 above. Particular focus has been placed on those plans and projects that are in close proximity to the Proposed Development and those that could potentially result in in-combination impacts on designated sites, surface water, habitats and species.

Taking into consideration the reported residual impacts from other plans and projects in the area and the predicted impacts with the current proposal, no residual in-combination adverse effects have been identified with regard to any European Site.

9. CONCLUDING STATEMENT

This NIS has provided an assessment of all potential direct or indirect adverse effects on European Sites. It has also assessed the potential for in-combination effects on European site with other plans and projects.

Where the potential for any adverse effect on any European Site has been identified, the pathway by which any such effect may occur has been robustly blocked through the use of avoidance, appropriate design and mitigation measures as set out within this report. The measures ensure that the construction of the Proposed Development does not adversely affect the integrity of the Lower River Shannon SAC or the River Shannon and River Fergus Estuaries SPA or any other European Sites, in view of their Conservation Objectives.

Therefore, it can be objectively concluded that the Proposed Development, individually or in-combination with other plans or projects, will not adversely affect the integrity of the Lower River Shannon SAC or the River Shannon and River Fergus Estuaries SPA or any other European Sites.

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APPENDIX 1

EIAR DESCRIPTION CHAPTER

CHAPTER ONE INTRODUCTION

1.1 INTRODUCTION

This Environmental Impact Assessment Report (EIAR) has been prepared on behalf of Limerick City & County Council in partnership with Limerick Twenty Thirty Strategic Development DAC (LTT). The EIAR has been prepared to accompany an application for approval to An Coimisiún Pleanála under Section 175 of the Planning & Development Act 2000 as amended, for the construction of a mixed use development that seeks the regeneration and adaptive reuse of a strategic brownfield site, as part of the Limerick City and County Council 'World Class Waterfront revitalisation and transformation project'.

The site, known locally as 'Cleeves Riverside Quarter' comprises the former industrial mill complex ('Cleeves') situated on the northern side of the River Shannon, Limerick City and occupies the area between; Stonetown Terrace Road to the northeast; O'Callaghan Strand to the southeast; Condell Road (R527) to the southwest; and, Salesian Primary School and the 'Fernhill' residential estate to the northwest and west respectively - all situated in the townland of Farranshone More in Limerick City. The site is dissected by North Circular Road where it extends between Shelborne Road Lower and O'Callaghan Strand. The full extent of the planning application site is detailed in Figure 1.1 and a description of the site is provided in Chapter 2.0.

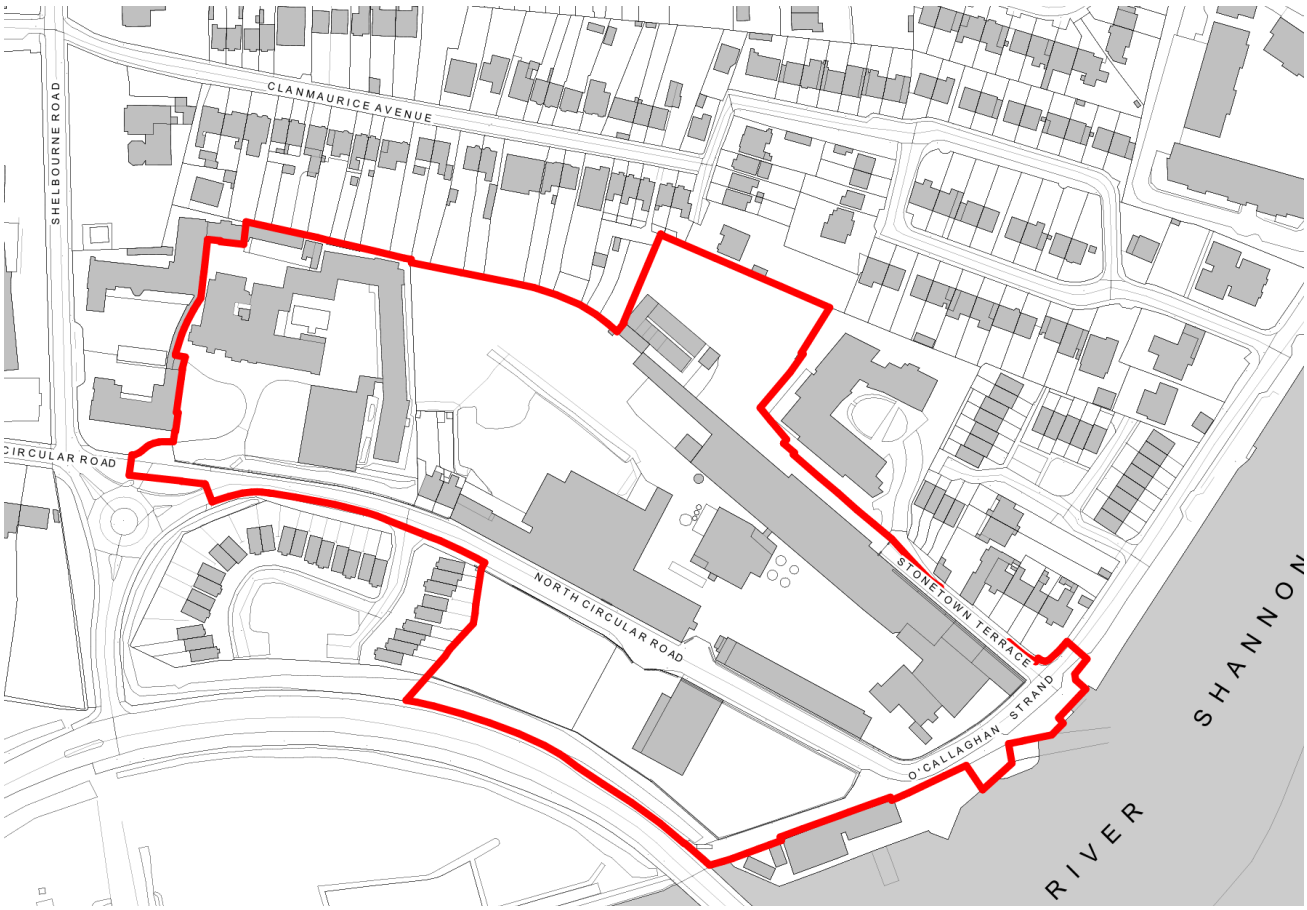

Figure 1.1 Application Site

The proposed development seeks the demolition of a number of structures and the construction and phased delivery of a number of buildings within the site ranging in height from 3 – 7 storeys including 234 no. residential units; 270 no. student bedspaces; commercial floorspace; and a creche. Extensive public realm works are proposed inclusive of the Flaxmill Plaza and a riverside canopy area. Chapter 2.0 provides a full description of the project.

The central purpose of this EIAR is to undertake an appraisal of the effects of the proposed development (Phase II) and the Masterplan site as far as practically possible on the environment, and to document this process and describe the likely significant effects on the environment (if any). The EIAR is then submitted to the competent/ consent authority to enable it to assess the likely significant effects of the project on the environment.

1.2 EIA LEGISLATION, DEFINITION OF EIA AND EIAR

The first EIA Directive was adopted in 1985 (Directive 85/337/EEC) and following the adoption of amending Directives in 1997, 2003 and 2009, a codified Directive was adopted in 2011 (Directive 2011/92/EU). Directive 2014/52/EU amends the 2011 codified Directive but does not replace it. This EIAR has been prepared in accordance with the requirements of the codified Directive 2011/92/EU as amended by Directive 2014/52/EU (hereafter referred to as the 'EIA Directive').as well as relevant national implementing legislation, i.e. Part X of the Planning and Development Act 2000, as amended ('the 2000 Act'), and Part 10 of the Planning and Development Regulations 2001, as amended, ("the 2001 Regulations").

Certain public and private projects that are likely to have significant effects on the environment are required to undergo an environmental impact assessment (EIA) in accordance with the EIA Directives. The purpose of the EIA Directives is to ensure that projects likely to have significant effects on the environment are subject to a comprehensive and systematic assessment of environmental effects prior to development consent being given. Directive 2014/52/EU defines 'environmental impact assessment' as a process, which includes the responsibility of the developer to prepare an Environmental Impact Assessment Report (EIAR), and the responsibility of the competent authority to provide reasoned conclusions following the examination of the EIAR and other relevant information.

The EPA Guidelines (2022)[1] (and the Planning and Development Act 2000 as amended) provide the following EIAR definition: "A report or statement of the effects, if any, that the proposed project, if carried out, would have on the environment."

The information to be included in an EIAR is specified in Article 5(1) and Annex IV of the EIA Directives (see section 1.7 below for more). The EIAR is prepared by the developer (in this instance Limerick City & County Council in partnership with Limerick Twenty Thirty Strategic Development DAC) and is submitted to a Competent Authority (CA) (in this instance An Coimisiún Pleanála) (ACP) as part of a consent process. The CA uses the information provided to assess the environmental effects of the project and, in the context of other considerations, to inform its decision as to whether consent should be granted. The information in the EIAR is also used by other parties to evaluate the acceptability of the project and its effects and to inform their submissions to the CA.

[1] *2 Guidelines on the Information to be contained in Environmental Impact Assessment Reports, Environmental Protection Agency, 2022*

The overall objective of the EIA process is to identify, assess and describe the potential direct and indirect significant effects resulting from a project. Where potentially significant adverse effects are identified, appropriate measures to avoid, reduce, and if necessary, offset these effects are prescribed.

The principal elements of the EIA process, informed by the EIAR Guidelines (EPA, 2022), are summarised in Table 1.0 with a high-level description of each stage.

Table 1.1 Principal Elements in the EIA Process

	Stage	Description
Project Inception	Screening	To determine whether an EIA is required for the Project.
	Scoping	To determine the issues to be considered as part of the EIA, information to be included in the EIAR, and the methods used to gather and assess that information.
Preparation of the EIAR	Consideration of alternatives	Describing the reasonable alternatives studied by the developer and the main reasons for choosing the project, outlining how environmental considerations were taken into account.
	Description of the proposed development	A description of the whole proposed project, comprising information on the site, design, size and other relevant features of the project, within the EIAR.
	Describing the baseline environment	The baseline scenario refers to the current state of environmental characteristics. It involves the collection and analysis of information on the condition, sensitivity and significance of relevant environmental factors which are likely to be significantly affected by the project.
	Identification and assessment of effects	The assessment of potential environmental impacts of the project on the existing environment and where the significance of effects is determined.
	Mitigation and monitoring	Description of mitigation measures to avoid and/or reduce significant adverse effects and details any monitoring proposals.
Completion of the EIA	Scrutiny and consent	The competent authority, ACP, will undertake the EIA and decide if the project can be consented. ACP will inform the public and other consultees of its decision
	Enforcement and monitoring	If consent is granted, the developer will have to adhere to mitigation measures published in the EIAR. Monitoring may be required to confirm the effectiveness of implemented mitigation measures during the construction, operation and maintenance (O&M) and decommissioning phases.

1.2.1 EIA Guidance

The primary objective of the EIAR is to identify the baseline environmental context of the proposed development, predict potential beneficial and/or adverse effects of the development and propose appropriate mitigation measures where necessary. In preparing this EIAR the following regulations and guidelines were complied with:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, EPA, May 2022
- 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.
- Circular letter PL 1/2017 - Advice on Administrative Provisions in Advance of Transposition (2017).
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DoECLG, March 2013).
- Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (EPA 2003).
- Environmental Impact Assessment (EIA), Guidance for Consent Authorities Regarding Sub-Threshold Development (DoEHLG 2003)
- OPR Practice Note PN02 Environmental Impact Assessment Screening
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report, European Commission, 2017
- Environmental Impact Assessment of Projects Guidance on Screening European Commission (2017).
- Environmental Impact Assessment of Projects Guidance on Scoping European Commission (2017).
- Study on the Assessment of Indirect & Cumulative Impacts as well as Impact Interaction (DG Environment 1999).

1.3 FUNCTION OF THE ENVIRONMENTAL IMPACT ASSESSMENT REPORT

This EIAR is a statement of the effects, if any, which the proposed development, if carried out, would have on the environment. It consists of a systematic analysis and assessment of the potential effects of a proposed project on the receiving environment. The function of the EIAR is to:

- Establish the existing environmental characteristics of the proposed site;
- Provide details of the proposed development and associated secondary developments;
- Predict the likely significant effects of the development on the environment;
- Outline the measures considered necessary to avoid, reduce or mitigate the negative impacts identified both individually and cumulatively to an acceptable degree;
- Identify areas requiring reinstatement and on-going monitoring.

The EIAR has been prepared following the logical analysis of the development proposal in relation to the receiving environment. This process of environmental impact ‘assessment’ and the preparation of this report has been an evolving iterative process. In order to avoid, reduce or negate potential adverse environmental effects, and to ensure holistic consideration of all environmental issues, the EIAR for this

project has been cognisant of baseline environmental conditions established and assessed within the wider masterplan site, including all areas which remain to be developed.

For the avoidance of doubt, all necessary technical information required for the purpose of the EIAR is enclosed either within this report or within the planning application documentation submitted with the planning application.

Prior to lodging this application, the required information was issued to the Department of Housing, Planning and Local Government's EIA Portal. The purpose of this tool is to inform the public, in a timely manner, of applications that are accompanied by an EIAR. The portal provides a URL link.

1.4 TECHNICAL DIFFICULTIES or LACK OF DATA

The compilation of the information necessary for the EIAR did not present any significant difficulties. However, some assumptions and projections were necessary for certain areas of this assessment, particularly the traffic and noise assessments.

The proposed development (Phase II) comprises part of a wider Masterplan site (see Section 1.6.3). Whilst the EIAR for this project is cognisant of baseline environmental conditions established within the wider masterplan site, including all areas which remain to be developed in future phases of development, the EIAR assesses the impacts arising from the proposed development (Phase II). The predicted impacts of future development as part of the Masterplan (cumulative impacts) are are taken into account in this EIAR as far as practically possible, based on the information currently available about potential future phases.

Survey work has been undertaken to complement data from official sources in order to provide up-to-date base line information on which to undertake the environmental assessments. Small areas of the buildings were inaccessible for the purpose of undertaking detailed surveys. The upstairs of the office building on North Circular Road has been deemed unsafe due to asbestos. The Coldstore building was accessible in 2021 and 2022 but has since been deemed structurally unsound and internal access was restricted after these dates. The Weaving Mill was unsafe to enter due to deteriorated asbestos roof and structural concerns. A number of other structures were not accessed due to health and safety limitations including the Upper Reservoir, the interior office of the water tank and underwater features within the reservoir.

With respect to archaeology It was found that a significant challenge to the assessment related to continuing development of the site from the 19th century, but more significantly in the 20th century. While many 19th century buildings on the development site retain their own heritage value, they conceivably could have impacted possible earlier archaeological or historical sites. Extensive sections of the site were surfaced with hard surfaces such as concrete. This either removed upper soil and ground levels or obscured them to visual examination. However, the results of a preceding ground penetrating radar survey greatly assisted in overcoming this impediment.

With respect to the cultural heritage assessment, the presence of c20th linings has concealed earlier wall surfaces making it impossible to be explicit about the integrity of fabric that cannot be seen. Irrespective, each building has been visited to permit visual inspection.

With respect to water, there are no currently available records which show a connection between the spring source at the Westfield Wetlands and the proposed development site. However given the reported historic presence of the pumphouse, spring supply and locally reported (albeit unconfirmed) connection to the proposed development, along with the fact that any historic decommissioning / capping is unlikely to have fully sealed off the pipework, for the purpose of this EIAR it is conservatively assumed that the historic connection remains in place between the site and Westfields Wetlands.

Nonetheless, this EIAR has been prepared on the best available information and in accordance with current best practice and guidelines published by the Environmental Protection Agency.

1.5 THE APPLICANT

The applicant is Limerick City & County Council in partnership with Limerick Twenty Thirty Strategic Development DAC (LTT).

LTT is a property development company, established as a special purpose vehicle of Limerick City and County Council, to plan and develop key strategic sites in Limerick City and County. The company has experience in delivering strategic sites, acting as anchors for enterprise and investment development across Limerick and the Mid-West Region.

To name but a few, the 0.2 hectare Gardens International Office site in the heart of Limerick City on Henry Street is a striking example of the new standard of office space that LTT is bringing to market.

The ongoing development of Opera Square, a 1.4 hectare site in the city, demonstrates the sustainability and innovation approach adopted by the company. Opera Square includes the largest new civic space to be created in Limerick City Centre in over 100 years. The project blends new next generation structures with sixteen carefully preserved heritage buildings. Set around a large pedestrianised square, it includes a library, hotel and leisure spaces, and places to live and work.

1.6 THE MASTERPLAN

1.6.1 Masterplan Overview

The Cleeves Riverside Quarter Illustrative Masterplan – Vision Document was published in October 2023 by LTT. The Masterplan was prepared in response to the requirements for a coordinated and holistic approach to development on the Cleeves Site (5.30 hectares) as acknowledged in the Limerick Development Plan 2022 – 2028[2]. The Masterplan was subject to public consultation and comprised the first step towards development on the site.

The Masterplan provides for the comprehensive regeneration and development of the entire 5.3 hectares site including demolition, repair and reuse of all buildings on site. The Master Plan identifies six separate Development Zones on the site as detailed in Figure 1.3. It is proposed to advance only some / part of these zones in the proposed development (Phase II). There are four proposed phases of development on the Cleeves Site as detailed below.

[2] Section 3.4.3.2 Limerick Development Plan 2022 -2028

Phase I – Heritage Works

The Flaxmill requires substantial and expansive repair and renovation to enable reuse. Urgent works are required to the main mill roof and upper storey which necessitates peeling back of modern layers. These works are in keeping with best conservation practice and the Architectural Heritage Protection Guidelines (2011) and are not considered to materially affect the character of the protected structure. Accordingly, they are outside the scope of the application for consent to An Coimisiún Pleanála and are being undertaken under the provisions of Section 179(6)(a) of the Planning & Development Act 2000 as amended. This EIAR will assess potential cumulative impacts arising from these works.

Phase II - Residential & Public Realm (Subject development proposal)

This application for consent is being advanced for the Residential sites (Salesians Zone, Stonetown Terrace Zone, O'Callaghan Strand which is located within the Flaxmill Zone and the Quarry Zone); and the full Public Realm for the entire site excluding St. Michaels Rowing Club. The commercial buildings proposed for the Shipyard site in the Masterplan are not being advanced at this time. However, a temporary meanwhile use for the Shipyard Zone is proposed. Demolition will be undertaken on site to facilitate the proposed development, including the total demolition of the Salesians School and associated buildings.

Phase III – TUS Campus

This will form a separate planning application and is likely to advance whilst the Phase 2 Residential & Public Realm development (current application) is being assessed. The Flaxmill and associated historical buildings will undergo a change of use, renovation works and be extended to accommodate commercial uses at the ground floor level with educational use at upper floors. Significant new educational buildings are proposed along North Circular Road as detailed in the Masterplan, which will necessitate further demolition of buildings. This development will be assessed as part of the EIAR insofar as possible having regard to the extent of information available at the current time.

LTT and the Technological University of the Shannon (TUS) have entered into a Memorandum of Understanding to deliver the campus with a detailed Feasibility Study already complete. The next stage in the process is Planning Developed Stage: Outline Sketch Scheme Design and it is likely that consent shall be sought for this development in 2026, dependent on funding approval from the Higher Education Authority.

Phae IV – Shipyard Site

final phase of development will be the Shipyard site which is intended to accommodate significant commercial development, including circa 23,000sqm of commercial floorspace, with significant buildings of up to 8 storeys in height and a landmark building extending towards the river. This part of the overall Masterplan is intended to accommodate most of the minimal car parking provision for the site within an undercroft / basement level. There is no timescale defined for the delivery of this element of the development, but it is likely that detailed design will commence after the consent process associated with the TUS educational campus. In the meantime, temporary 'meanwhile uses' are proposed on the Shipyard site which will be assessed in the EIAR.

Figure 1.4 Cleeves Riverside Quarter Illustrative Masterplan – Vision Document

1.7 THE DEVELOPMENT

1.7.1 Masterplan Site Context

The Cleeves Masterplan site (5.30 hectares) has a unique location, situated on the northern bank of the River Shannon, yet also being assigned part of the City Centre Area. The river visually separates the site from Limerick city centre which allows it to form a stronger relationship with the immediate context west of the river, including residential neighbourhoods, educational facilities and public open space, including the Westfield Wetlands.

The site consists of two separate parts, located north and south of North Circular Road, comprising Cleeves, a former industrial site which is located dissected by the North Circular Road; the Salesians Convent and Secondary School, which is located to the north of the Cleeves site; and St. Michaels Rowing Club located between the river and O'Callaghan Strand.

The site is bounded by Stonetown Terrace Road to the northeast; O'Callaghan Strand to the southeast; Condell Road (R527) to the southwest; and, Salesian Primary School and the 'Fernhill' residential estate to the northwest and west respectively. The former industrial mill complex ('Cleeves') has a number of heritage buildings and mid - late c.20th building structure additions.

Figure 1.2 Cleeves Riverside Quarter development site in the context of Limerick City and hinterlands.

There are two structures within the site designated as protected structures; the Flaxmill Building (PS Ref no.264 & NIAH No. 21512053) and the octagonal brick chimney (PS Ref no.265 & NIAH No. 21512059). The site is currently a brownfield site, mainly comprising hardstanding and revegetating bare ground, with Salesians school dominating the north western section. The levels within the site vary significantly, sloping from northwest to southeast towards O'Callaghan Strand and the River Shannon. An old quarry is located at the centre of the site, with a reservoir formed from part of the quarry. The site consists of six development zones as detailed in Figure 1.3, including Salesians Zone; Quarry Zone; Stonetown Terrace

Figure 1.3 Six Development Zones with the Overall Masterplan Site

Zone; Flaxmill Zone / O'Callaghan Strand; St. Michael's Rowing Club / Riverside Zone; and Shipyard Zone. A different approach to development has been adopted or each zone and which shall inform future delivery sequencing.

1.7.2 The Application Site

Whilst the area of the proposed development site (5.09 hectares) encompasses most of the Masterplan site, the St. Michael's Rowing Club site adjoining the river's edge, is excluded from the current development proposal (Phase II). This area which measures 0.2 hectares will be included in Phase IV. Further, within the site not all buildings are proposed to be demolished / constructed or re-used as indicated within the Masterplan. Rather, the focus on this phase of development is to advance residential development in an effective and efficient manner to address the critical shortage of accommodation in the city, whilst ensuring that the development does not compromise the future delivery of Phase III TUS Educational Campus and the remaining Masterplan proposal.

1.7.3 The Proposed Development (Phase II)

The development site as defined in red on the Site Layout Plan comprises 5.09 hectares. The proposed development as described in the public notices is set out hereunder.

The proposed development comprises Phase II, of an overall Masterplan with four phases of development proposed. Phase II will commence subsequent to ongoing emergency stabilisation and repair of the Flaxmill protected structure (Phase I). Phase III is intended to comprise an educational campus, inclusive of the adaptive reuse of the Flaxmill Building as part of that development and will be subject to a future separate application. Phase IV comprising the Shipyard site will be the final phase of development.

Two structures within the site are designated protected structures; the Flaxmill Building (PS Ref no.264 & NIAH No. 21512053) and the octagonal brick chimney (PS Ref no.265 & NIAH No. 21512059), which are to be retained.

The proposed development includes:

A. Demolition of a number of structures to facilitate development including (i) Salesians Secondary School and Fernbank House; (ii) 2 no. houses on North Circular Road; (iii) Residual piers from the basin of the reservoir; (iv) Upper Reservoir on Stonetown Terrace comprising 2 no. concrete water tanks, pump house and liquid storage tank; (v) 1960's lean-to building structures adjoining the Cold Store (former Weaving Mill); (vi) remaining fabric of c20th rear lean-to of the Flaxmill Building; (vii) c.1960s office building adjoining the Packing Store and Cheese Plant on North Circular Road; (viii) Cluster of buildings including altered part of the Linen Store, the former Linen Store, Storage Building, and Office/Lab building at O'Callaghan Strand / Stonetown Terrace with partial retention of existing stone wall; (ix) warehouse on the Shipyard site; and (x) partial removal of stone boundary wall defining the Cleeves site adjoining O'Callaghan Strand / Stonetown Terrace and around the Shipyard site.

B Construction and phased delivery of:

i. Residential Development in 4 development 'zones' within the site ranging in height from 3 – 7 storeys (with screened service plant at roof level) comprising; (a) 234 no. residential units; (b) 270 no. student bedspaces with ancillary resident services at ground floor level; (c) 299sqm of commercial floorspace; and (d) a creche. The specific development details of each proposed development zone comprise the following:

- Salesians Zone – 1 no. building with 2 no. blocks extending to 6 and 7 storeys comprising 146 no. apartments (76 no. 1 bed; and 70 no. 2 bed); a creche; semi basement car and bicycle parking; reception area, plant rooms, and refuse storage, with screened external plant and photovoltaic panels at roof level; 20 no. 3 storey 3 bed triplexe units with photovoltaic panels at roof level; and 30 no. car parking spaces for the dedicated use of the adjoining Salesians Primary School.
- Quarry Zone – 1 no. Purpose Built Student Accommodation (PBSA) building with 3 no. blocks extending to 6 and 7 storeys comprising 270 no. bedspaces with study rooms, shared areas, exercise room, reception area, plant rooms, refuse storage and bicycle parking all at ground floor level and screened external plant and photovoltaic panels at roof level. Provision is made for telecommunication antennae on the roof top of one block. Consent is also sought for use of the PBSA accommodation, outside of student term time, for short-term letting purposes.
- Stonetown Terrace Zone – 1 no. building extending to 4 - 5 storeys comprising 38 no. apartments (6 no. studios; 12 no. 1 beds; and 20 no. 2 beds) with plant rooms and refuse storage at ground level, ancillary infrastructure at basement level at northern end of the block, with screened external plant and photovoltaic panels at roof level; 9 no. 3 storey 3 bed townhouses with photovoltaic panels at roof level; and a dedicated secure bicycle storage facility.
- O'Callaghan Strand Zone – 1 no. building extending to 4 / 5 storeys comprising 21 no. apartments (9 no. 1 bed and 12 no. 2 bed) with an open roof structure accommodating communal open space, plant and photovoltaic panels; and 299qm of commercial ground floorspace intended to accommodate Class 1, Class 2 and / or Class 3 uses, with provision for car parking in the undercroft.

ii. Dedicated mobility hub with canopy and photovoltaic panels including double stacker bicycle parking; and EV Charging spaces, within the Shipyard Zone. A dedicated pedestrian/cycle link connects North Circular Road with Condell Road. The remaining area of the zone shall accommodate temporary car parking and a temporary external event space to be used on a periodic basis as the need arises, pending future redevelopment proposals as detailed in the Masterplan (Stage IV).

iii. Extensive provision of Public Realm including creation of the Reservoir/Quarry Park, the Flaxmill Square and the Riverside Corridor. Significant areas of civic and green spaces are provided, incorporating formal and informal play space; nature based SuDs, permeability and access; and a riverside canopy with photovoltaic panels functioning as an outdoor event space and incorporating heritage interpretative panels

iv. 3 no. dedicated bat houses;

v. Telecommunication antennae on roof of Block 2A of the PBSA, including (a) 9 no. Support poles to support 2 no. antennae each; (b) 6 no. microwave dishes affixed to the plant screen; and (c) associated telecommunications equipment and cabinets (effectively screened). To facilitate technologically acceptable locations at the time of delivery, a micro-siting allowance of 3m is proposed on the roof top of Block 2A of the PBSA for the infrastructure.

vi. Provision of vehicular access/egress points including (a) utilisation of existing access points to the Salesians Zone, to the Flaxmill and Quarry Zones and to the Mobility Hub on the Shipyard Site Zone; (ii) reopening an existing (currently blocked) access point off O'Callaghan Strand; (iii) new access points to the proposed undercroft carparking at Salesians from the North Circular

Road and at the end of Stonetown Terrace road which provides access to the Stonetown Terrace Zone; and (iv) emergency access only from Stonetown Terrace to the Flaxmill Zone;

vii. Provision of 30 no. dedicated car parking spaces to serve the Salesians Primary School; and

viii. All ancillary site development works including (a) water services, foul and surface water drainage and associated connections across the site and serving each development zone; (b) attenuation proposals; (c) raising the level of North Circular Road between Fernhill and O'Callaghan Strand; (d) refuse collection store (e) car and bicycle parking to serve the development; (f) public lighting; (g) all landscaping works.; and (h) temporary construction measures including (i) construction access to the Quarry site including provision of a temporary access across the reservoir; and (ii) temporary use of onsite mobile crusher.

1.8 PLANNING APPLICATION AND ENVIRONMENTAL ASSESSMENT – CLARIFICATION

1.8.1 The Masterplan

In considering the 'whole' Masterplan proposal and in the context of describing a proposed project and future alterations to the project, the EPA Guidelines[3] note that the *Apple Date Centre Case*[4] provides useful clarification on the requirements for assessment of cumulative effects and 'project splitting' as follows:

the obligation … to take account, when conducting the EIA of the proposed development which is the subject of the planning application, of potential environmental impacts of future phases of a masterplan, as far as is practically possible, does not amount to an obligation to conduct an EIA of the masterplan.… When and if an application for planning permission for further phases of the masterplan is made, a full EIA will be required which in turn will both assess cumulative impacts with all existing or approved developments, and look forward by taking account, as far as practically possible, of remaining future phases of the masterplan.'

For the avoidance of doubt, all works proposed as part of the application for which planning consent is being sought, and described in the statutory notices, have been subject to environmental assessment which is presented in this EIAR. The 'physical characteristics' of these development works are presented and described in further detail in the following chapters. These characteristics of development present a phased (sequencing) approach to development on the lands and the proposed phasing approach is described and assessed as part of this EIAR.

However, in order to ensure an effective and conclusive environmental assessment consistent with best practice, the assessment of potential effects on the environment examines; the effects arising from the physical characteristics of the proposed residential and public realm works (Phase II) and the collective cumulative effects of the Phase I works and the remaining masterplan lands which have yet to be advanced for development, insofar as information is available. Further detail of the individual Masterplan Phases and the information available at the current time are provided in Chapter 2.0 Section 2.2.4.

The examination of the 'all phase' development scenario for the site is consistent with best practice in order to examine a 'worst-case' scenario of the project effects.

[3] Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, EPA, May 2022

[4] Fitzpatrick & Daly v An Bord Pleanála & Others [2019] IESC 23

Whilst the proposed development and the permitted development scenarios can be easily quantified and assessed, there remains many unknowns with respect to the remainder of the Masterplan site. Accordingly, the impacts of specific development proposals will need to be considered and assessed as development evolves and planning consent is sought for such development.

Examination of this 'worst-case' scenario is based on the likely effects of the proposed development and the anticipated activities that will occur from subsequent construction and operational stages of remaining phases based on the information known and available at this time in respect to those subsequent phases.

1.8.2 Micrositing of Telecommunication Antennae

Block 2A (west wing) of the PBSA proposes support poles to accommodate telecommunication equipment and associated infrastructure necessary to mitigate the impact the development will have on the existing poor mobile phone signal in the area and provide both the occupants of the development and the local area with adequate voice and data services to meet modern demands.

The proposed development involves the micrositing of telecommunication antenna by approximately 3 meters on the rooftop of Block 2a of the PBSA. The adjustment is intended to optimise signal coverage and network performance without altering the overall design or height of the installation. The flexibility is required to facilitate technologically acceptable locations at the time of delivery. This flexibility will be assessed in the EIAR having regard to relevant environmental factors.

1.8.3 Clarification of Terminology Used

This EIAR uses specific terminology to describe the application site and the proposed development comprising different phases of development and which form part of an overall Masterplan. The definitions and explanations of key terms are provided to ensure clarity and consistency throughout the document.

Proposed Development – That development as described in the public notices for the purpose of the application for approval, further explained in Chapter 2.0 and including detail on site development works, all of which are assessed in this EIAR.

Application Site – The site comprising 5.09 hectares in area as defined in Chapter 1.0 Figure 1.1 and described in Section 1.7.2, that being the same as the red line boundary on the application for approval drawings and for which planning permission is sought, comprising Phase II development.

Masterplan Site – The site comprising 5.3 hectares in area as defined in Chapter 1.0 Figure 1.4, inclusive of St. Michael's Rowing Club, comprising Phases I – IV development, that being the same as the site defined in the non-statutory Cleeves Riverside Quarter Illustrative Masterplan – Vision Document, Limerick Twenty Thirty, 2023.

Application for Consent / Application for Approval – The plans, drawings and particulars submitted to An Coimisiún Pleanála under Section 175 and 177AE of the Planning and Development Act 2000

1.9 REQUIREMENT FOR ENVIRONMENTAL IMPACT ASSESSMENT REPORT

The projects which require EIA are listed in Annex I and Annex II of the codified Directive 2011/92/EU as amended by Directive 2014/52/EU (hereafter referred to as the 'EIA Directive'). Schedule 5 (Part 1) of the Planning & Development Regulations 2001 (as amended) transposes Annex I of the EIA Directive

directly into Irish legislation and establishes thresholds for development for which an EIA is always required.

Article 4(2) of the EIA Directive provides that, for projects listed in Annex II, Member States shall determine whether the project shall be subject to an EIA and that this determination shall be made either through a case-by-case examination or thresholds or criteria set by the Member State. In transposing Annex II of the EIA Directive into Irish legislation, Schedule 5 (Part 2) of the Planning and Development Regulations 2001 (as amended) sets mandatory thresholds for each project class.

For a project of this nature and scale, Paragraph 10 Infrastructure Projects and Paragraph 14 Works of Demolition are the relevant paragraphs in Part 2, Schedule 5 of the Regulations, as detailed in Table 1.2.

Table 1.2 EIA Threshold Screening	
Paragraph 10 Infrastructure Projects Class (b)(i)	
Threshold	Construction of more than 500 dwelling units
Response	The proposed development comprises 302 no. dwelling units[5] and is below the 500 dwelling unit threshold. The development does not exceed the threshold requirement for this class of works.
Paragraph 10 Infrastructure Projects Class (b)(iv)	
Threshold	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. (In this paragraph, "business district" means a district within a city or town in which the predominant land use is retail or commercial use).
Response	The application site is 5.09 hectares in area. Whilst the existing predominant landuse surrounding the subject site is residential in nature and zoned accordingly, the site itself is of industrial / commercial nature. Of importance, the majority of the site is located within the defined City Centre Area zoning. Further the site is identified as a City Centre Commercial Area (CCCA) where the objective is to support the retention and expansion of a wide range of commercial, cultural, leisure and residential uses in the commercial core area, (apart from comparison retail uses). Having regard to the primary zoning of the land as a 'city centre commercial area' and the objective to provide for a mix of commercial, residential, leisure and cultural uses, which is distinct from the immediate adjoining residential zonings, it is considered that the site falls within a 'business district'. The development exceeds the 2 hectare threshold under Paragraph 10(b)(iv) and mandatory EIA is required.
Paragraph 14 Works of Demolition	
Threshold	Works of demolition carried out in order to facilitate a project listed in Part 1 or Part 2 of this Schedule where such works would be likely to have significant effects on the environment, having regard to the criteria set out in Schedule 7.
Response	The proposed development comprises extensive demolition in proximity to the River Shannon and other sensitive environmental receptors including consideration of protected species – Lesser Horseshoe Bat. The works of demolition have the potential to have significant effects on the environment and requires mandatory EIA.

[5] 4 no. student bedspaces are equivalent to 1 no. residential unit as per definition provided in the Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities

1.10 STRUCUTRE OF THE ENVIRONMENTAL IMPACT ASSESSMENT REPORT

1.10.1 Layout of the EIAR

The EIAR shall contain three Volumes, including

(A) Non – Technical Summary;
(B) Written Statement
(C) Appendices

Volume I *'Non-Technical Summary'* presents a synopsis of the specialist technical reports, and commentary on the significant direct and indirect effects on the environment. It omits technical terms and abbreviations but does not understate any issues of significance that may arise from the project.

Volume II Environmental Impact Assessment Report – Written Statement is the main volume of the EIAR. It provides information on the location and scale of the proposed development and details on design and impacts on the environment (both positive and negative) as a result of the proposed development. Environmental variables, as detailed in Section 1.9.4 below, are examined in terms of the existing or baseline environment, identification of potential construction and operational stage impacts and where necessary proposed mitigation measures are identified. The interaction of the environmental aspects with each other is also examined. Each chapter includes an assessment of potential cumulative impacts with other existing and planned developments, where relevant.

Volume III Environmental Impact Assessment Report – Appendices contains specialists' technical data and other related reports.

1.10.2 Assessment Criteria

The EIAR includes a simplistic and systematic methodological assessment of the proposed development under the following sub-headings:

- Introduction
- Assessment Methodology
- Existing Receiving Environment
- Characteristics of the Proposed Development
- Likelihood of Significant Effects
- Cumulative Development & Impacts
- Remedial & Mitigation Measures
- Residual Impacts
- Worst Case Scenario
- Monitoring
- References

1.10.3 Significance of Environmental Effect

The effects on the receiving environment are measured as the likely natural or physical changes in the environment resulting directly or indirectly from the development processes. Consideration of these effects was undertaken by assessing the proposed development against the defined environmental variables set out in the Planning and Development Regulations 2001, as amended and the EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports

Impacts or effects are described in Guidance documents in terms of quality, significance, magnitude, probability, duration, and type. Table 1.2 below presents the Quality of effects; Table 1.3 details the description of the significance of effects and Table 1.4 presents the description of the duration of effects as shown in the Guidelines.

1.10.4 Environmental Variables

In assessing each of the above variables, examination was undertaken in terms of their context, character, significance and sensitivity in respect to the proposed development and location. The likely significant effects in this EIAR are, unless otherwise indicated in a particular Chapter, described using the terminology in Table 3.4 in the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, EPA, May 2022 (the EPA Guidelines 2022), which are presented in Table 1.3 – 1.6 below. The use of these terms for the classification of impacts ensures that the EIA employs a systematic approach, which can be replicated across most disciplines covered in the EIAR. The consistent application of terminology throughout the EIAR facilitates the assessment of the proposed development on the receiving environment.

Table 1.3 Quality of Effects

Quality of Effects	Definition
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).
Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Positive	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).

Table 1.4 Significance of Effects

Significance of Effects	Description of Potential Effects
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 significantly alters the majority of 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

Table 1.5 Probability of Effects

Probability of Effects	Describing the Probability of Effect
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

Table 1.6 Duration of Impact	
Duration of Impact	Definition
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 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)

1.10.5 Cumulative Impacts

The potential cumulative impact of the project in combination with other existing, planned or proposed developments in the area is considered in each chapter with the purpose of identifying the influence the proposed development will have on the surrounding environment when considered cumulatively and in combination with relevant existing permitted and proposed projects in the vicinity of the proposed site.

The assessment of projects in combination with other projects has four principal aims:

- To establish the range and nature of existing projects within the cumulative impact study area of the project.
- To summarise the relevant projects which have a potential to create cumulative impacts.
- To establish anticipated cumulative impact findings from expert opinions within each relevant field.
- Detailed cumulative impact appraisals are included in each relevant section of the EIAR.
- To identify the projects that hold the potential for in combination effects and screen out projects that will neither directly or indirectly contribute to in combination impacts.

1.10.5.1 Cumulative Effects Assessment

The potential cumulative effects of the proposed development with respect to traffic and noise resulting from the cumulation from multiple projects are predicted through the results of traffic and noise scenario modelling. The traffic modelling scenarios for the cumulative assessment are described in Chapter 18.0, whilst Noise is described in Chapter 13.0.

For other cumulative effects, it is necessary to consider the scale, nature and likely impacts of other projects which could combine with the proposed development to cause cumulative effects. It was therefore necessary to identify which other projects should be included for analysis as part of the cumulative effects assessment (CEA).

The first stage of the CEA was to identify other projects deemed potentially relevant. While the EIA Directive only requires the consideration of other existing and/or approved projects, this assessment has gone further having regard to the length of time envisaged to deliver the entirety of the Masterplan development (Phases 1 – IV). Cognisant of the fact that there is potential for a number of other projects

to receive approval and be progressed within that time period which may give rise to cumulative effects in combination with the proposed development, it was, therefore, considered appropriate to identify projects which, at the time of assessment, were yet to be approved, but for which a decision and potentially approval is reasonably foreseeable over the likely consenting and construction period anticipated for the proposed development

In addition to the cumulative assessment of the Phase I Masterplan development, which includes stabilisation and repair works to the Flaxmill Building, future phases of Masterplan development (Phases III & IV) will also be included, insofar as information is currently available. In the absence of specific guidance on CEA study areas, consideration was given as to the distance over which impact pathways from other projects could potentially combine with the impact pathways of the proposed development to have likely significant effects on relevant receptors for each environmental topic. There are a number of environmental factors which will have recommended study areas, including for example biodiversity, waste management and climate.

The Guidance for Planning Authorities on Appropriate Assessments (Department of Environment, Heritage and Local Government 2009) recommends a study area of 15km is applied. However, any Appropriate Assessment to be conducted by the competent authority needs to consider all potential pathways to impacts on European nature conservation sites and therefore the application of an arbitrary distance may not be suitable. Therefore, the Biodiversity Chapter will consider cumulative developments over a much more extensive area than other environmental factors.

Waste management is undertaken on a regional basis and therefore for the Waste & Resources assessment, consideration has been given to projects within the Souther Waste Region (SWR).

The Climate assessment has been considered on a national basis and not confined to a specific study area, as the drivers and impacts of climate change operate on a wider scale.

For other chapters of the EIAR, assessment material for the cumulative impact appraisal was compiled on relevant developments within the vicinity of the application site. A review of all permitted planning applications was undertaken within a 1km radius of the site, over the last five years[6]. A 1km buffer (zone of influence) was chosen having regard to the urban configuration of the city including the extent of the defined city centre and landmark features including development either side of the River Shannon. The The Zone of Influence was selected to provide a guide as to the likelihood that another project may contribute to potentially significant cumulative effects with the proposed development.

The material was gathered through a search of the National Planning Application Map Viewer, Myplan.ie and is detailed in Appendix 1.1. In the interest of completeness, planning permissions were considered, irrespective of their scale as ultimately likely impacts are dependent on the nature and location of development including site sensitivities.

However, given the location of the site in the city centre, a substantial quantum of applications comprises a change of use, or minor works which because of the protected structure status of the building required planning permission. Further, some of the permissions identified in the last five years have already been delivered on site. These instances have been highlighted in grey in the table provided in Appendix 1.1

[6] The review was undertaken on 16th July 2025 and has accounted for all permitted developments over the last five years

and which have not already been factored into the assessment as part of the existing baseline environment. It is primarily those developments which have not been highlighted which have a potential to create cumulative impacts.

These developments need to be considered in conjunction with the proposed Phase I Masterplan works. The relevance of the projects identified in Appendix 1.1 are considered on a case by case basis in each chapter as necessary, depending on the interaction and likelihood of in combination impacts.

1.10.6 Mitigation and Residual Effects

Mitigation measures are developed to eliminate or reduce adverse effects identified in the EIA. The approach to mitigation for the proposed development is a hierarchical one, which seeks to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment.

For the purposes of the EIA, two types of mitigation are defined:

- Primary (or embedded) mitigation: Throughout the development, measures have been adopted as part of the evolution of the project design and approach to construction to avoid or otherwise reduce adverse impacts on the environment. These mitigation measures are referred to as 'incorporated design mitigation'. They are an inherent part of the proposed development and are effectively 'built in' to the impact assessment.
- Additional (or secondary) mitigation: Additional mitigation includes measures that are not incorporated into the design and require further activity to secure the required outcome of avoiding or reducing the significance of an effect. Additional mitigation is normally receptor specific and may make reference to management plans to control activities or specific commitments. These are divided into construction and operation phase mitigation.

Following initial assessment, if the impact does not require additional mitigation (or none is possible) the residual effect remains the same. However, if additional mitigation measures are identified, impacts are reassessed and all residual effects clearly described. The residual effects are identified and described in each chapter of the EIAR.

The mitigation associated with the proposed development is identified and described in more detail in the relevant chapters of the EIAR (Chapters 6.0–21.0) and summarised in Chapter 23.0 Summary of Mitigation and Monitoring.

1.11 COMPETENCIES OF THE TEAM

In accordance with Article 5(3)(a) of the EU Directive, the EIAR has been prepared by "Competent experts". In accordance with Environmental Protection Agency (EPA) guidance *"All competent persons must possess a combination of technical knowledge, experience and skills, and must be able to demonstrate both practical and theoretical competence and should participate in continual professional development. Competence may be demonstrated through reference to an appropriate qualification and/or professional membership of a recognised acoustic organisation (e.g. the Institute of Acoustics) and/or appropriate experience".*

The preparation of this EIAR has been project managed by HRA Chartered Town Planning & Environment Consultants, trading as HRA Planning. The project management team hold recognised professional

qualifications in Town Planning, Environmental Impact Assessment Management, and in Ecological Assessment. The assessment has been prepared with other specialist professionals as per Table 1.7

Mary Hughes is a Director of HRA Chartered Town Planning & Environment Consultants and is a Corporate Member of the Irish Planning Institute (IPI). She qualified as a Town Planner in 1996 with a Masters of Science Degree from Queens University Belfast and has 29 years' experience in the field of town planning and environmental assessment. She received a Diploma in Environmental Impact Assessment Management from UCD in 1999. She spent her formative years working in local authorities throughout Ireland as a Town Planner before moving to private practice in 2002. Mary has project managed and co-authored many Environmental Impact Statements (EIS) and Environmental Impact Assessment Reports (EIAR) on behalf of private clients and public bodies across a diverse range of project typed and development sectors in Ireland. She is a Past President of the Irish Planning Institute.

Gary Rowan is a Director of HRA Chartered Town Planning & Environment Consultants, a Corporate Member of the Irish Planning Institute (IPI), and a Chartered Member of the Royal Town Planning Institute (RTPI). He has 26 years' experience in town planning, environmental impact assessment (EIA), and EIA management in Ireland. Qualified as a Town Planner in 1999, Gary went on to earn a Postgraduate Diploma in Environmental Impact Assessment Management from UCD in 2004 and an MSc in Applied Science (Ecological Assessment) from UCC in 2013. His career has included professional planning roles in local government and private consultancy, where he has provided town planning and EIA services to both public and private sector clients on development projects across Ireland. Gary has project-managed numerous EIARs (and earlier EISs), Strategic Environmental Assessments (SEAs), and Habitats Directive Assessments for private clients, including residential, commercial, and quarry developments.

Sara Fissolo is a Project Ecologist with MKO with over five years' experience in ecological consultancy. Sara holds a BSc. (Hons) in Ecology and Environmental Biology from University College Cork. Sara first joined MKO in 2019 and has since worked as a member of MKO's dedicated bat unit, where she scopes and manages bat survey requirements for a variety of projects, including wind-farms planning applications. She has specialised in carrying out bat survey requirements for developments and nature conservation projects, including habitat appraisals and roost assessments, manual/static activity surveys and data analysis, and produces bat report outputs to inform Ecological Impact Assessments, Environmental Impact Assessments and Appropriate Assessments. Sara's role includes keeping up to date with scientific literature and guiding her team and the rest of the ecology team on how to assess impacts on bats. She attended Wildlife Acoustics, Bat Conservation Ireland (BCI), Bat Conservation Trust (BCT) and CIEEM courses on surveying heritage buildings for bats, on performing advanced survey techniques and identification, on bats and lighting, on performing bat care, on assessing the impact of developments on bats and on the use of Kaleidoscope Pro Software. Sara is a member of BCI, for which she carries out volunteer surveys, is a qualifying member of CIEEM.

Pat Roberts is Principal Ecologist with MKO with over 20 years post graduate experience of providing ecological services in relation to a wide range of developments at the planning, construction and monitoring stages. Pat holds B.Sc.(Hons) in Environmental Science. Pat has extensive experience of providing ecological consultancy on large scale industrial and civil engineering projects. He is highly experienced in the completion of ecological baseline surveys and impact assessment at the planning stage. He has worked closely with construction personnel at the set-up stage of numerous construction sites to implement and monitor any prescribed best practice measures. He has designed numerous Environmental Operating Plans and prepared many environmental method statements in close

conjunction with project teams and contractors. He has worked extensively on the identification, control and management of invasive species on numerous construction sites. Prior to taking up his position with MKO in June 2005, Pat worked in Ireland, USA and UK as a Tree Surgeon and as a nature conservation warden with the National Trust (UK) and the US National Park Service. Pats key strengths include his depth of knowledge and experience of a wide range of ecological and biodiversity topics and also in his ability to understand the requirements of the client in a wide range of situations. He is currently responsible for staff development, training and ensuring that the outputs from the ecology team are of a very high standard and meet the requirements of the clients and relevant legislation and guidelines. He is a full member of the Chartered Institute of Ecologists and Environmental Managers (CIEEM) Pat sits on the Irish Policy Group of the CIEEM and reviews and comments on Irish and European Policy and legislation in this capacity. He is also an assessor for CIEEM membership applications.

Niall Gregory is a director of Gregory Archaeology and a member of the Institute of Archaeologists of Ireland, member of the European Association of Archaeologists, associate member as conservation surveyor of the Society of Chartered Surveyors of Ireland, tutor and member of the Nautical Archaeology Society, ambassador and founding member of Early Watercraft Association global network. He qualified as archaeologist with a BA NUI degree in archaeology and economics from University College Dublin in 1990, is a licence eligible archaeologist from 1990, awarded a PhD in archaeology in 1997 from the University of Edinburgh, and Dip in Safety, Health and Welfare from the University of Limerick in 2008. He worked as a consultant archaeologist to various archaeological practises, directing archaeological excavations, undertaking archaeological impact assessments, archaeological test excavations and archaeological monitoring. In 2001 he joined Babtie International – a multi-national consulting engineer company – with responsibility for large-scale infrastructural design projects, working with multi-disciplinary teams for the design, tendering, execution and review of advance archaeological contracting works. In 2002 he established Gregory Archaeology with a client base ranging from individuals to large national commercial developers, contractors and companies within the private sectors to local authorities and semi-state entities, such as Uisce Éireann, the Department of Education and the Health Service Executive within the public sector. Conservation and restoration projects of medieval town walls, town gates, buildings, castles / tower houses to 18th and 19th buildings, including industrial archaeology, have frequently involved working in close collaboration with other heritage and conservation professionals to ensure project delivery to the highest standards and outcomes.

***J*ames Sibson** has 20 years of experience working in the historic built environment. He is an Architect Accredited in Building Conservation who has led the repair and reuse of listed buildings and protected structures from pre- and post-industrial era. Many of these buildings are of national significance and a few are of international significance. His works includes industrial structures from the late 1700s and 1800s as well as more recent designated buildings of the mid C20th. He also works with Archaeologists in development settings scoping the investigation and appraisal of heritage above and below ground. He has prepared statements of significance for buildings dating from the 1400s through to designated buildings built in the 1960s. His work has guided major redevelopment projects in Manchester, Liverpool, Bristol and Huddersfield. He has also undertaken Heritage Impact Assessments for these projects. James has authored two Conservation Area Character Appraisals for Huddersfield and Islip, Oxford and has been working on the Cleeves Riverside Project since 2019.

Dave Kirkwood is Managing Director of Mitchell + Associates, Landscape Architects and Urban Designers. He qualified as a Chartered Landscape Architect in 1983 (Landscape Institute, UK) and has been a member of the Irish Landscape Institute since 1995. He served on the Council of the Irish

Landscape Institute for 5 years and is a Past President of the Institute. He has over 40 years' experience in landscape architectural practice, specialising in Landscape and Visual Impact Assessment (LVIA) since 2005.

Jannifer Harmon is a Director of Acoustics with AWN. She holds a BSc in Environmental Science and a Diploma in Acoustics and Noise Control and has over 24 years' experience in acoustic consultancy**.** She is a member of the Institute of Acoustics (MIOA) and has extensive knowledge in the field of environmental noise and vibration impact assessment, building acoustics and inward impact assessments. She has prepared environmental noise and vibration impact assessments for numerous major industrial, residential, commercial and infrastructural projects throughout the country.

Tanmay Gojamgunde is an environmental consultant in the Air Quality & Climate section of AWN Consulting, a Trinity Consultants Company. He holds a MSc in Air Pollution Management and Control from the University of Birmingham and has also completed BTech in Environmental Engineering. As part of the MSc, he worked on 'The Impact of bus-fleet electrification on air quality in Birmingham' utilising advanced dispersion modelling tools and emission inventory toolkit. Prior to joining AWN, Tanmay contributed to several key environmental projects in India, including Delhi's first air quality monitoring program (R ASMAN), air quality and traffic planning assessments with IIT Kanpur, and an Environmental Impact Assessment Report (EIAR) for an industrial district in Kanpur. He also specialises in conducting air dispersion modelling assessments of emissions, emission inventories, R programming and extends to broader aspects of environmental engineering

Ciara Nolan is a Principal Environmental Consultant in the Air Quality & Climate section of AWN Consulting. She holds a BSc in Energy Systems Engineering from University College Dublin and has also completed an MSc in Applied Environmental Science at UCD. She is a Member of the Institute of Air Quality Management (MIAQM) and the Institution of Environmental Sciences (MIEnvSc). She has over 8 years of experience in undertaking air quality and climate assessments. She has prepared air quality and climate impact assessments as part of EIARs for residential developments commercial and industrial developments, as well as renewable energy development. She also specialises in conducting air dispersion modelling assessments of emissions from data centres, energy centres and the chemical industry as part of EPA Industrial Emissions Licences.

Harshad Joshi has a B.E. in Mechanical Engineering and a MS in Mechanical and Aerospace Engineering, and leads the CFD division within IES. For the past 12 years he has worked in the IES Consultancy division using his expertise in Computational Fluid Dynamics to deliver projects worldwide.

Douglas Bell has a B.Sc. (Hons) in Design for Industry (Industry Engineering) and a PGDip in Integrated Product Development and leads the Lighting & BIM divisions within IES. For the past 19 years he has worked in the IES Consultancy division using his expertise in Daylight, Sunlight and Overshadowing assessments and BIM to deliver projects worldwide.

Pat 0'Brien is a Chartered Engineer and Managing Director with EOB Management Services Limited. Pat has over 35 years' professional experience and in relation to Major Accidents & Disasters assessment has worked on Lough Gill Distillery Co Sligo, and Dew Valley Foods Thurles, and has had historical involvement in Seveso sites in the Limerick area at Grassland Fertilizers, and with the same company in Cork. He also has had advisory roles for clients in Dublin, Cork and Galway where significant projects impacted on their interests.

Christine Madden has 18 years' professional experience in managing health and safety in construction. Actively providing PSDP services to Aegis Safety Management's wide client base from complex

healthcare projects educational and housing developments to industrial plant upgrade projects. Christine focuses on applying quality standards and continual improvement to construction safety management systems and ensuring health and safety remains an integral part of the design process.

Deirdre Larkin (Technical Director with AtkinsRéalis) has over 20 years' experience of environmental assessment on major site developments and infrastructural projects across Ireland and in the UK, including Strategic Infrastructure Developments, Strategic Housing Developments, major road schemes and greenways. Deirdre holds a BSc in Geology and MSc in Applied Hydrogeology. She specialises in the area of Geology and Hydrogeology, with extensive experience in the preparation of Land Soils and Geology, and Water EIAR chapters and interpretive reporting on contaminated land projects. She is accredited with the Institute of Geologists (IGI) (PGeo EurGeol) and is also listed on the IGI Register of Professional Qualified Geoscientists/Competent Persons (Regulated and Unregulated Waste Disposal/Contaminated Land Assessments). She is responsible for the delivery and management of environmental services ranging from EIAR co-ordination and preparation to environmental due diligence and contaminated land services. Among her responsibilities, she delivers technical reports, liaises with clients, statutory stakeholders, and multidisciplinary design teams, inputs to technical meetings, and manages the AtkinsRealis Environmental Team.

Nicholas Van Den Berg, is a Chartered Engineer with over 11 years' experience in the civil engineering industry. Since joining AtkinsRealis, he has developed comprehensive stakeholder communication and project management skills enabling him to lead projects and strategically advise clients. Nicholas has significant experience in undertaking Traffic and Transportation Assessments, preparation of EIAR Traffic & Transportation Chapters, Mobility Management Plans and Road Safety Audits. His skills include the development of strategies to enhance sustainable transport and active travel provisions to improve overall permeability and connectivity of proposed developments and existing villages, towns and cities. Nicholas has played a key role in numerous planning applications including, but not limited to, residential developments, retail nodes and data centers. He has also led the delivery of traffic and transportation components of urban design strategies and masterplans, providing expert and trusted advice on strategic access and mobility issues.

Dr Catherine McIntyre has broad experience in the water industry over the last 14 years with skills in water technology development, pre-treatment for anaerobic digestion, wastewater treatment, water quality, project management, analysis, and communications. Her degree is in chemistry from the University of Galway. At University of Bristol, her biogeochemistry PhD project was embedded in a catchment science program, which aimed to characterise the organic fraction of nutrient influxes to freshwater ecosystems and understand its impact on freshwater quality. Her professional roles have seen her developing novel industrial microwave technology for treatment of sludge wastes and assessing innovative water technology developments. She has been working at AtkinsRéalis as Principal Water Quality Scientist since January 2025.

Ewuresi Opoku is a Senior Environmental Consultant with 10 years' experience delivering complex assessments and strategic advice across infrastructure, industrial, and multi-sector projects. Her expertise includes EIA, environmental planning and compliance, stakeholder engagement, and sustainability. She obtained her Bachelors of Science degree in Botany in 2012 from the University of Ghana, and Masters of Science in Environmental Monitoring and Management from the University of Nottingham in 2015.

Jenny Snook has over 2 years' experience of environmental assessment on major site developments across Ireland, including Strategic Infrastructure Developments, renewable energy projects, major road schemes and greenways. In 2022, she completed an MSc in Environmental Science at UCD, basing her final thesis on the Liffey Sweeper; the first vessel of its kind in Dublin to help tackle aquatic debris that accumulates in the River Liffey. She has written numerous Construction Environmental Management Plans, Environmental Impact Assessments and Resource and Waste Management Plans, while working for AtkinsRéalis. She also has 5 years of previous experience working in museum and archival research, after completing an MA in Archaeology and Heritage in 2010.

Orla Wood is an environmental consultant with 2 years' experience working on a range of environmental assessments which include Strategic Infrastructure projects, Renewable Energy projects, major road schemes and greenways. Her experience to date covers the preparation of EIA screening reports, Constraints Assessments, Multi-criteria analysis studies, Construction Environmental Management Plans, Resource and Waste Management Plans, and Non-statutory Environmental Assessment Reports as well as input into the preparation of EIAR chapters. Orla completed her Bachelor of Science at Dublin City University in 2022 with an Honors degree in Environmental Science and Technology.

Table 1.7 EIAR Table of Content & Authors – Competent Experts

Chapter of EIAR	Author(s)	Company	Subject Area	Qualification
Part A	Mary Hughes	HRA Planning	Non-Technical Summary	BA (Hons) MSc PGDip EIA Mgmt. MIPI
Part B				
Chapter 1.0	Mary Hughes	HRA Planning	Introduction	BA (Hons) MSc PGDip EIA Mgmt. MIPI
Chapter 2.0	Mary Hughes Gary Rowan	HRA Planning	Project Description	BA (Hons) MSc PGDip EIA Mgmt. MIPI Bsc (Hons.), MSc. PGDip, EIA Mgmt. MIPI MRTPI
Chapter 3.0	Mary Hughes	HRA Planning	Project Need & Spatial Planning Policy	BA (Hons) MSc PGDip EIA Mgmt. MIPI
Chapter 4.0	Mary Hughes	HRA Planning	Project Scoping & Engagement	BA (Hons) MSc PGDip EIA Mgmt. MIPI
Chapter 5.0	Mary Hughes Gary Rowan	HRA Planning	Examination of Alternatives	BA (Hons) MSc PGDip EIA Mgmt. MIPI Bsc (Hons.), MSc. PGDip, EIA Mgmt. MIPI MRTPI
Chapter 6.0	Mary Hughes	HRA Planning	Population & Human Health	BA (Hons) MSc PGDip EIA Mgmt. MIPI
Chapter 7.0	Sara Fissolo Pat Robers	MKO	Biodiversity	BSc Ecology CIEEM B.Sc., MCIEEM
Chapter 8.0	Niall Gregory	Gregory Archaeology	Cultural Heritage - Archaeology	BA NUI (UCD); Dip UL; PhD Edin; MIAI; AMSCSI; AEWA; MNAS; MEEA
Chapter 9.0	James Sibson	Feilden Clegg Bradley Studios	Cultural Heritage - Architecture	BA(Hons) Barch RIBA AABC

Chapter 10.0	Deirdre Larkin Jenny Snook Ora Wood	AtkinsRealis	Land, Soils & Geology	BSc. (Hons) Geology MSc Applied Hydrogeology IGI PGeo, EurGeol MA Archaeology, MSc Env Sc BSc (Hons) Env Sc & Tech
Chapter 11.0	Catherine McIntyre Deirdre Larkin	AtkinsRealis	Water & Hydrogeology	BSc (Hons) Chemistry PhD Biogeochemistry BSc. (Hons) Geology MSc Applied Hydrogeology IGI PGeo, EurGeol
Chapter 12.0	Dave Kirkwood	Mitchells	The Landscape	BSc Hons, CMLI, MILI, Dip. Env Mgmt
Chapter 13.0	Jennifer Harmon	AWN	Noise & Vibration	BSc, Dip Noise, MIOA
Chapter 14.0	Tanmay Gojamgunde Ciara Nolan	AWN	Air Quality	MSc, BTech BSc, MSc, MIAQM, MIEnvSc
Chapter 15.0	Tanmay Gojamgunde Ciara Nolan	AWN	Climate	MSc, BTech BSc, MSc, MIAQM, MIEnvSc
Chapter 16.0	Harshad Joshi	IES	Microclimate – Pedestrian Wind Comfort & Distress	BE (Mech.) MS (Mech. and Aerospace),
Chapter 17.0	Douglas Bell	IES	Microclimate – Sunlight Daylight & Shadow Analysis	BSc (Hons) PGDip
Chapter 18.0	Nicholas Van Den Berg	AtkinsRealis	Material Assets - Traffic & Transport	BSc. Eng, CMIEI
Chapter 19.0	Ewursel Opoku Jenny Snook	AtkinsRealis	Material Assets – Waste Management	BSc. Botany MSc Environmental Monitoring and Management MA Archaeology, MSc Env Sc
Chapter 20.0	Deirdre Larkin Jenny Snook	AtkinsRealis	Material Assets – Utilities	BSc. (Hons) Geology MSc Applied Hydrogeology IGI PGeo, EurGeol MA Archaeology, MSc Env Sc
Chapter 21.0	Pat O'Brien Christine Madden	EOB Engineers Aegis Safety	Risk Management for Major Accidents /Disasters	BE, BSc Env, H dip Geology, LLB BSc, BCom, HDip OSHW
Chapter 22.0	Mary Hughes	HRA Planning	Interaction Between Environmental Factors	BA (Hons) MSc PGDip EIA Mgmt. MIPI
Chapter 23.0	Mary Hughes	HRA Planning	Summary of Mitigation Measures	BA (Hons) MSc PGDip EIA Mgmt. MIPI

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- Circular letter PL 1/2017 - Advice on Administrative Provisions in Advance of Transposition (2017).
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- Environmental Impact Assessment of Projects Guidance on Scoping European Commission (2017).
- Study on the Assessment of Indirect & Cumulative Impacts as well as Impact Interaction (DG Environment 1999).

APPENDIX 2

SITE DRAINAGE PLANS

Notes:
1. SuDS - Use blue/ green roofs to attenuate surface water flows.
2. Use permeable paving/ porous surfacing to car parking spaces/ pavements.
3. Possibly use green areas as attenuation basins, tree pits etc.

Rev	Date	By	Chkd	Appd
C01	03/10/25	NK	AS	GS
	Issued for Planning (Status A2)			
P03	05/09/25	NK	AS	GS
	Issued for Information (Status S2)			
P02	22/08/25	WC	AS	GS
	Issued for Information (Status S2) After. Tanks Removed			
P01	25/04/25	NK	AS	GS
	Issued for Information (Status S2)			

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Cleeves Riverside Quarter Masterplan

Drawing Title:
Proposed Drainage & Watermain Overall Layout

Scale at A0: 1:500
Hatch: Civil Drainage
Suitability: A2 - Issued for Planning
Arup Job No: 277975-00
Rev: C01
Name: CRQMP-ARUP-XX-00-DR-CE-2100

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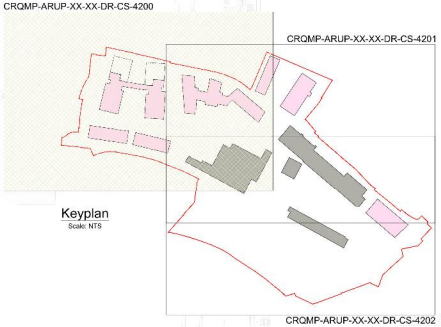
CRQMP-ARUP-XX-XX-DR-CS-4200



Keyplan
Scale: NTS

N

LEGEND
- Proposed red line boundary
- Proposed building
- Existing building
- Abandoned/ Defunct foul sewer
- Abandoned/ Defunct combined sewer
- Proposed foul sewer
- Proposed foul manhole
- Abandoned/ Defunct surface water drain
- Proposed surface water drain
- Proposed perforated pipe
- Proposed surface-level channel
- Proposed slot drain
- Proposed surface water manhole
- Proposed surface water inspection chamber
- Proposed petrol interceptor
- Proposed sump unit
- Proposed back drop
- Proposed non-return valve
- Abandoned/ Defunct watermain
- Proposed surface water drain
- Proposed hydrant
- Proposed sluice valve
- Proposed water meter
- Existing Surface Water
- Existing Foul Sewer
- Existing Combined Sewer
- Existing Watermain
- Existing Gas
- Existing Electrical
- Existing COMMS
- Existing Public Lighting
- Existing Eir
- Existing Unknown Service

0 5 10 Metres
Scale 1:250

Notes:

Issue	Date	Description
C01	02/10/25	Issued for Planning (Status A2)
P02	05/09/25	Issued for Information (Status S2)
P01	16/06/25	Issued for Information (Status S2)

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Project title: Cleeves Riverside Quarter Masterplan

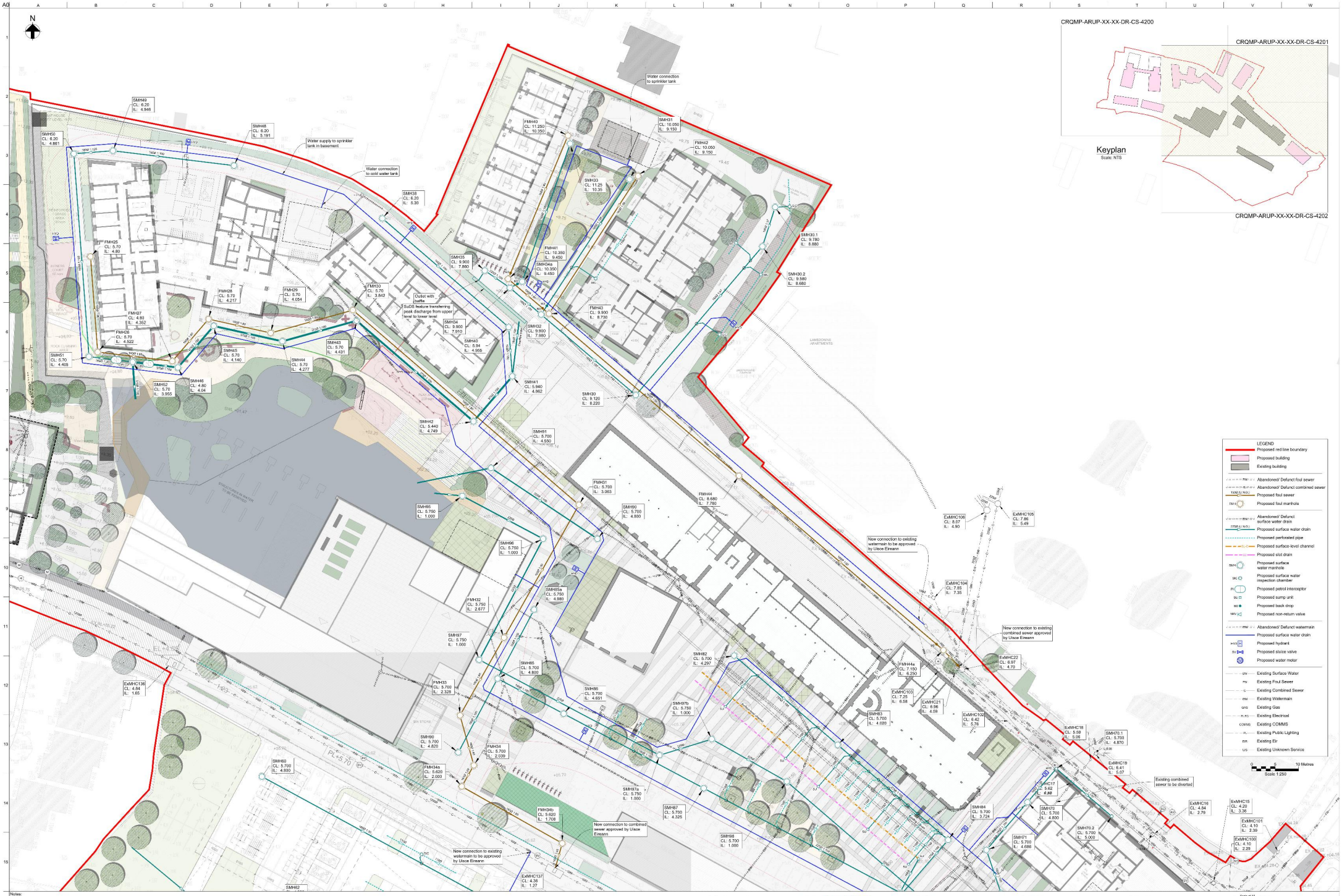
Drawing title: Salesians Proposed Drainage Layout

Drawn: NK | Design Check: AS | Designed: AS | Approved: GS

Scale at A1: 1:250
Role: Civil Drainage
Status: A2 - Issued for Planning
Arup Job No: 277975-00
Issue: C01
Document Number (ID): CRQMP-ARUP-XX-00-DR-CE-4200

Do not scale

© Arup



Notes:

NOTE:
Backgrounds to be updated to latest architects and landscape architects plans

Issue	Date	Description
C01	02/10/25	Issued for Planning (Status 2)
P03	05/09/25	Issued for Information (Status S2)
P02	22/08/25	Issued for Information (Status S2) Missing SW Drainage Added
P01	18/08/25	Issued for Information (Status S2)

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Client: Limerick Twenty Thirty

Project Title: Cleeves Riverside Quarter Masterplan

Drawing Title: The Quarry & Stonetown Terrace Proposed Drainage Layout

Drawn: NK | Design Check: AS | Designed: AS | Approved: GS

Scale at A1: 1:250
Role: Civil Drainage
Status: A2 - Issued for Planning
Arup Job No: 277975-00
Rev: C01
Document Number (ID): CRQMP-ARUP-XX-00-DR-CE-4201

Do not scale

Notes:

NOTE:
Backgrounds to be updated to latest architects and landscape architects plans

Issue	Date	Description
C01	02/10/25	Issued for Planning (Status A2)
P03	09/09/25	Issued for Information (Status S2)
P02	22/08/25	Issued for Information (Status S2), Attenuation Tanks Removed & Revised as Clouded
P01	18/08/25	Issued for Information (Status S2)

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Client: Limerick Twenty Thirty

Project Title: Cleeves Riverside Quarter Masterplan

Drawing Title: O' Callaghan Strand & Shipyard Proposed Drainage Layout

Drawn: NK
Design Check: AS
Designed: AS
Approved: GS

Scale at A1: 1:250
Role: Civil Drainage
Status: A2 - Issued for Planning
Arup Job No: 277975-00
Rev: C01
Document Number (ID): CRQMP-ARUP-XX-00-DR-CE-4202

Do not scale

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APPENDIX 3

FLOOD RISK ASSESSMENT

Comhairle Cathrach & Contae Luimnigh
Limerick City & County Council

LIMERICK TWENTY THIRTY DAC

ARUP

Limerick City & County Council in partnership with Limerick Twenty Thirty DAC

Cleeves Riverside Quarter

Flood Risk Assessment

Reference: CRQMP-ARUP-ZZ-ZZ-RP-CF-0001

C01| 03 Oct 2025

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 277975

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Document Verification

Project title	Cleeves Riverside Quarter (CRQ)
Document title	Flood Risk Assessment
Job number	277975-00
Document ref	CRQMP-ARUP-ZZ-ZZ-RP-CF-0001
File reference	4-04-03

Revision	Date				
C01	03 October 2025	**Filename**	CRQMP-ARUP-ZZ-ZZ-RP-CF-0001		
		Description	Issued for Planning (Status A2)		
			Prepared by	**Checked by**	**Approved by**
		Name	Emma Krampe	Brian Sexton	Brian Sexton
		Signature			

Issue Document Verification with Document ☑

Contents

Tables

Figures

Executive Summary

This Flood Risk Assessment report has been prepared by Arup for the proposed Cleeves Riverside Quarter development comprising residential spaces, commercial offices, community, and cultural uses to support the final Masterplan through planning. The development is being progressed in nine distinct but overlapping stages. This document considers the flood risks both at the final completion stage and throughout the works. Flood mitigation measures will be constructed in earlier stages for areas in Flood Zones A and B before any parts of the Proposed Development in these areas are occupied. The development site is located at the old Cleeves factory site in Limerick.

The purpose of the report is to identify and assess the risk of flooding to and from the development site and to propose mitigation measures to manage flood risk throughout the lifetime of the development, taking the potential effects of climate change into account (see Chapter 4 for further details).

The key findings of the report are summarised in the table below.

Item	Description	Findings
Flood Risk to the Site	Tidal	The main risk of flooding to the site is tidal (high tides and tidal surges) from the River Shannon. Part of the site lies in areas of high to moderate risk of flooding (Flood Zones A or B). The Shipyard site and part of the Flaxmill site (Infiltration Galleries) are at high risk of tidal flooding (0.5% Annual Exceedance Probability AEP), parts of the Quarry site are at moderate risk of flooding (0.1% AEP) and the rest (the majority) of the site is at low risk (<0.1% AEP). These areas correspond to Flood Zones A, B and C (i.e. high, moderate, and low risk respectively).
	Fluvial	The site is at low risk of fluvial flooding from the River Shannon in the absence of a high tidal boundary level.
	Surface water/Pluvial	The Stonetown Terrace, Salesian and Quarry sites could receive shallow overland flows originating from the adjacent residential developments to the north.
	Groundwater	Groundwater levels within the site generally exhibit no substantive correlation with the tidal signal nor the water levels in the reservoir (which themselves are correlated to the tidal signal). The exception to this is at a well location within made ground in very close proximity to the reservoir at the Quarry site, where the testing results showed that the groundwater levels are more closely related to the water levels in the reservoir (and by default, correlated to the tidal signal, noting the reservoir levels do exhibit a tidal influence, albeit a muted correlation i.e. as these levels are still well below the corresponding tide levels). Overall the risk of groundwater flooding is deemed low, particularly once the connectivity of the reservoir to the river is mitigated.
	Reservoir	Survey investigations have indicated that the reservoir within the Quarry site discharges to the River Shannon. Further confirmatory investigation and analysis will deepen the understanding of the subsurface pipe network and its hydraulic connectivity to the river. It is evident from surveys completed thus far that the flow and volumes passing through the network and reservoir are

Item	Description	Findings
		low and the tidal signal is muted, which in itself mitigates the risk from tidal flooding. Upon completion of the network assessment, measures will be implemented to prevent backflow through the system. This will include the strategic installation of non-return valves and the decommissioning of redundant pipework.
Mitigation Measures (see also Chapter 4 for more detailed information)	Sequential Approach	Highly vulnerable uses such as residential properties will be in areas at low risk of flooding or raised upper levels. Residential areas have been located at Salesian site, Stonetown Terrace, and the Quarry site. Residential plots are also proposed at the upper levels at the O'Callaghan Strand site. A justification test is included in Chapter 5 of this report which contains detailed information in this regard.
	Flood Protection Level	Development to be protected against the 1 in 200-year tidal event with allowance for climate change and a suitable freeboard.
	Climate Change Allowance	+500mm for less vulnerable uses and +1000mm for highly vulnerable
	Freeboard Allowance	+500mm
	Minimum Recommended Finished Floor Levels	Lower threshold (commercial uses): 5.7m AOD Higher threshold (residential/habitable spaces): 6.2m AOD
	Safe Access and Egress	Safe access and egress to be provided from all buildings for emergency vehicles. The Master Plan proposes that North Circular Road (NCR) be raised above 5.7m AOD to provide safe access and egress to/from the site.
	Intercepting Overland Flows	There is a relatively minor risk of shallow overland flows entering the Salesians, Quarry and Stonetown Terrace sites from the north during a significant rainfall event. A new perimeter drainage system (open or piped) will intercept any offsite overland flows from adjacent properties to the north of the site to safely divert the flow away from the properties.

1. Introduction

1.1 Project Background

This Flood Risk Assessment has been prepared by Arup on behalf of Limerick City & County Council in partnership with Limerick Twenty Thirty DAC (LTT) as part of a planning application for the proposed Cleeves Riverside Quarter Development.

Limerick City and County Council, partnership with Limerick Twenty Thirty DAC, intends to seek the approval of An Coimisiún Pleanála in accordance with Section 175 and 177AE of the Planning and Development Act 2000, as amended, for a mixed-use development that seeks the regeneration and adaptive reuse of a strategic brownfield site, as part of the Limerick City and County Council 'World Class Waterfront revitalisation and transformation project'.

This Flood Risk Assessment (FRA) has been undertaken and prepared in support of the Cleeves Riverside Quarter Stage 2A2 planning application. The FRA is in accordance with the Guidelines for Planning Authorities on 'The Planning System and Flood Risk Management' published in November 2009, jointly by the Office of Public Works (OPW) and the then Department of Environment, Heritage and Local Government (DEHLG).

1.2 Scope of Study

The scope of the study includes the following:

- A review of all relevant available information and data, as detailed in the section below;
- A review of the risk of tidal, fluvial, groundwater and pluvial flooding at the site;
- Preparation of a site-specific FRA Report and Justification Test.

1.3 Summary of data used

The following data was collated and reviewed:

- Strategic Flood Risk Assessment for the Limerick Development Plan 2022-2028, June 2022;
- Consultation with the Limerick County Council regarding the plans for the Limerick City and Environs Flood Relief Scheme, October 2024.
- Catchment Flood Risk Assessment and Management (CFRAM) Programme data accessed through floodinfo.ie in August 2025;
- Topographical data of the site;
- Site visits / walkovers (September 2024, July 2025);
- Architectural drawings of the Proposed Development;
- Aerial photography and mapping from Google Maps;

1.4 Site Description

The Proposed Development comprises Phase II of an overall Masterplan with four phases of development scheduled. Phase II is subsequent to ongoing stabilisation and repair of the Flaxmill protected structure (Phase I). Phase III is intended to comprise an educational campus, inclusive of the adaptive reuse of the Flaxmill Building as part of that development and will be subject to a future separate application. Phase IV comprising the Shipyard site will be the final phase of development.

The Proposed Development provides for the (A) Demolition of a number of structures to facilitate development and (B) Construction and phased delivery of (i) buildings within the site ranging in height from 3 to 7 stories (with screened plant at roof level) including (a) 234 no. residential units; (b) 270 no. student

bedspaces (PBSA) with ancillary resident services at ground floor level; (c) 256sqm of commercial floorspace; and (d) a creche; (ii) extensive public realm works, (iii) riverside canopy and heritage interpretative panels, (iv) 3 no. dedicated bat houses; (v) Mobility Hub with canopy; and (vi) all ancillary site development works including (a) water services, foul and surface water drainage and associated connections across the site and servicing each development zone; (b) attenuation measures; (c) raising the level of North Circular Road; (d) car and bicycle parking; (e) public lighting; (f) telecommunication antennae and (g) all landscaping works. Consent is also sought for use of the PBSA accommodation, outside of student term time, for short-term letting purposes.

The flood risk assessment undertaken as part of this report examines the wider Masterplan area and the associated flood risk to the Proposed Development. Note that with reference to the terminology within this document, the Masterplan encompasses the Proposed Development for Phase II.

The Site is located on the northern bank of the River Shannon at the former Cleeves factory. It is approximately 5ha in area and is bounded by O'Callaghan Strand to the southeast, Condell Road (R527) to the southwest and Stonetown Terrace to the northeast; and Salesian Primary School and the 'Fernhill' residential estate to the northwest and west respectively. North Circular Road (NCR) bisects the site in a southeast to northwest direction. Refer to Figure 1-1. The site is currently a brownfield site, historically used for industrial uses. It is mainly hardstanding. The levels within the site vary significantly, sloping from northwest to southeast towards O'Callaghan Strand and the River Shannon. An old quarry is located at the centre of the site. A reservoir has been formed within the Quarry area. General levels across the site are shown in Table 1-1.

The site is currently occupied by historic structures, some of which are protected (listed) and will be retained, namely the Flax Mill Factory and the Chimney Stack. Additionally, there are several other buildings of historic significance on site which can be retained and converted.

Table 1-1: Existing levels at Cleeves site

Sections/area	Levels (m AOD- Malin datum, OSGM15)
Shipyard	3.5m AOD – 4.4m AOD
Flax Mill	4.4m AOD – 6.2m AOD
Quarry	3.8m AOD – 5.0 m AOD
Salesian	7.7 m AOD – 12.7 m AOD
Stonetown Terrace	9.7 m AOD – 14.0 m AOD

1.5 Proposed Development

The Cleeves Riverside Quarter will deliver a variety of public and private spaces, including residential areas comprising apartment blocks, 3-storey townhouses and student accommodation, a mixed-use apartment block along O'Callaghan Strand, an open public plaza, and provision of public and private spaces. It is split into five sections: the Flax Mill site, the Quarry site, the Shipyard site, the Stonetown Terrace site and the Salesian site as shown in Figure 1-1.

Following completion of the Options Development & Appraisal, the scope of the site has been revised to exclude the Shipyard site and buildings along the NCR. Temporary uses are proposed for these areas. The Shipyard site specifically is proposed to continue being used for car parking, with a new walkway proposed to connect Condell Road with the NCR along the north part of the Shipyard site.

The development of the site will occur over the course of nine distinct but overlapping stages to allow for the raising of the North Circular Road, a key component of the flood emergency access and egress routes, before

the introduction of highly vulnerable development within areas requiring mitigation. The CRQ project team and LTT have been coordinating closely with LCCC to ensure an integrated approach to flood protection along the Shannon is achieved, and, in particular, at the junction of Stonetown Terrace and O'Callaghan Strand. For more information on this junction location, please see Section 4.3, and for more information on the Flood Protection Level, please see Section 4.2. Based on market conditions and delivery mechanisms, some stages will progress more quickly or ahead of others. The anticipated sequence of the stages is outlined as follows. More detail on the phased approach can be found within Atkins Realis CEMP, Section 2.5.1 'Construction Phasing and Duration' (Table 2-2), but which are also summarised below:

- Stage 1: Construction of Bat Houses – 3 months allocated with no overlapping construction activity to allow for the bats to adjust
- Stage 2: Site Demolition and Enabling Works: - 12-15 months allocated for demolition of identified buildings and structures and to install enabling drainage infrastructure across the Flaxmill area. Temporary surface treatments applied to support access to the upper-level sites (Salesians and Stonetown Terrace).
- Stage 3: Flood Protection Works – 15 months concurrent with Stage 2 allocated for the raising of the North Circular Road and implementation of other flood protection measures.
- Stage 4: Salesians Zone Development – 18-24 months to begin midway through Stage 2 for construction of apartments and townhouses along with public realm and communal open spaces.
- Stage 5: Stonetown Terrace Zone Development – 15-18 months concurrent with Stage 4.
- Stage 6: O'Callaghan Strand Zone Development – 15 months for construction of apartments in the zone. To begin midway through Stage 5.
- Stage 7: Quarry Zone PBSA and Public Realm: 24 months for construction of Purpose-built Student Accommodation (PBSA) and associated amenities, as well as public realm improvements around the reservoir.
- Stage 8: Flaxmill Plaza and Riverside Public Realm – 15 months for the delivery of Flaxmill Plaza and riverside canopy works.
- Stage 9: Shipyard Mobility Hub – 6 months for the final stage involving the construction of the Mobility Hub on the Shipyard site, along with associated site works.

Figure 1-1 Site location (Background image: Google Satellite)

2. Planning Context

2.1 Introduction

The following planning policy documents are relevant to the assessment of this Masterplan of the Cleeves Riverside Quarter:

- The national planning guidelines published by the OPW and the DEHLG in November 2009 entitled 'The Planning System and Flood Risk Management: Guidelines for Planning Authorities'
- Limerick City and County Council Development Plan 2022-2028 and Strategic Flood Risk Assessment (SFRA).

2.2 The Planning System and Flood Risk Management: Guidelines for Planning Authorities

In November 2009, the DEHLG and the OPW jointly published a Guidance Document for Planning Authorities entitled "The Planning System and Flood Risk Management". This is referred herein as the Guidelines.

The Guidelines are issued under Section 28 of the Planning and Development Act 2000 and Planning Authorities. Therefore, An Bord Pleanála are required to implement these Guidelines in carrying out their functions under the Planning Acts.

The aim of the Guidelines is to ensure that flood risk is neither created nor increased by inappropriate development.

The Guidelines require the planning system to avoid development in areas at risk of flooding, unless they can be justified on wider sustainability grounds, where the risk can be reduced or managed to an acceptable level.

They require the adoption of a sequential approach to flood risk management following the steps of avoidance of flood risk, substitution with less vulnerable uses, justification, and mitigation of flood risk. The Guidelines require the incorporation of Flood Risk Assessment (FRA) into the process of making decisions on planning applications and planning appeals.

Fundamental to the Guidelines is the introduction of flood risk zoning and the classification of different types of development having regard to their vulnerability to flooding.

The management of flood risk is now a key element of any development proposal in an area of potential flood risk and should therefore be addressed as early as possible in the site master planning stage.

2.2.1 Flood Zones

There are three types of flood zones defined in the Guidelines and replicated in Table 2-1.

Table 2-1: Definition of Flood Zone Categories

Zone Category	Probability	Definition
Flood Zone A	High probability	Probability of flooding from rivers and the sea is highest (greater than 1% annual exceedance probability (AEP) or 1 in 100 for river flooding or 0.5% AEP or 1 in 200 for coastal flooding).
Flood Zone B	Moderate probability	Probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 and 1% AEP or 1 in 100 for river flooding and between 0.1% AEP or 1 in 1000 and 0.5% or 1 in 200 for coastal flooding); and
Flood Zone C	Low probability	Probability of flooding from rivers and the sea is low (less than 0.1% AEP or 1 in 1000 for both river and coastal flooding). Flood Zone C covers all areas of the plan which are not in zones A or B.

2.2.2 Flood Risk Vulnerability

The Guidelines classify different land uses and types of development as highly vulnerable, less vulnerable, and water-compatible to flooding. The vulnerability classification is influenced primarily by the ability to manage the safety of people in flood events and the long-term implications for recovery of the function and structure of buildings. Table 2-2 summarises the vulnerability classes defined in the Guidelines and provides a sample of the most common type of development applicable to each class.

The Proposed Development uses at Cleeves site are residential (*highly vulnerable*), commercial offices and cultural/visitor attractions (*less vulnerable*).

Table 2-2:Definition of vulnerability classes

Vulnerability Class	Land uses and types of development which include
Highly Vulnerable Development	Includes Garda, ambulance and fire stations, hospitals, schools, residential dwellings, residential institutions, essential infrastructure, such as primary transport and utilities distribution and SEVESO and IPPC sites, etc.
Less Vulnerable Development	Includes retail, leisure, warehousing, commercial, industrial, and non-residential institutions, etc.
Water Compatible Development	Includes Flood Control Infrastructure, docks, marinas, wharves, navigation facilities, water-based recreation facilities, amenity open spaces and outdoor sport and recreation facilities

2.2.3 Sequential approach and Justification Test

The Guidelines outline the sequential approach that is to be applied to all levels of the planning process. This approach should also be used in the design and layout of a development and the broad philosophy is shown in Figure 2-1. In general, development in areas with a high risk of flooding should be avoided as per the sequential approach.

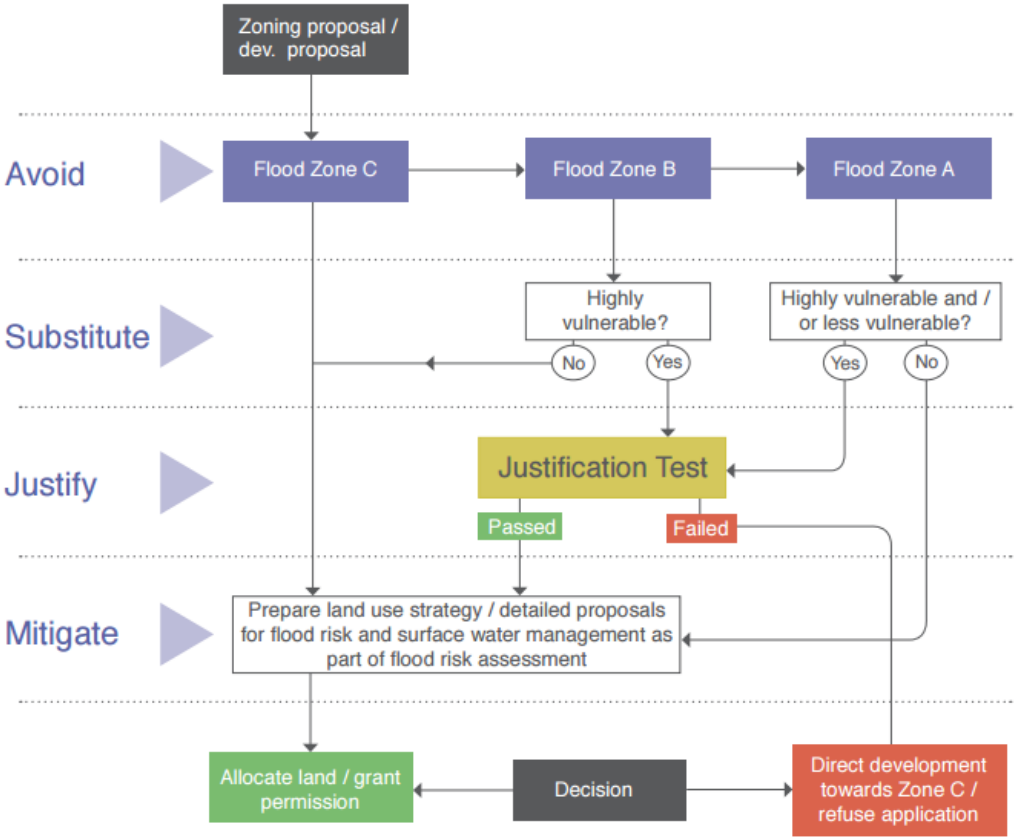

Figure 2-1:Sequential approach (reproduced from the Guidelines)

The Justification Test has been designed to rigorously assess the appropriateness, or otherwise, of developments that are being considered in areas of moderate or high flood risk. The test comprises the following two processes.

- The first is the Plan-making Justification Test and is used at the plan preparation and adoption stage where it is intended to zone or otherwise designate land which is at moderate or high risk of flooding.
- The second is the Development Management Justification Test and is used at the planning application stage where it is intended to develop land at moderate or high risk of flooding for uses or development vulnerable to flooding that would generally be inappropriate for that land.

Table 2-3 illustrates the different types of Vulnerability Classes appropriate to each zone and indicates where the Justification Test is required.

Table 2-3:Vulnerability class appropriateness in flood zones

Vulnerability class	Flood Zone A	Flood Zone B	Flood Zone C
Highly Vulnerable	Justification Test	Justification Test	Appropriate
Less Vulnerable	Justification Test	Appropriate	Appropriate
Water Compatible	Appropriate	Appropriate	Appropriate

2.3 Limerick City & County Council Development Plan 2022-2028

The Limerick City & County Council Development Plan 2022-2028 was adopted in June 2022. It sets the core strategy for Limerick City and County which is implemented through a set of policies and objectives. Policy **CAF P5 - Managing Flood Risk** aims to *protect Flood Zones A and B from inappropriate development and direct land uses into the appropriate lands, as per the Guidelines. Where a development* ***is***

proposed that is inappropriate within the Flood Zone, but that has passed the Plan Making Justification Test, then the development proposal will need to be accompanied by a Development Management Justification Test and Site-Specific Flood Risk Assessment In Flood Zone C, the developer should satisfy themselves that the probability of flooding is appropriate to the development being proposed and should consider other sources of flooding, residual risks and the implications of climate change.

Objective CAF020 was set by the council as part of the plan and are relevant to the development:

It is an objective of the Council to require a Site-Specific Flood Risk Assessment (FRA) for all planning applications in Flood Zones A and B and consider all sources of flooding (for example coastal/tidal, fluvial, pluvial or groundwater), where deemed necessary. The detail of these Site-Specific FRAs (or commensurate assessments of flood risk for minor developments) will depend on the level of risk and scale of development. The FRA will be prepared taking into account the requirements laid out in the SFRA, and in particular in the Plan Making Justification Tests as appropriate to the particular development site. A detailed Site-Specific FRA should quantify the risks, the effects of selected mitigation and the management of any residual risks. The assessments shall consider and provide information on the implications of climate change with regard to flood risk in relevant locations.

2.3.1 LCCC Development Plan 2022-2028 Strategic Flood Risk Assessment

A Strategic Flood Risk Assessment (SFRA) was developed to accompany the development plan. It included a two stage assessment of flood risk to first identify risk, and where settlements were identified as requiring the Justification Test were carried through to Stage 2, a more detailed assessment of flood risk. The SFRA also provides guidelines for development within areas at potential risk of flooding.

The report includes guidelines on development in Flood Zones A and B, and recommended allowances for climate change and freeboard when setting finished floor levels. These are included below.

Table 5-2: Climate change allowances by vulnerability and flood source

Development vulnerability	Fluvial climate change allowance (increase in flows)	Tidal climate change allowance (increase in sea level)	Storm water / surface water
Less vulnerable	20%	0.5m (MRFS) + 50mm for land movement	The Surface water management plan including details of climate change allowances is under preparation
Highly vulnerable	20%	0.5m (MRFS) + 50mm for land movement	
Critical or extremely vulnerable (e.g. hospitals, major sub-stations, blue light services)	30%	1.0m (HEFS) + 50mm for land movement	
Note: There will be no discounting of climate change allowances for shorter lifespan developments.			

Table 5-3: Recommended minimum finished floor levels

Scenario	Finished floor level to be based on
Fluvial, undefended	1% AEP flood + climate change (as Table 5-2) + 300mm freeboard.
Tidal, undefended	0.5% AEP flood + climate change (as Table 5-2) + 300mm freeboard (or 500mm where there is risk of storm surge and wave action).
Fluvial, defended	1% AEP flood + 300mm freeboard. Climate change does not need to be included, provided it is included in the defence height or adaption plan for the scheme. Where a breach model has been developed to further understand risks, FFL may be set based on model outputs.
Tidal, defended	0.5% AEP flood + 300mm freeboard (or 500mm where there is risk of storm surge and wave action). Climate change does not need to be included, provided it is included in the defence height or adaption plan for the scheme. Where a breach model has been developed to further understand risks, FFL may be set based on model outputs.

Figure 2-2: LCCC SFRA extracts.

3. Flood Risk Appraisal

3.1 Potential Flood Mechanism

The following potential sources of flood risk were assessed:

- Tidal/Fluvial flood risk from the River Shannon, bounding the site on the southeast;
- Pluvial flood risk from overland flows from adjacent sites;
- Groundwater flood risk; and
- Flood risk from the Quarry reservoir.

3.2 Historic Flooding at the Site

Records of historic fluvial flooding within the development site and neighbouring areas were reviewed from the OPW National Flood Hazard Mapping website (www.floodinfo.ie; accessed August 2025). An extract from the website is included in Figure 3-1.

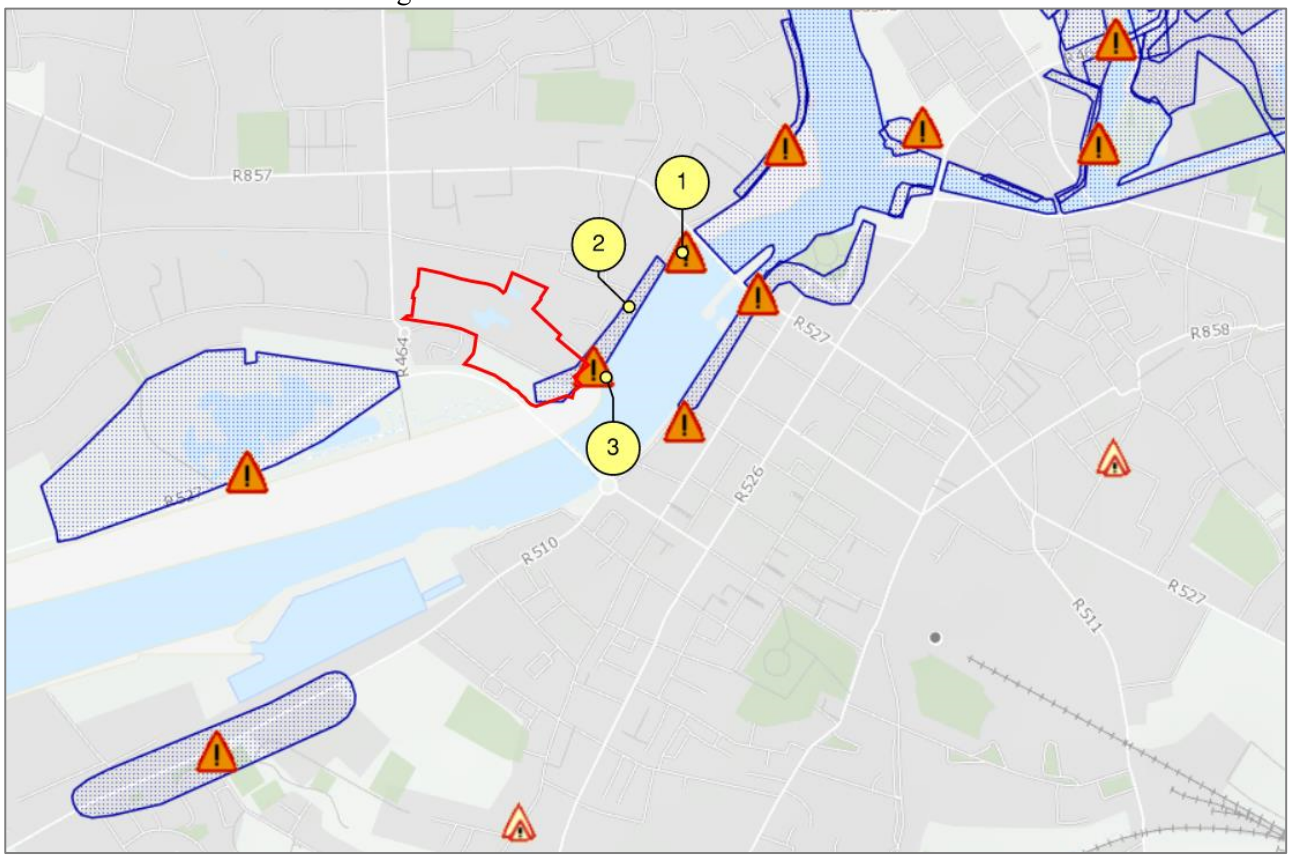

Figure 3-1:Historic flood events (OPW, www.floodinfo.ie)

Information on the events shown is summarised below:

1. On 17th January 1995, flooding occurred on O'Callaghan Strand roadway in front of the Golden Vale (Cleeves' site). 'This was due to the level of the roadway and has happened at this location for as long as I can remember' (information taken from letter to Limerick Corporation City & Environs from Sanitary Services).
2. In December 1999 a combination of spring tides, low atmospheric pressure, strong westerly winds caused increased high tide to 4.1m AOD, as recorded at Limerick Docks. The wave action caused by strong westerly winds increased this height to an effective height of approximately 4.3m AOD. Heavy

rainfall before Christmas resulted in increased flows on the Shannon. O'Callaghan Strand was flooded in the morning of 25th December; the road was impassable for a short period of time however properties were not affected. Flooding coincided with times of high tide and receded as the tide ebbed. Other areas in Limerick were also flooded because of this event: Clancy's Strand, Sir Harry's Mall and Athluknard Street were also affected, with 60 properties in total around Limerick being flooded. (information from Limerick main drainage (City & Environs), Report on flooding – December 1999)

3. On the morning of 11th February 2002, Limerick City experienced its highest tide since 1961, with a tide level of 4.27m AOD. This was caused by a combination of heavy rain, low atmospheric pressure, westerly winds, and a spring tide. Flooding can also be contributed to by the release of water from the E.S.B. power station at Ardnacrusha. The flooding on O'Callaghan Strand was restricted to the 300m of the strand where the quay wall finishes at road level (information from Limerick City flooding – February 2002).

Since the OPW created the above database in 2014, several other events have occurred that might have caused flooding to the site. Most notable are the events occurring in February 2014, January 2018, and February 2016, when water levels at Baals Bridge river level gauge reached 4.48m AOD, 4.37m AOD and 4.27m AOD. These events along with events occurring in 2017 and 2020 have recorded higher flood levels than the February 2002 flood event recorded by OPW and are considered more extreme.

3.3 Limerick City & Environs Flood Relief Scheme Tidal/Fluvial Flood Risk from the River Shannon

The site is bounded on the southeast by the River Shannon. The risk of flooding from the River Shannon has been assessed as part of the Shannon CFRAM study (2016). A joint probability analysis of the coincidence of fluvial flood flows and coastal flood levels was carried out as part of the study, which indicated that the upper reach of the model extent is not affected by tidal levels and the lower reach not affected by fluvial levels. Due to the insensitivity to the boundary condition, it was therefore decided that the tidal flood modelling will be mapped for the tidally affected reach only and the fluvial flooding mapped for the fluvial reach only. An overlapping area at Kings Island was mapped for both.

The Shannon is tidal at the site location, with the most critical flood event occurring due to tidal flooding (high tides and tidal surges) rather than fluvial (high river flows). The risk of fluvial flooding to the site is considered low (less than 0.1%AEP).

3.3.1 Tidal flood risk and flood zones

The risk of tidal flooding and designated flood zones around the site can be seen in Figure 3-2. Note that the darker green shows areas at risk of flooding during the 1 in 10-year event (10% Annual Exceedance Probability – AEP).

Areas at relatively low probability of flooding (less than 1 in 1000 year event, <0.1% AEP) are shown transparent (i.e. where no flood extent is shown on the image).

Most of the site lies in areas at low risk of flooding (<0.1%AEP), which is defined by the Guidelines as Flood Zone C.

The Shipyard site and Infiltration Galleries lie in an area at high risk of flooding, during the 1 in 200 year flood event (0.5% AEP), defined as Flood Zone A. The Quarry lies within an area at moderate risk of flooding, defined as Flood Zone B, which sits between Flood Zone A and C (i.e. between the 1 in 200 (0.5% AEP) flood extent and the 1 in 1000 year (0.5% AEP) flood extent respectively).

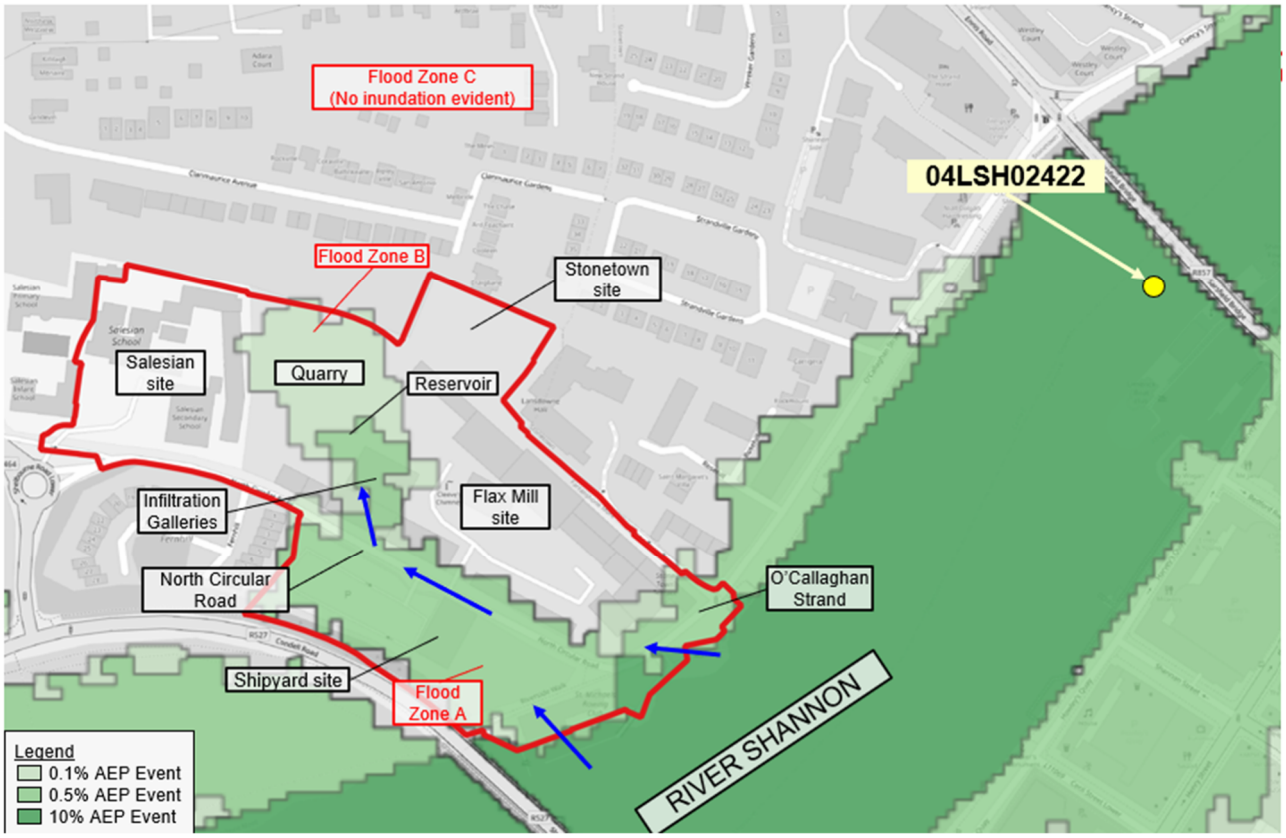

Figure 3-2 Tidal flooding (CFRAM study) and flow paths (shown in blue). Site boundary shown in thin red line.

3.3.2 Predicted Flood Levels

The predicted flood levels at the closest upstream modelled node downstream of Sarsfield Bridge (04LSH02422, see Figure 3-2) as estimated by the CFRAM study are shown in Table 3-1. Note that the CFRAM modelled levels are transformed[1] to OSGM15, which is the geoid model recommended to be used nationally by Ordnance Surveys Ireland (OSI).

Table 3-1:Modelled flood levels downstream Sarsfield Bridge (Shannon CFRAM study, 2016)

Flood event	Level (OSGM02 – m AOD)	Level (OSGM15 – m AOD)
1 in 10 year (10% AEP)	3.99	3.92
1 in 200 year (0.5% AEP)	4.72	**4.65**
1 in 1000 year (0.1% AEP)	5.16	5.09

3.3.3 Flooding Mechanism

According to the Shannon CFRAM study, the predicted flood level at the site during the 1 in 200-year tidal flood event is 4.65m AOD (OSGM15, Malin Head). Some parts of the site lie below this predicted extreme flood level. During such an event, water from River Shannon will overtop its banks and flood O'Callaghan Strand, St Michael's Rowing Club, and the Shipyard/lower North Circular Road. As the flood levels rise, a

[1] In August 2016, the OSGM02 geoid model used in Ireland to report elevation data changed to an improved OSGM15. While both geoids use Malin Head datum, there are differences between the two. At the subject site, the difference is 0.069m (OSGM02 higher than OSGM15). While the CFRAM modelling and studies were done in OSGM02, all surveys since August 2016 are generally in OSGM15.

flood pathway is created along North Circular Road, shown to enter the Infiltration Galleries causing flooding to the Quarry area.

It should be noted that the ground floor levels in the Infiltration Galleries are set at 5.6m AOD, which is above the modelled 1 in 1,000 year flood level. It is believed that the building floor level was modelled incorrectly during the CFRAM study, possibly set only a small height above the surrounding road levels as captured by LiDAR surveys. In the absence of threshold survey data, this is a common and acceptable approach for the CFRAMS. However, underestimating the levels in the Infiltration Galleries allows the creation of a flood flow path through the building to the Quarry site that possibly is not there in reality.

The internal floor level of one of the buildings northwest of the Infiltration Galleries has a level of 5.6mOD. Furthermore, the ground finished floor levels will be raised to a minimum of 5.7m AOD to block any flood flows from the Shipyard site to the Quarry site as part of the developed scenario, along with the raising of the North Circular Road. Accordingly, this issue (as is evident in the CFRAMS mapping) is of no consequence to the site as all flowpaths into the site will be cut off owing to the proposed design and design levels (see Section 4).

3.3.3.1 Future Flooding – Climate Change Allowance and Land Movement

The effects of climate change are likely to result in an increase in sea levels and subsequent increased flood levels and frequency of flood events. OPW guidelines recommend consideration of two possible future scenarios where, mean sea level could increase by 0.5m in the Mid-Range Future Scenario (MRFS) and 1m in the High-End Future Scenario (HEFS). This is to help minimise vulnerability and provide resilience to flooding in the future. This is a critical part of any assessment of flood risk and assessment of design and mitigation measures.

An allowance of 0.5mm/year shall also be allowed for isostatic land movement of the south part of Ireland, including Limerick. This has been accounted as 50mm in total, assuming a 100-year design life.

The future 1 in 200-year flood level could therefore increase to between 5.2m and 5.7m AOD.

This increased future flood level would result in an increase in flood extents and depths, resulting in future flood risk to some parts of the Flax Mill site.

3.3.4 Pluvial Flood Risk

Pluvial flooding occurs when the capacity of the local urban drainage network is exceeded during periods of intense rainfall.

At these times, rainfall runoff cannot infiltrate into the ground or drain away and can collect at low points in the topography, causing flooding.

The Salesian site (northwest of the Masterplan area) lies between 11.0m -13.0m OD, sloping from north to south. The Quarry is immediately to the east of the site and is excavated to an average level of 4.0m OD. The Quarry face acts as retaining wall of approximately 8.0m in height along the west and north of the Quarry. This area forms a significant depression in the topography that is prone to pluvial ponding.

The Salesian, Quarry and Stone Town terrace sites are bounded to the north by the back gardens of residential housing on Clanmaurice Avenue, sloping from 13.0m OD adjacent to Salesian site to 15.8m OD at the road level to the north. As such, there is a risk of overland flows from these higher grounds entering the Salesian, Quarry, and Stone Town terrace sites from the north during a heavy rainfall event.

3.3.5 Groundwater flooding

Groundwater flooding occurs when the groundwater table rises above ground level, leading to ponding at local low points and causing flooding. It typically occurs following lengthy periods of rainfall, typically over several days, usually late winter/ early spring when the groundwater table is already high. Groundwater can also impose risk of flooding to basements and underground services.

Verde Environmental Consultants (Verde) have undertaken water level monitoring at a series of groundwater wells within the Cleeves site. Automatic groundwater level dataloggers were installed from 20 January 2021 through to 24 February 2021 in three bedrock wells and three wells installed in made ground. An additional

datalogger was placed in the Quarry reservoir, refer to Figure 3-3. The following information is taken from the Factual Report on Hydrographic and Hydrogeological Assessments (Verde, March 2021). This is included in Appendix A.

The findings from the groundwater monitoring are summarised below:

Made ground – Perched groundwater levels:

- Direct hydraulic connectivity between perched groundwater at MW102 (Quarry site, near reservoir) and the reservoir levels.
- Tidal influence on the perched groundwater in the made ground at MW102.
- No obvious tidal influence at MW104 and MW107 located to the southeast of the site at Flax Mills site, despite located near the Shannon.

Overall, the tidal influence on the site in the shallow perched groundwater is related to the hydraulic connection between the reservoir and the permeable made ground deposits that surround this feature (Verde, March 2021).

Bedrock groundwater levels:

- No significant tidal influence.
- The main influence in groundwater levels in bedrock related to rainfall recharge.
- A bedrock groundwater contour map was created and is shown in Figure 3-3.

Rainfall measurements and groundwater level charts that support the above observations are included in Verde's report in Appendix A.

There is no evidence of strong tidal influence from the river on the groundwater levels. The risk of groundwater flooding to the development is considered low.

3.4 Flood Risk from Quarry Reservoir

A depression within the Quarry, referred to here as the Quarry Reservoir, is observed to permanently hold water. A bathymetric survey and water level monitoring have been undertaken by Irish Hydrodata Ltd in February 2021. The water level monitoring was undertaken between 20th January and 12th February 2021. The report produced by Irish Hydrodata Ltd. is included in Appendix A.

It was found that the water levels in the Quarry reservoir vary semi-diurnally and with the spring-neap tidal cycle. Recorded values ranged from 1.2m AOD- 2.15m AOD, while the tidal levels ranged from -1.5m AOD to 3.0m AOD.

An inlet flap valve was located under the Infiltration Gallery. Water was observed to enter and exit the lagoon through this structure during the bathymetric survey (Irish Hydrodata Ltd., March 2021).

Survey investigations have confirmed that the reservoir within the Quarry site discharges to the River Shannon. Confirmatory investigations and analysis will further the understanding of the subsurface pipe network and its hydraulic connectivity to the river. Note however that the flow and volumes that are passing through the network into and out of the reservoir appear low – this is evident in a muted tidal signal within the reservoir which matches neither the peak nor the ebb of the river's tidal signal (see the ranges quoted above in the second paragraph of this section). This in itself is a mitigating factor with regard to flood risk. Upon completion of the confirmatory investigations, measures will be implemented to prevent backflow through the system. This will include the strategic installation of non-return valves and the decommissioning of redundant pipework.

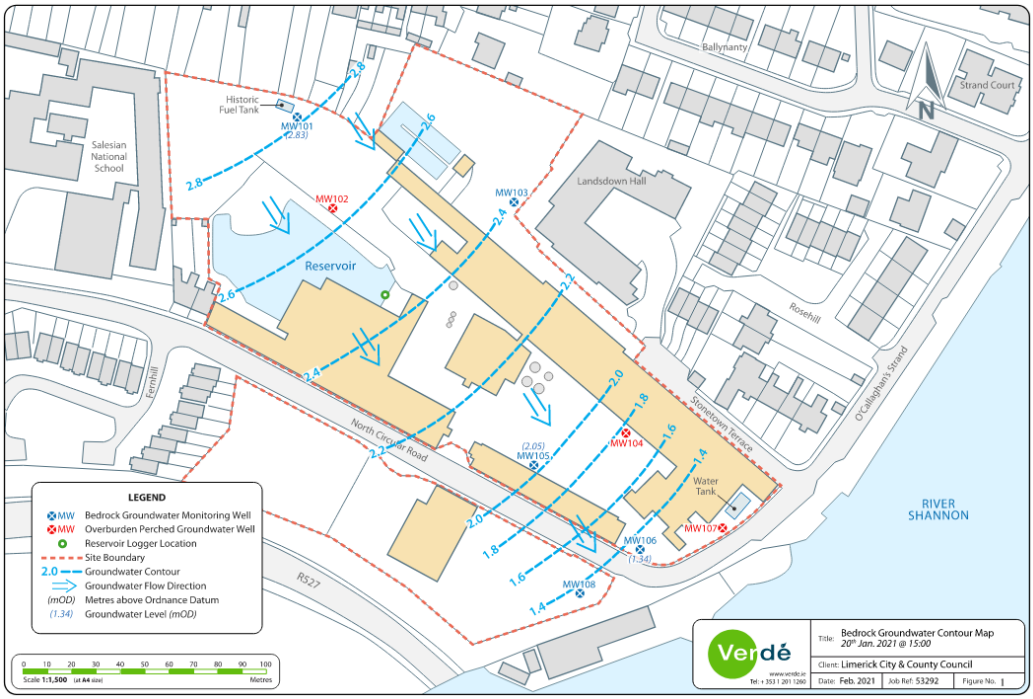

Figure 3-3: Location of groundwater level monitoring wells and groundwater contours, Verde (March 2021)

3.5 Summary of Flood Risk

The main risk of flooding to the site is tidal from the River Shannon. The site lies in areas at high, moderate, or low risk of flooding (Flood Zones A, B and C, respectively). The Shipyard Site and part of the Infiltration Galleries lie in Flood Zone A (high risk), parts of the Quarry Site lie in Flood Zone B (moderate risk) and the rest (the majority) of the site lies in Flood Zone C (low risk).

The Stonetown Terrace, Salesian and Quarry Site could be at risk of receiving shallow overland flow originating from the adjacent residential development to the north.

Due to proximity of the site to the Shannon River, there is risk of groundwater flooding to basements or underground services. Based on groundwater level monitoring within the site, there is no evidence of a strong tidal influence on the groundwater levels.

An inlet valve has been identified under the Infiltration Gallery. The inlet allows water ingress from the Shannon to the Quarry Reservoir on a rising tide, and vice versa on a falling tide. When the river levels are very high, there could be a slight risk of flooding to areas around the reservoir if no mitigation measures were implemented. Note however that even then, the flow and volumes passing through the network into and out of the reservoir appear low, which in itself is a mitigating factor – this is evident in a muted tidal signal within the reservoir which matches neither the peak nor the ebb of the river's tidal signal. Confirmatory investigations and analysis will be completed to understand the connectivity of the underground piping at the site. Any residual flood risk will be mitigated following these confirmatory investigations and analysis, via the installation of non-return valves and the decommissioning of redundant pipework.

4. Managing and Reducing Flood Risk

4.1 Approach to Flood Risk Management

According to the Guidelines, most forms of development should be avoided in areas of flood risk where possible. Where development cannot be avoided, proposals for less vulnerable uses should be substituted.

The Guidelines also recognise that in some instances such as existing brownfield sites in large urban areas, it may be appropriate to allow development where it can be illustrated that there is a wider strategic justification for such development and that the flood risk can be managed to an acceptable level. However,

where a change of use from less vulnerable to highly vulnerable development is proposed in areas of flood risk, a Justification Test will be required.

Given the location of the site and its designation as a key regeneration site within the current development plan, the site will pass the Justification Test provided the Masterplan mitigates the flood risk to an acceptable level for highly vulnerable development (i.e. as per the site-specific mitigation measures outlined in this document).

While the planning guidance requires that flood risk should be managed to an appropriate level for the design life of the development, it should be done in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.

The following measures to flood risk management will ensure flood risk is managed to an acceptable level:

- Flood risk areas are avoided where possible,
- Highly vulnerable uses such as residential development are in areas at lower risk (Flood Zone C) or raised to a higher level when located in Flood Zones A or B. Residential uses are primarily proposed within the Salesian and Stonetown Terrace sites. Where residential development is proposed in areas at risk of tidal flooding (O'Callaghan Strand, Quarry site), the development will be raised above flood levels and residences will be located on higher floors,
- Safe access and egress for emergency vehicles are provided to all buildings.
- Finished floor levels are raised above the flood protection level with an allowance for climate change where possible. Raising of levels shall be considered in conjunction with compliance with the Building Regulations for access for all, economics of the development, aesthetics, and practical design.

The above concepts are explained in more detail in the following sections.

Note that modelling has not been conducted for the purposes of this site specific FRA. This acknowledges the key flood mechanism at the site being tidal flooding. Inundation within and around the site is effectively backwater tidal flooding from the River Shannon that extends into the site area / site vicinity. Accordingly, this is a flood-storage area only, particularly so given the flood mechanism. The raising of the NCR or the construction of the embanked walkway in the Shipyard site will therefore have no impact on the surrounding tidal flood levels (implying no risk of adverse flood level increases to adjacent properties or land). Of note, the proposed mitigation measures do not impact on flow conveyance (for all the reasons outlined above) hence flood modelling not being required.

4.2 Flood Protection Level

The Guidelines recommend a minimum standard of protection for new development level of the 1 in 200-year flood event plus an appropriate allowance for climate change and a suitable freeboard.

Freeboard allowances are made to account for uncertainties in data collection, assessment, and modelling, as well as allowances for physical interference / effects such as wave action.

As the River Shannon near the site is tidal on an estuary subject to some wave action, it is recommended that an allowance of 500mm freeboard be used in addition to the design flood levels. This is in line with the recommendations included in the LCCC SFRA (included in Figure 2-2).

The SFRA requires developments to be protected from flooding with allowances for climate change depending on the vulnerability classification of the Proposed Development. The final SFRA required that for both the less vulnerable development (commercial uses) and highly vulnerable uses (residential uses) the MRFS allowance of 0.5m shall be considered.

A more conservative approach has been followed when proposing flood protection levels across the site. The HEFS allowance of 1m has been applied to highly vulnerable development.

Please refer to Table 4-1 for the variation in flood protection levels, depending on the climate change allowances adopted.

Table 4-1 Flood protection level range for Cleeve Riverside Quarter

Parameter	Lower allowance (Commercial uses)	Higher allowance (Residential uses)
1 in 200-year flood level	4.65m AOD	
Mean Sea Level Rise	+500mm (Mid-Range Future Scenario)	+1000mm (High End Future Scenario)
Land movement	50mm	50mm
Freeboard	500mm	500mm
Flood protection level	5.7m OD	6.2m OD

Flood protection on site will be achieved by raising floor levels. As the risk of flooding to the site is primarily tidal (from the sea) and not fluvial, the land raising within the site is expected to have negligible impact on flood risk to other sites upstream or downstream of the site. The requirement to provide flood compensation storage within the site is not anticipated to be required owing to the fact that the critical flood mechanism is tidal flooding.

Limerick City Council has undertaken detailed hydraulic modelling of the River Shannon as a part of the Limerick FRS. The modelling has produced updated flood levels compared to CFRAMs as shown in Table 4-2:

Table 4-2 Comparison of Flood Defence Levels Between CFRAMS and Limerick FRS Modelling

Study	1 in 200-year flood level	Coastal defences level (with 500mm freeboard)	Future defence level (with 1m climate change)
CFRAMS	4.65m AOD		
Limerick FRS	4.97m AOD	5.47m AOD	6.47m AOD

While the baseline 1 in 200-year flood levels have increased by 320mm between CFRAMS and the FRS modelling, it is considered that the proposed level of protection currently being incorporated into the Proposed Development provides adequate protection, noting it to be of a higher standard than the Limerick FRS defences.

The design team discussed lowering the level of defence of the Masterplan to match the flood defence level of the FRS to 5.47m AOD; however, it is considered that this would be a sub-optimal approach recognising it would not cater for any climate change provision. The Masterplan proposed flood protection levels of 5.7m AOD and 6.2m AOD will provide a 230mm and 730mm allowance for climate change, which is deemed a prudent approach. It is also possible that the Limerick FRS might not be able to be adapted in the future to

provide climate change protection to the site location, where hard defences proposed would be expected to be raised by 1m (i.e. above the 5.45m AOD level) to account for climate change. As such, the Design Team concluded, based on best practice guidance, available data, and in their collective professional judgement, that the proposed defence levels are maintained at 5.7mAOD and 6.2mAOD for commercial and residential uses respectively.

4.3 Safe Access and Egress

Emergency services access and egress will be provided to all buildings as part of the Site-specific Flood Risk Assessment Report.

Condell Road runs south of the Shipyard site between 6.5m OD to 8.0m OD northwest to southeast. The road is well above the flood protection level and can provide emergency access and egress for the Shipyard site. Similarly, the exit from Salesian site to North Circular Road (NCR) is at 6.4m AOD, providing safe evacuation towards the northwest. However, NCR is sloping down from 6.4m AOD northwest to 3.97m AOD at the interface with O'Callaghan Strand with an average longitudinal slope of 1:110. Currently, there is no safe access and egress for Flax Mill site, Quarry site or Stonetown Terrace.

A key flood mitigation measure to be considered is therefore the re-grading of NCR. This would allow most of the site to be accessed by the emergency services during the 1 in 200-year flood event, as well as protecting the Quarry and Flax Mill sites from tidal flooding by forming part of the flood defence line.

To provide safe access and egress to the Flax Mill site, Stonetown Terrace and Quarry Site, as well as mitigating the risk of tidal flooding entering the Quarry depression, the NCR will be re-graded and raised to the flood protection level of 5.7m AOD, as shown in Figure 4-1. Raising the road to any higher level than this is not considered practical, considering the levels of the surrounding buildings and roads. From the junction with O'Callaghan Strand, the NCR will rise with a 1:21 slope to 5.7m AOD. The road will be maintained at that level before ramping down again to 5.2m AOD and eventually to 4.85m AOD to tie in with existing road levels in front of existing residential housing west of the Shipyard site. The road naturally rises again to 6.4m AOD at the entrance to Salesians site.

There is a gap in the defence line on the NCR (northwest of the proposed 5.7m AOD crest location) where the road must tie back in with existing road levels of approximately 4.85m AOD. As part of the original Masterplan, the Shipyard site was proposed to be raised to the flood protection levels and provide the defence line against flows coming from the south through the site. Without this being done, floodwater reaching levels approaching 5.7m AOD could inundate the Shipyard site, flood onto the NCR north-west of the proposed mitigation crest / raising of the NCR, and then enter the site via pathways / flow-paths leading into the development.

Under the current proposal, the Shipyard site is proposed to have temporary uses, until the site is developed to a mixed-use development (note that flood protection works for any such future mixed-use development have not been taken into account as part of this assessment).

The temporary uses currently considered include the current car parking facilities, landscaping and access to St Michael's boat club in the south and a new pedestrian connection running between the NCR at 5.7m AOD and Condell Road at 6.78m AOD. The site may also serve as a potential zone for the construction compound. This new pedestrian embankment will provide interim flood protection to the NCR and the rest of the development, until the Shipyard site development is completed. The Shipyard site itself during the temporary use phase is not proposed to be protected and will be allowed to flood as per existing conditions, apart from a situation where it is being used as a construction compound. Safe access and egress routes are demonstrated in Figure 4-2.

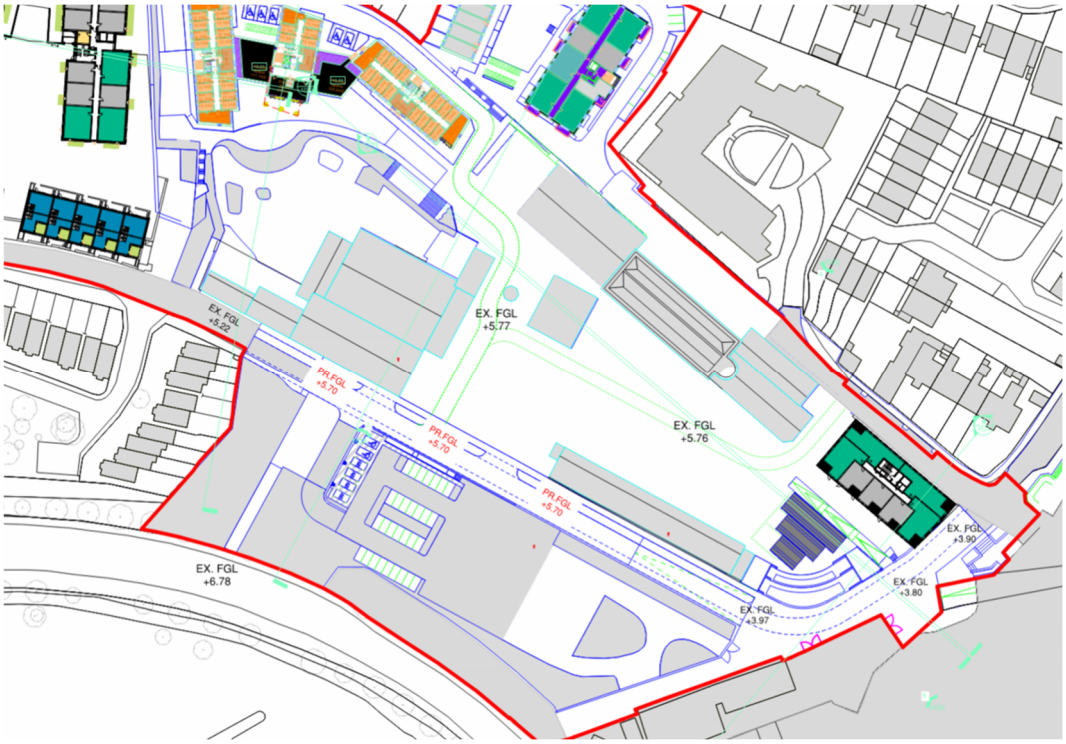

Figure 4-1 Proposed NCR land raising for flood protection.

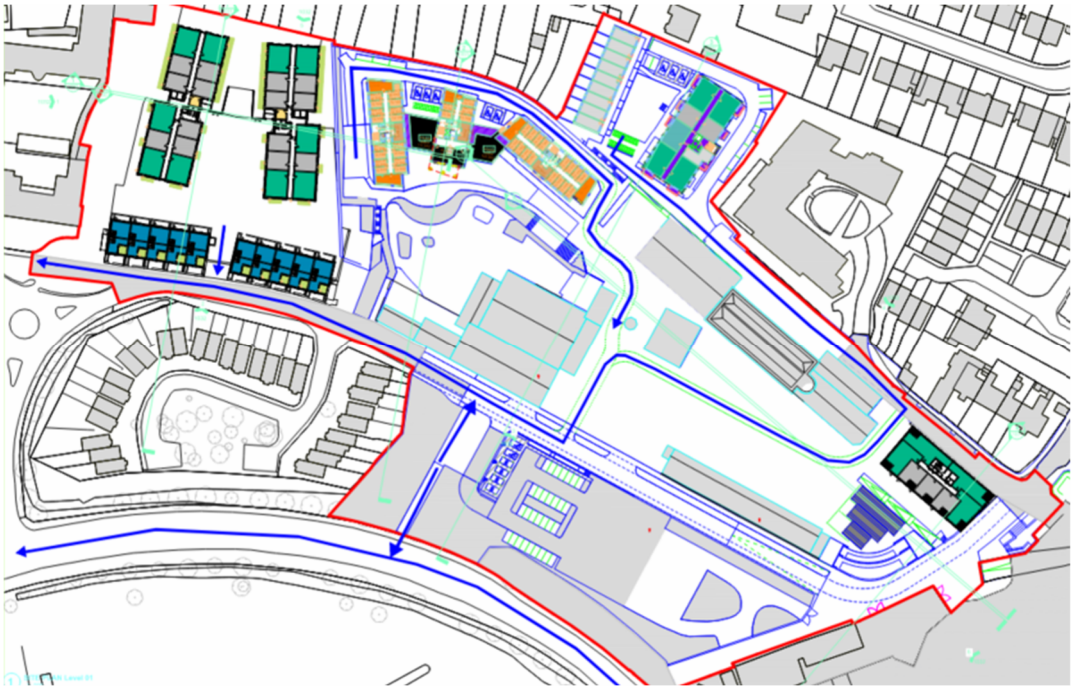

Figure 4-2: Safe access and egress.

Note also that at the junction of Stonetown Terrace and O'Callaghan Strand, flood protection measures are proposed that will protect existing residential buildings along O'Callaghan Strand from inundation during tidal floods that exceed bank-full level at this location. The protection of these buildings is principally achieved through design work being commissioned by LCCC as part of the Limerick (River Shannon) Flood Relief Scheme (FRS). However the CRQ project team and LTT have been coordinating closely with LCCC to ensure an integrated approach to flood protection along the Shannon, and – in particular – at the junction of Stonetown Terrace and O'Callaghan Strand.

As part of the Limerick (River Shannon) FRS, both projects will interface to provide a holistic design solution that will protect the aforementioned buildings along O'Callaghan Strand against tidal flood inundation. While not final as yet, this design will likely comprise a close-able flood gate near the junction of O'Callaghan Strand and Stonetown Terrace, which will work in tandem with the wider, more extensive flood defence measures along the Shannon in this area (i.e. flood defence walls / barriers). This collaborative design solution is currently being developed, but is shown indicatively in the Landscape Plan (drawing number CRQMP-MLA-ZZ-XX-DR-L-1003-OCS).

4.4 Intercepting Overland Flows

The northern boundary of the site is at a relatively minor risk of receiving overland flow from external / off-site catchments without any mitigation measures being implemented (Salesian site, the Quarry, and Stonetown Terrace site). Accordingly a new perimeter drainage system (open or piped) will be installed to intercept the offsite flows from the properties to the north and divert the surface water runoff to the site drainage system. The perimeter drainage system shall consist of Sustainable Drainage Systems (SuDS) and connect to the Quarry Reservoir.

4.5 Flood Risk Management at Each Site

4.5.1 Flax Mill Site

The Flaxmill building is earmarked for retention during this application for future development for academic use. Flood risk to the building will be considered for access and egress purposes.

The levels within Flax Mill site are proposed to be raised above the flood protection level for less vulnerable uses of 5.7m AOD. Flood mitigation to the standard of protection of 1 in 200 year with climate change is therefore achieved.

The listed Flax Mill Factory and adjacent buildings (Cold Store and Dairy buildings), as well as the Engine House and Water tank building, are currently proposed to be retained due to their historic importance. No works are proposed at this stage to the Infiltration Galleries.

Table 4-3 indicates the approximate existing ground levels of each building.

Table 4-3: Historic buildings to be retained and levels.

Reference	Building	Ground level
A1 & A5	Flax Mill Factory (listed) and extension	5.90m OD
A2	Cold Store	5.94m OD
A3 & A4	Dairy Buildings	5.86m OD
B2-B4	Engine House	5.56m OD
C1	Water Tank building	6.05m OD
C2	Building above Infiltration Galleries	5.60m OD

Where existing buildings are proposed to be retained and are currently below the flood protection level, the ground floor levels can be retained as per existing. Future intended land uses include educational uses, which are the same vulnerability classification as per existing (less vulnerable). Other standard non-structural flood mitigation measures can be retrofitted to these buildings to provide flood resilience.

The building on O'Callaghan Strand is proposed to have sleeping accommodation at the upper levels, above 6.2m AOD. The ground floor level will be raised to 5.7m AOD to ensure safe and dry access and egress for all residents.

Safe access and egress from the Flax Mill site is achieved via the NCR as discussed in Section 4.3.

4.5.2 Quarry Site

The Quarry site is currently located in a depression in the ground and is exposed to flooding during the 1 in 1000-year flood event scenario and the 1 in 200-year future scenario (with climate change). Buildings within the Quarry are proposed to be raised above 5.7m AOD flood protection level. Sleeping accommodation is proposed at upper levels and above the highly vulnerable flood protection level of 6.2m AOD.

Safe access and egress from Quarry site are discussed in Section 4.3.

4.5.3 Salesian Site and Stonetown Terrace

The Salesian site and Stonetown terrace are located above the flood protection level and are therefore outside the risk of tidal flooding. The Salesian site can be accessed safely by emergency vehicle via the higher levels of NCR.

Stonetown Terrace does not currently provide for dry access to the site. Access above the flood protection level of 5.7m AOD to the Stonetown Terrace site is proposed via the raised NCR road through the Flax Mill site.

4.5.4 Shipyard Site

The Shipyard site is currently proposed to be developed for temporary uses, with the mixed-use development proposals to follow as a future phase. The site lies in an area at high risk of tidal flooding (Flood Zone A). It is adjacent to O'Callaghan Strand and the River Shannon and generally lies at low levels (3.5m AOD - 4.4m AOD).

The interim flood protection measures at the Shipyard site (i.e. the embanked pedestrian walkway at the rear of the site) will ensure a continuous flood protection line to tie in with the raised NCR. This is further explained in Section 4.3.

Whatever is ultimately done with the Shipyard site it will be necessary that it is designed such that it protects the NCR from being outflanked by tidal flood levels north-west of the proposed road crest / raising, and to tie in the with the NCR crest level of 5.7m AOD.

5. Application of 'Flood Risk Management Guidelines'

5.1 Flood Zones

The Shipyard site and Infiltration Galleries lie in an area at high risk of flooding, during the 1 in 100 year flood event (1% AEP), defined as Flood Zone A. The Quarry lies within an area at moderate risk of flooding, during the 1 in 1000-year flood event (0.1% AEP), defined as Flood Zone B.

The rest of the site lies within Flood Zone C (outside the 0.1% AEP extents).

5.2 Vulnerability Classification

The Proposed Development includes residential units classified as 'Highly Vulnerable Development' and commercial spaces classified as 'Less Vulnerable Development'.

5.3 Sequential Approach and Requirement for Justification Test

Figure 5-1 illustrates the Sequential Approach to be adopted under the 'Planning System and Flood Risk Management' guidelines. The site partially lies within Flood Zone A and is classified as 'Highly and/or Less Vulnerable Development'; therefore, a Justification Test is required.

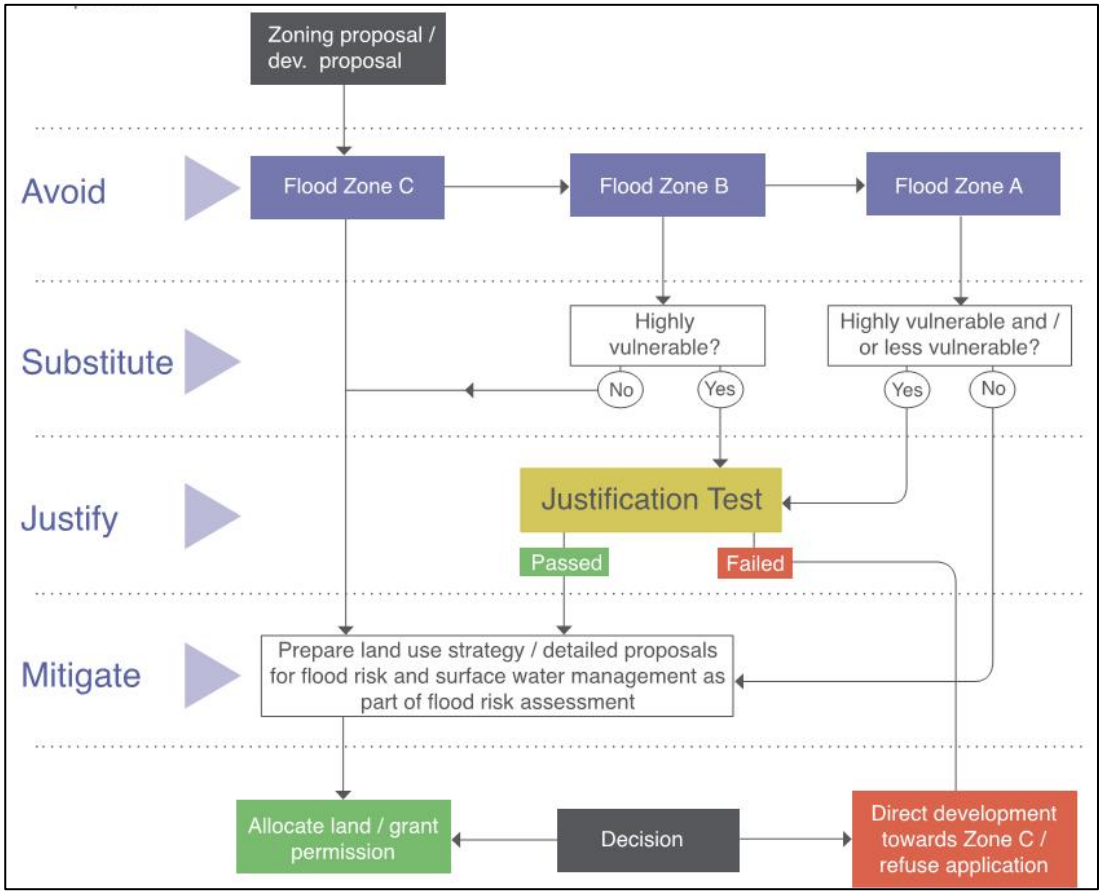

Figure 5-1 Sequential approach justification test.

5.4 Application of the Justification Test

5.4.1 Overview

The Development Plan Justification Test has been undertaken as a part of the Strategic Flood Risk Assessment for the Limerick Development Plan 2022-2028. The development is within an area which constitutes brownfield under-utilised lands within the centre of the city in addition to being part of the city core. The Justification Test was passed and allows for development proposals supported by an appropriately detailed FRA.

5.4.2 Development Management Justification Test

The Development Management Justification Test is undertaken when developments vulnerable to flooding are proposed in areas at moderate or high risk of flooding (Flood Zones A and B). Prior to granting permission for the development, the planning authority must be satisfied that the development meets the criteria set out in the Development Management Justification Test described in Section 5 of The Planning Guidelines. These criteria are included in Table 5-1. It is demonstrated that the Proposed Development satisfies the criteria of the Development Management Justification Test.

Table 5-1 Justification Test for Development Management

Justification Test Criteria	Response based on findings of FRA
1. The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of these Guidelines.	The Limerick Development Plan 2022-2028 has zoned the area within the site boundary as 'city centre' and 'existing residential'. The objectives of the city centre zoning including protection, consolidation, and facilitation of commercial, retail, education, leisure, residential social and community uses/facilities. The objective of existing residential zoning is to provide for and protect existing residential amenities. The development proposal includes 270 beds within the proposed student accommodation and 234 homes within proposed residential areas as well as commercial, educational, and childcare facilities. These all align with the recommendations of the urban centre. Therefore, it is considered that the Masterplan satisfies the criteria of Part 1 of the development management Justification Test.
2. The proposal has been subject to an appropriate flood risk assessment that demonstrates:	
i. The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk;	In terms of assessing whether the development would increase flood risk elsewhere, the Proposed Development will be constructed largely on existing building footprints. Flow pathways throughout the site have been investigated to ensure no new flow pathways are created. To ensure safe access and egress, the NCR will be raised to 5.7m AOD sloping away from O'Callaghan Strand before sloping back down to 4.85m AOD to match existing road levels in front of existing residences west of the Shipyard site. A gap is created during this lowering of the NCR back down to the residences which could allow for water to pass through the Shipyard site. A pedestrian embankment is proposed as an interim measure to protect the NCR and the rest of the development until the Shipyard is developed in a future proposal. The nature of the flooding at the site is tidal, and therefore the development and mitigation works will not impact on flood levels associated with fluvial / conveyance-dominated flood events.
ii. The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible;	The development minimises flood risk by setting levels above the 1-in-200 year flooding event and including provisions for climate change (500mm for lower allowance and 1000mm for higher allowance) in addition to freeboard and land movement allowances. These levels are higher than the SOP proposed for the Limerick FRS, providing a high standard of protection for the lifetime of the Masterplan.
iii. The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and provision for emergency services access;	Because the flood mechanism is tidal, raising the finished floor levels is not expected to cause residual risks. The flood mitigation measures proposed ensure all of the site areas have adequate emergency access and egress in the event of flooding along O'Callaghan Strand. It is noted that the Shipyard site is not protected in this proposal, but provision has been made for an interim pedestrian embankment to serve as a barrier for the flow path through the site. A permanent defence should be designed for should the Shipyard development not occur. The development proposal is in line with the options considered for the Limerick FRS and the site is protected with or without the scheme through the raising of finished floor levels.
iv. The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.	The Proposed Development supports the development of a vibrant and active city centre and the objective for increasing housing provision; therefore, it is in line with wider planning objectives. It is considered that the Proposed Development satisfies the criteria of Part 2(iv) of the development management Justification Test.

6. Conclusion

The Cleeves site is currently at risk of flooding from the following sources:

- Tidal flood risk: The Shipyard Site and Quarry Site are at risk of flooding during the 1 in 200-year flood event, Flax Mill site could be at risk of flooding in the future, when climate change allowances for sea level rise are considered.
- Pluvial flood risk: The Quarry site, Salesian Site and Stonetown Terrace could be at relatively minor risk from receiving overland flows from external catchment areas.
- Groundwater flood risk: The risk of groundwater flooding is deemed low.
- Reservoir flood risk: An inlet flap valve has been identified with a potential to allow water ingress from the river to the Quarry Site. Confirmatory investigations and analysis will be completed to understand the underground pipe network so as to mitigate this risk.

A variety of flood mitigation measures have been proposed and are presented in this Flood Risk Assessment. These include:

- raising building floor levels to between 5.7m AOD and 6.2m AOD
- raising the NCR to 5.7m AOD thereby providing safe access and egress to/from the site, and;
- construction of a new pedestrian connection at the northern end of the Shipyard site to run between Condell Road and the NCR set between 6.78m AOD and 5.7m AOD. This will provide flood mitigation for the development by completing the flood defence line in the interim until the Shipyard site is fully developed.

Appendix A

Factual Report on Hydrographic and Hydrogeological Assessments, Verde, March 2021

Verde Environmental Consultants

Factual Report on Hydrographic and Hydrogeological Assessments

Cleeves Factory Site, North Circular Road, Limerick

March 2021

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FIGURES

GRPAHS

APPENDICES

DOCUMENT CONTROL

Project Title:	Factual Report on Hydrographic and Hydrogeological Assessments
Report Ref.:	53292
Status:	Final
Client:	Rogerson Reddan on behalf Limerick Twenty Thirty (LTT)
Site Details:	Former Cleeves Factory Site, North Circular Road, Limerick City
Issued By:	Verde Environmental Consultants Ltd

Document Production / Approval Record				
	Name	**Signature**	**Date**	**Position**
Created By	Donal Hogan		3rd Mar 2021	Senior Hydrogeologist
Created By	Jim Walshe	Jim Walshe	3rd Mar 2021	Hydrographic Surveyor Director of Irish Hydrodata Ltd
Approved by	Kevin Cleary		3rd Mar 2021	Operations Director

LIMITATIONS

This report represents the results of the inspection and site survey works conducted at the above referenced site. Best practice was followed at all times and within the limitations stated. This report is the property of Verde Environmental Consultants Limited and cannot be used, copied or given to any third party without the explicit prior approval or agreement of Verde Environmental Consultants Limited.

Verde makes no other representations whatsoever, including those concerning the legal significance of its findings or as to other legal matters touched on in this report, including, but not limited to ownership of any property or the application of any law to the facts set forth herein.

1 Factual Survey Report Findings

1.1 Project Contractual Basis & Parties Involved

Verde Environmental Consultants (Verde) was commissioned by Rogerson Reddan on behalf Limerick Twenty Thirty (LTT) to provide baseline characterisation data to support the soil and water chapters of an Environmental Impact Assessment Report (EIAR) in relation to Redevelopment of the Cleeves Site in Limerick. The factual report includes the following initial survey findings with recommendations in relation to proposed further assessment works.

1.2 Water Level Monitoring

In 2017 Verde carried out an environmental due diligence assessment of the Cleeves site involving soil and groundwater assessments. As part of this assessment a series of groundwater monitoring wells were installed in the overburden and bedrock aquifer underlying the site.

On 20th January 2021, Verde located the existing groundwater monitoring wells and installed automatic groundwater level dataloggers in three bedrock wells and three well installed in the made ground/subsoils. In addition a datalogger was placed in the surface water reservoir on-site to observe any comparison with this tidally influenced water feature, as outlined in Table 1. Site survey levels were provided from a topographic survey undertaken on-site.

Table 1: Water Level Logging Locations on-site and Survey Levels

Cleeves Reservoir & Groundwater Level Monitoring					
Well ID	**Geology**	**Survey Level (mOD)**	**Water Level (mOD) 20/01/21 @15:00**	**Neap Tidal Range (m)**	**Spring Tidal Range (m)**
MW101	Bedrock	4.47	2.83		
MW102	Made Ground	4.77	1.4	0.05	0.44
MW104	Made Ground	5.43	3.61		
MW105	Bedrock	5.7	2.05		
MW106	Bedrock	5.05	1.34		
MW107	Made Ground/ Clay	4.7	2.54		
Reservoir		2.99	1.35	0.1	0.65

A graph of the shallow perched groundwater level monitoring in the shallow wells installed in the made ground/subsoils is presented in Graph 1 with the bedrock aquifer groundwater level monitoring wells in Graph 2. Surface water levels in the reservoir show a tidal influence of approximately 0.1m range during neap tides and 0.65m range during spring tides in the monitoring period of 20th January to 24th February 2021.

1.2.1 Perched Groundwater Levels

It can be seen there is direct hydraulic connection between the perched groundwater in MW102 and the adjacent reservoir water level. There is tidal influence on the perched groundwater in the made ground in MW102 of approximately 0.05m during neap tides and 0.44m during spring tides.

In MW104 and MW107 located to the south east of the site, there is no obvious tidal influence on the perched groundwater in these locations, although closer to the River Shannon. The fluctuations seen in the perched groundwater in MW104 and MW107 are seen to be related to responses to rainfall recharge. This indicative daily rainfall data for the site was obtained from the Shannon Airport weather station.

Overall the tidal influence on the site in the shallow perched groundwater is related to the hydraulic connection between the reservoir and the permeable made ground deposits that surround this feature.

1.2.2 Bedrock Groundwater Levels

The groundwater levels in the bedrock monitoring wells are not seen to have any significant tidal influence. In MW101 located within 40m of the reservoir there was no noticeable tidal influence.

In bedrock wells MW105 and MW106 located in the south eastern region of the site and closer to the River Shannon there was some minor tidal influence of <0.04m.

The main influence on groundwater levels in the bedrock aquifer is related to rainfall recharge as presented in Graph 2. Overall the reservoir tidal influence does not impact on the nearby limestone bedrock aquifer groundwater levels.

Using the survey levels and groundwater levels taken at 15:00 on 21st January 2021 a bedrock groundwater contour map was created, as presented in Figure 1. It can be seen the groundwater flow in the bedrock aquifer underlying the site is in a south easterly flow direction towards the River Shannon.

1.3 Reservoir Water Quality

The automatic water level datalogger installed in the surface water reservoir also recorded electrical conductivity (EC) to assess if the water quality is fresh or influenced by brackish/saline water from the River Shannon. The EC readings from the datalogger at the location presented in Figure 1 ranged from 205µS/cm to 248µS/cm, as presented in Graph 3. These low EC readings recorded at the south eastern corner of the reservoir indicate fresh water with no brackish water influence over this period of measurement from 20th January to 24th February 2021.

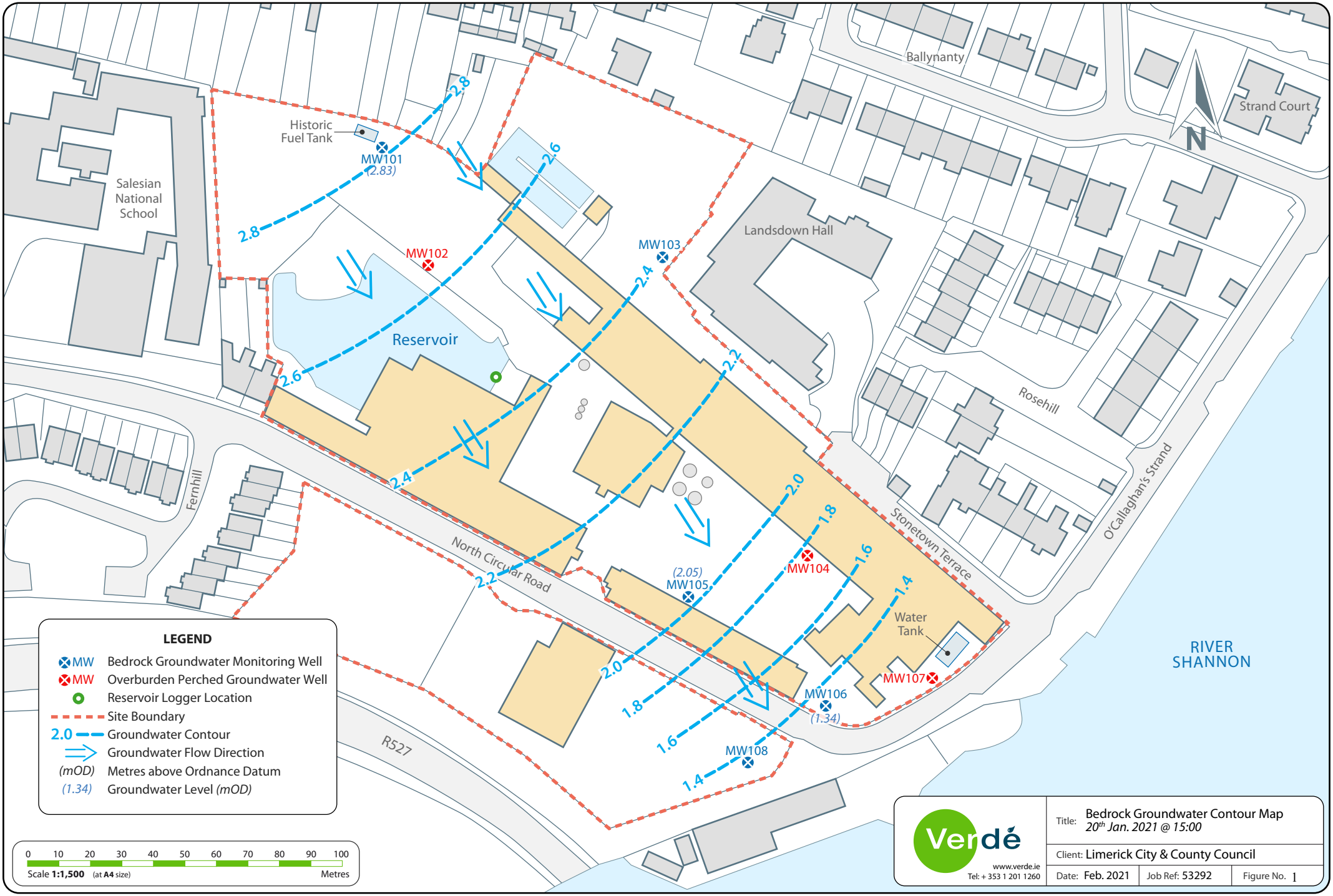
This corresponds with the low EC readings (263µS/cm) recorded from the reservoir when sampled in the 2015 investigation.

1.4 Bathymetric Survey

The Bathymetric Survey prepared by Irish Hydrodata Ltd is presented in Appendix A.

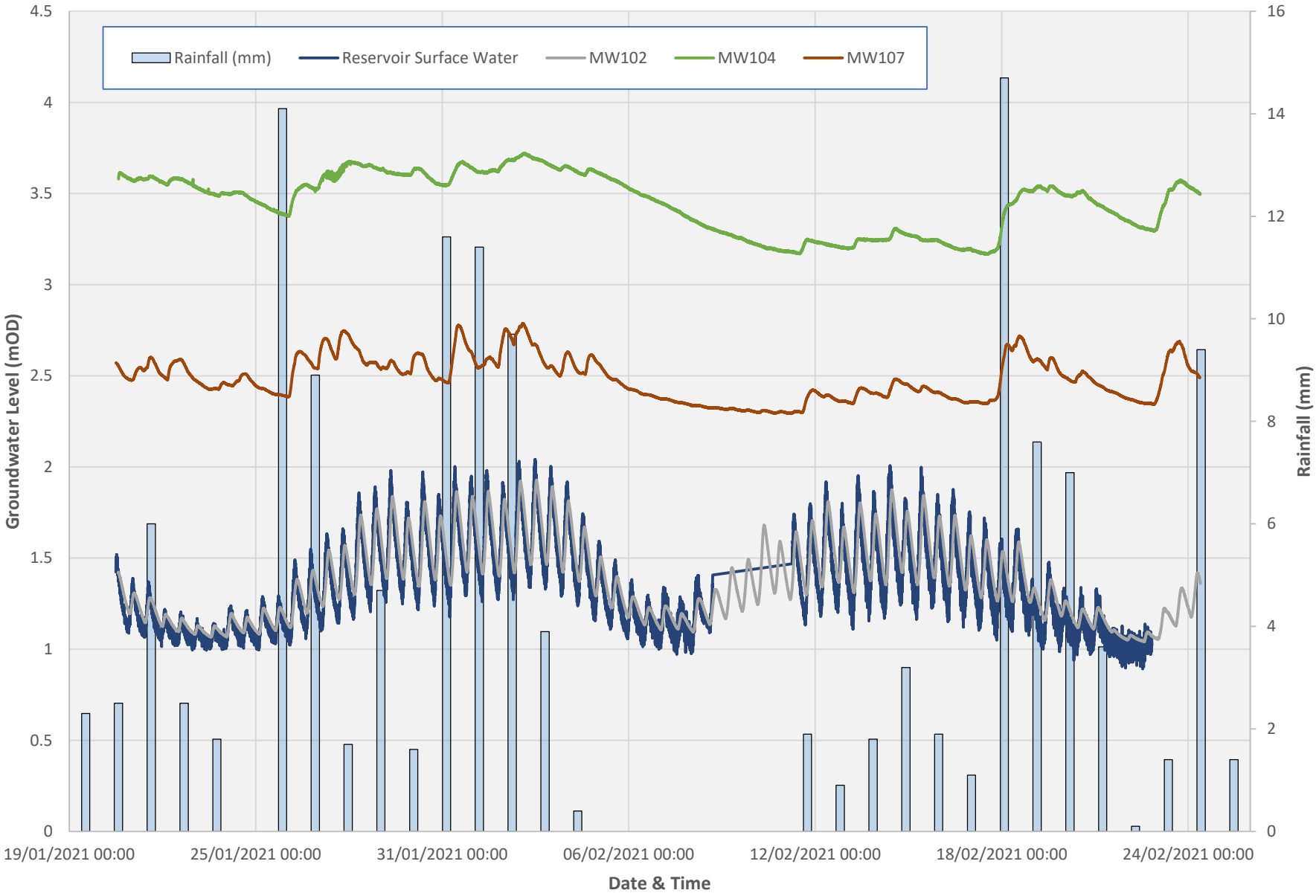
Figure 1

Groundwater Contour Map for Limestone Bedrock Monitoring Wells


Ballynanty
Strand Court
N
Historic Fuel Tank
MW101
(2.83)
Salesian National School
MW102
MW103
Landsdown Hall
Reservoir
Rosehill
Fernhill
North Circular Road
Stonetown Terrace
O'Callaghan's Strand
(2.05)
MW105
MW104
Water Tank
MW107
MW106
(1.34)
MW108
R527
RIVER SHANNON
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
LEGEND
MW Bedrock Groundwater Monitoring Well
MW Overburden Perched Groundwater Well
Reservoir Logger Location
Site Boundary
2.0 Groundwater Contour
Groundwater Flow Direction
(mOD) Metres above Ordnance Datum
(1.34) Groundwater Level (mOD)
0 10 20 30 40 50 60 70 80 90 100
Scale 1:1,500 (at A4 size)
Metres
Verdé
www.verde.ie
Tel: + 353 1 201 1260
Title: Bedrock Groundwater Contour Map
20th Jan. 2021 @ 15:00
Client: Limerick City & County Council
Date: Feb. 2021
Job Ref: 53292
Figure No. 1

Graph 1: Perched Groundwater Level in Made Ground/Subsoils

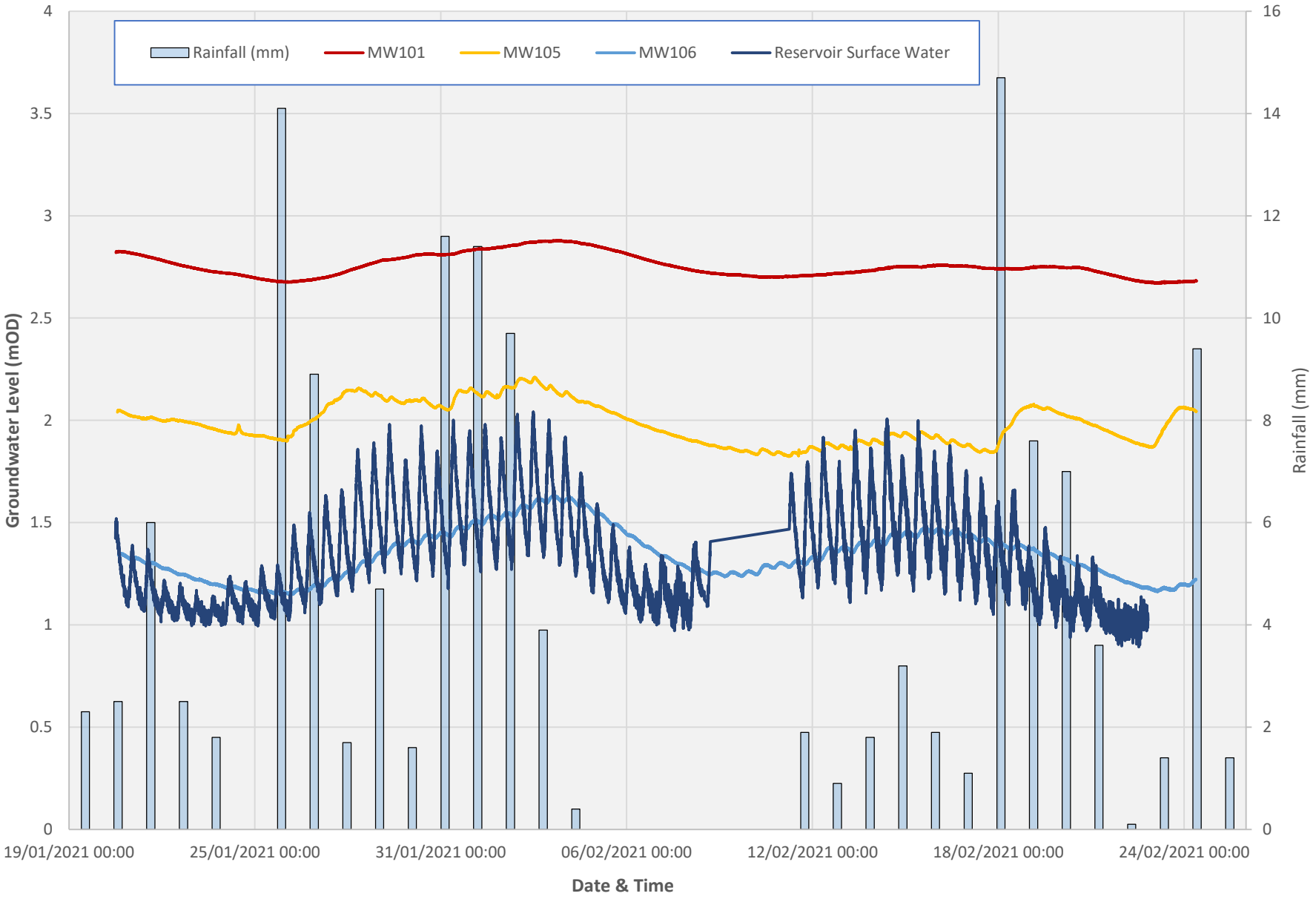
Graph 1: Cleeves Limerick - Perched Groundwater Level Monitoring in Wells installed in Made ground/Suboils



Graph 2:

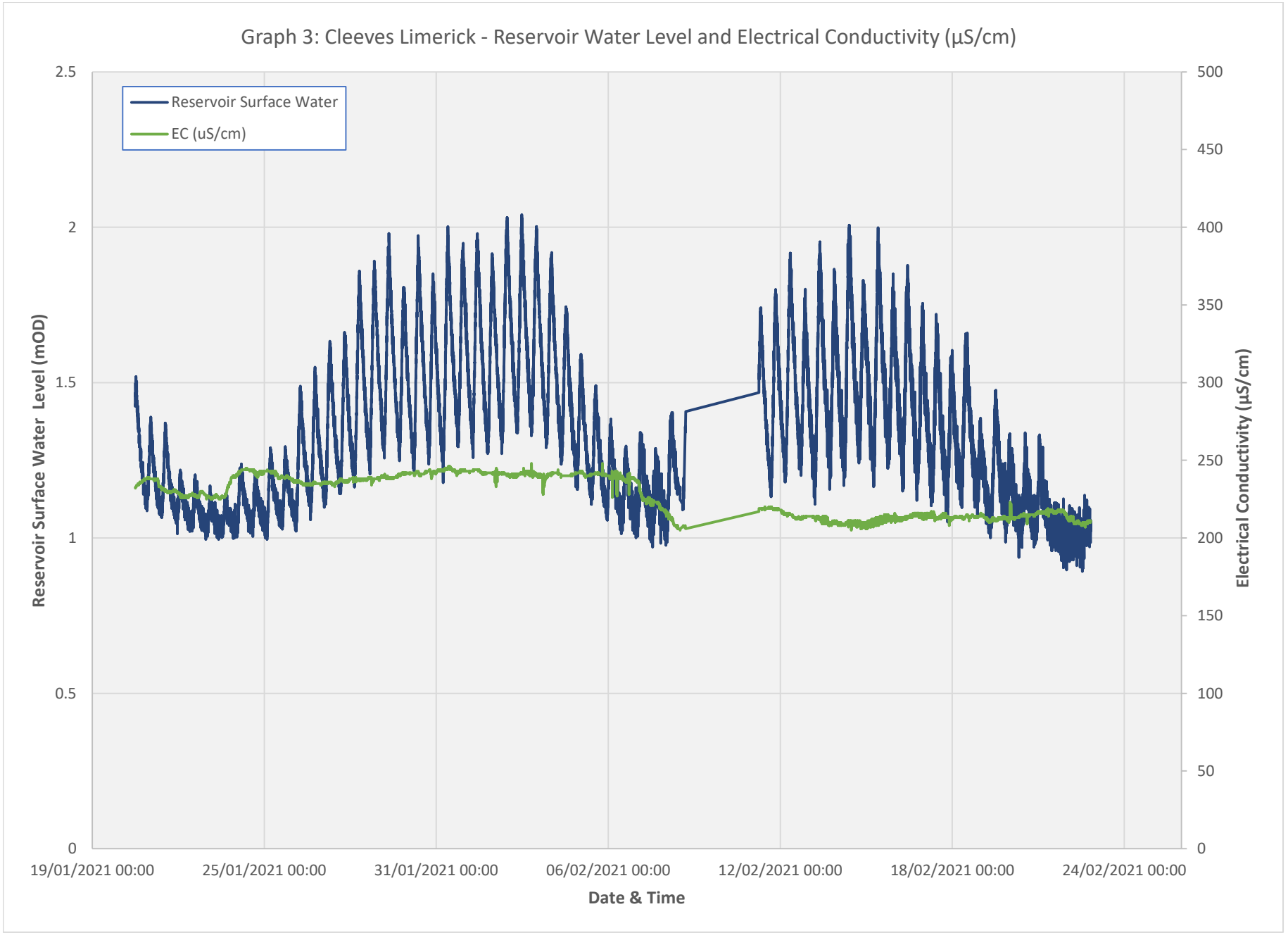
Groundwater Levels in Limestone Bedrock

Graph 2: Cleeves Limerick - Groundwater Level Monitoring in Bedrock Monitoring Wells



Graph 3:

Reservoir Water Level and Electrical Conductivity


Graph 3: Cleeves Limerick - Reservoir Water Level and Electrical Conductivity (µS/cm)
Reservoir Surface Water
EC (uS/cm)
Reservoir Surface Water Level (mOD)
Electrical Conductivity (µS/cm)
Date & Time
2.5
2
1.5
1
0.5
0
500
450
400
350
300
250
200
150
100
50
0
19/01/2021 00:00
25/01/2021 00:00
31/01/2021 00:00
06/02/2021 00:00
12/02/2021 00:00
18/02/2021 00:00
24/02/2021 00:00

Appendix A

Bathymetric Survey

Cleeves Site, Limerick

Bathymetric Survey

12th February 2021

Prepared by:	***Prepared for:***
IRISH HYDRODATA Ltd. Rathmacullig West, Ballygarvan, Co. Cork	***Verde Environmental Consultants on behalf of Rogerson Reddan and Limerick Twenty Thirty (LTT)*** Park House, Arthurs Quay, Limerick.

March 3rd 2021

Contents

1.0 INTRODUCTION

Irish Hydrodata Ltd. (IHD) was commissioned by Verde Environmental Consultants (Verde) on behalf of Rogerson Reddan and Limerick Twenty Thirty to carry survey works in the lagoon area of the Cleeves Site in Limerick City (Figures 1a-d).

The survey works comprised:

- Bathymetric survey of the open area of the lagoon;
- Preliminary reconnaissance survey under building;
- Preliminary dye test within lagoon.

A preliminary site visit was made on 20th January 2021, the survey works were completed on 12th February 2021.

2.0 SURVEY RESULTS

Water Level Measurements

A water level recorder was deployed at the site on 20th January. This remained in place until 12th Feb, logging data at 5 minute intervals. Data was reduced to Ordnance Datum Malin Head (ODM) based on level data supplied by Geodata Surveys. The observed lagoon water levels together with tidal data from Limerick Docks are presented in Figure 2. An expanded plot for the survey date is shown in Figure 3. Water levels in the lagoon vary semi-diurnally and also with the spring – neap tidal cycle. Recorded values ranged from a minimum level of 1.2m ODM to 2.15m ODM over the duration of the measurement period.

Bathymetric Survey Results

The open water area was surveyed by boat using an echo sounder and DGPS. The survey data were reduced to Malin datum. Data is presented in the accompanying survey chart and in Figure 4. The typical bed level is between 0.6 to 0.8m ODM with local areas dropping to a level of about 0.0m ODM.

The water level during the bathy survey ranged from about 1.6 to 1.7m ODM. The lagoon water surface area at this level is about 2200sqm (including the area under the building).

Speed of sound profiling indicated that the lagoon waters were substantially fresh and well mixed.

The lagoon bed was found to be composed of very soft mud. Hand probing easily achieved penetrations of about 1m. Various underwater obstructions and debris were encountered. These have been included on the survey chart in their approximate locations.

Under-building Survey Results

The area under the old building adjacent to and above the lagoon was examined by boat. The building is supported on cross walls which run in a NE-SW direction (Figure 5). These walls have three or four arch openings running the length of the building. The under-building area is about 35m long by an average of 26m wide. At the outer NW end, Bay 9, the width dimension is 34m while at the opposite end, Bay 1, it reduces to approximately 18m.

The arch dimensions are typically as shown in Figure 6. Not all arches were measured and some of the arches appear visually smaller.

An inlet flap is located in Bay 1 at the SE end of the building as shown in Figure 7 and in Photo 1. This comprises a timber gate (0.6m wide) with a top hinge recessed in an arch passage. The arch structure has a base cill level of +0.3m ODM. The state of the timber gate could not be determined. On the day of the survey waters were exiting and entering the lagoon through this structure.

Partition walls were evident at a number of locations. Only some of these were recorded due to the difficulty of manouvering in the confined areas. The top levels of these observed ranged from +1.4 to +1.7m ODM. The presence of these walls and associated pipe nozzle and gate valves suggests that the area was used in the past for liquid impoundment. The wall and gate valve in Bay 6 has a top level of +1.4m suggesting that in the past the lagoon water level must have been kept below +1.4m for these to be effective.

Bed probing indicated very soft mud in the area under the building. Various observed features are recorded in the attached photographs.

Preliminary Dye Test

Small quantities of tracer dye were released in the south eastern part of the lagoon and under the building to help identify water movements. Weather conditions on the day were not ideal with strong winds inducing surface circulations. The only significant water movement observed was in the vicinity of the inlet flap valve structure where waters exiting on the ebb tide. A more thorough survey would be required to identify and locate the outlet structure if one exists.

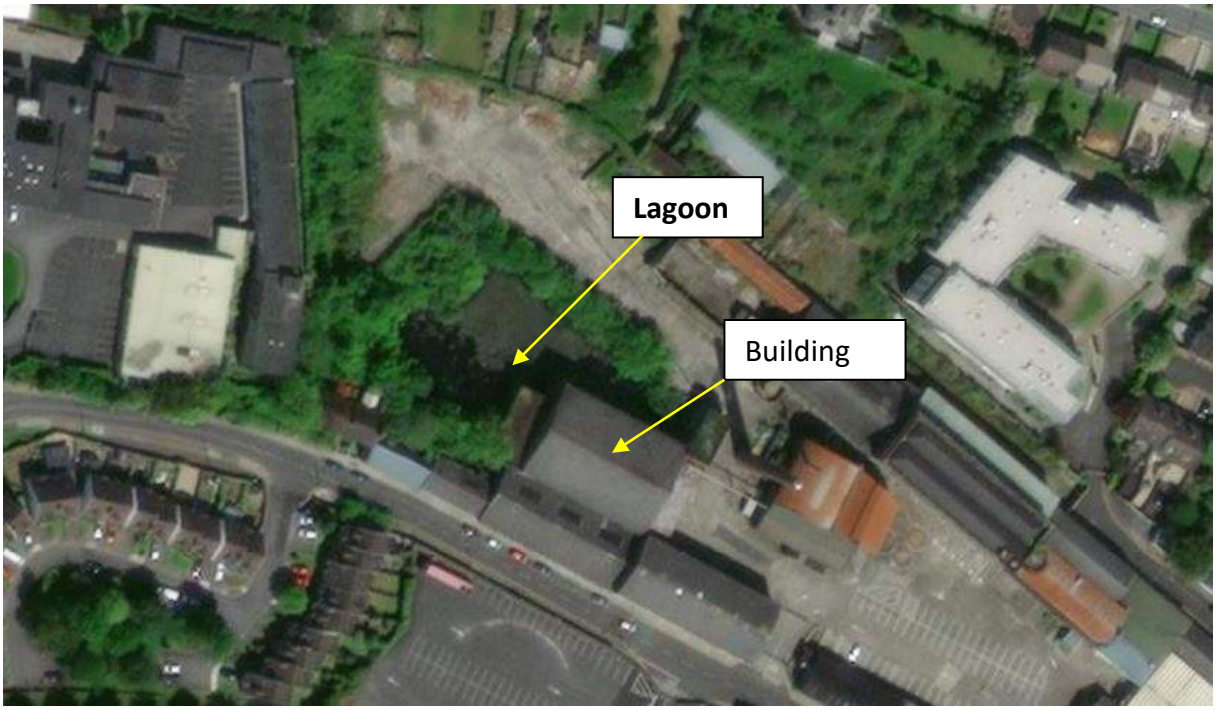


Figure 1a – Lagoon in Cleeve's site

Figure 1b – Lagoon in Cleeve's site

Figure 1c – Lagoon in Cleeve's site

Figure 1d – Lagoon in Cleeve's site

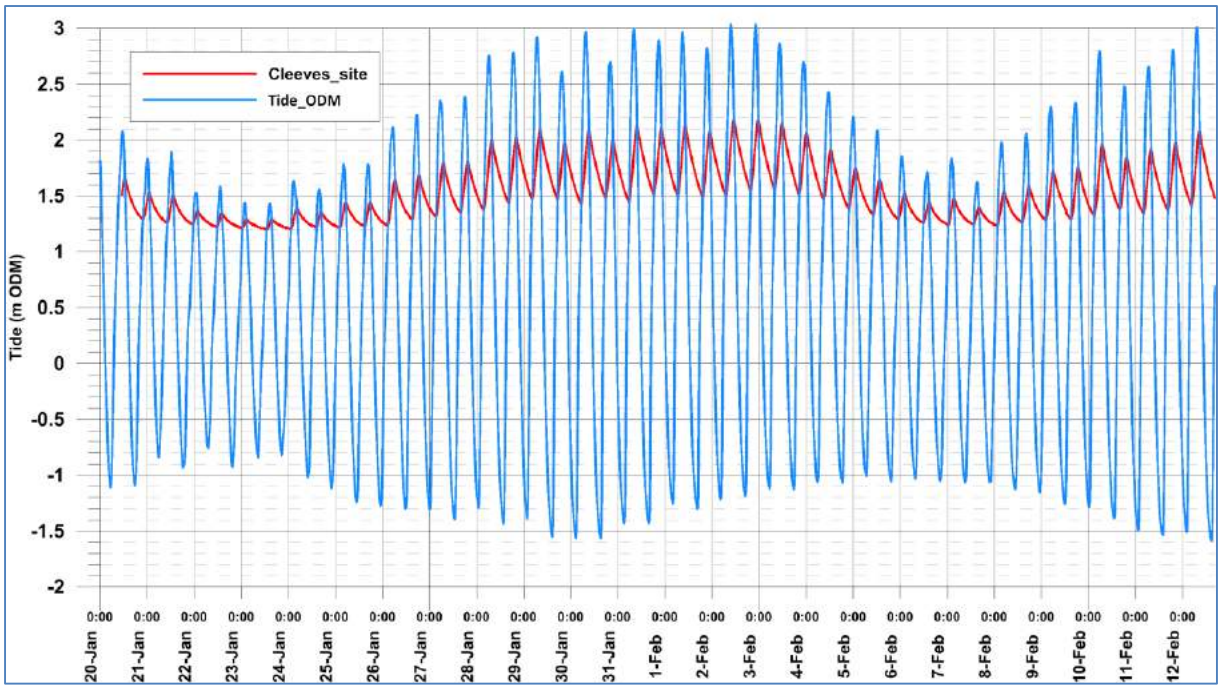


Figure 2 – Water level variations in the lagoon and Limerick Docks over the period 20th Jan to 12th Feb.

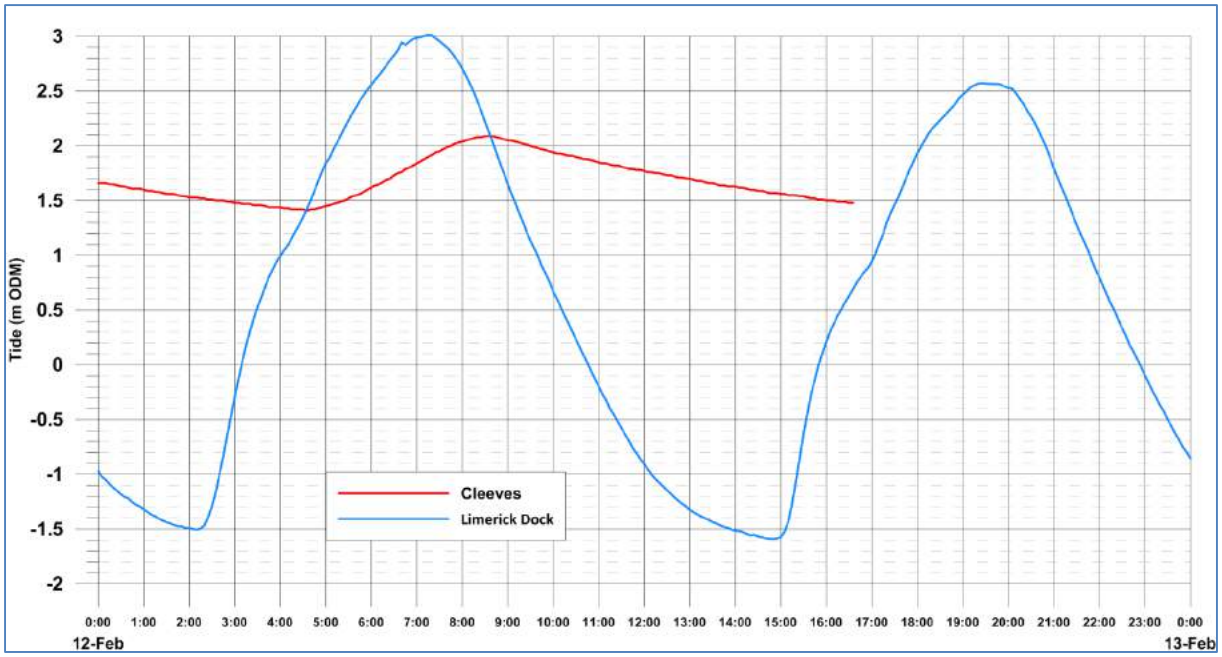


Figure 3 – Water level variations in the Cleeves lagoon and at Limerick Docks during the survey works on 12th Feb.

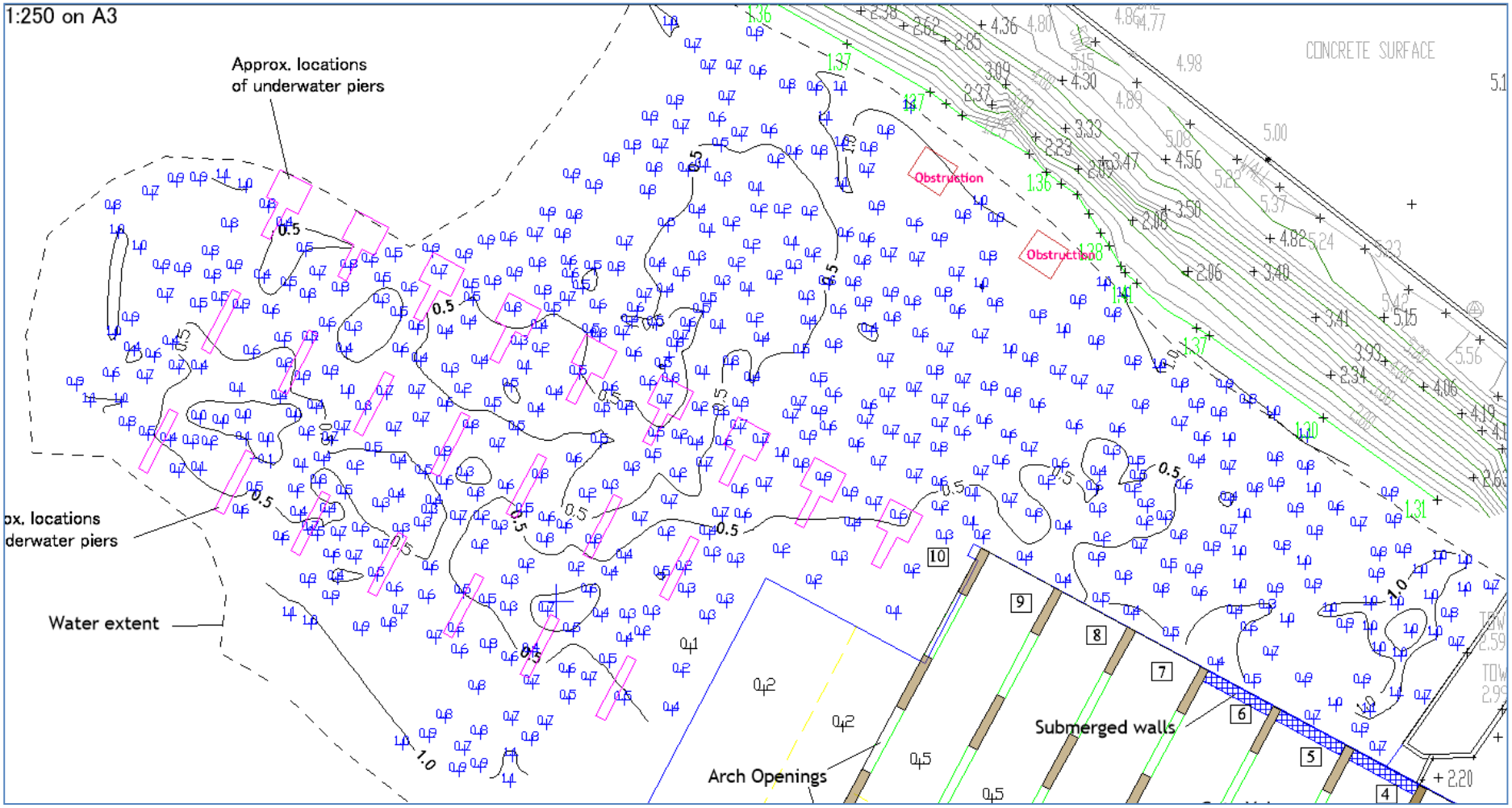


Figure 4 - Open water bathymetric survey area

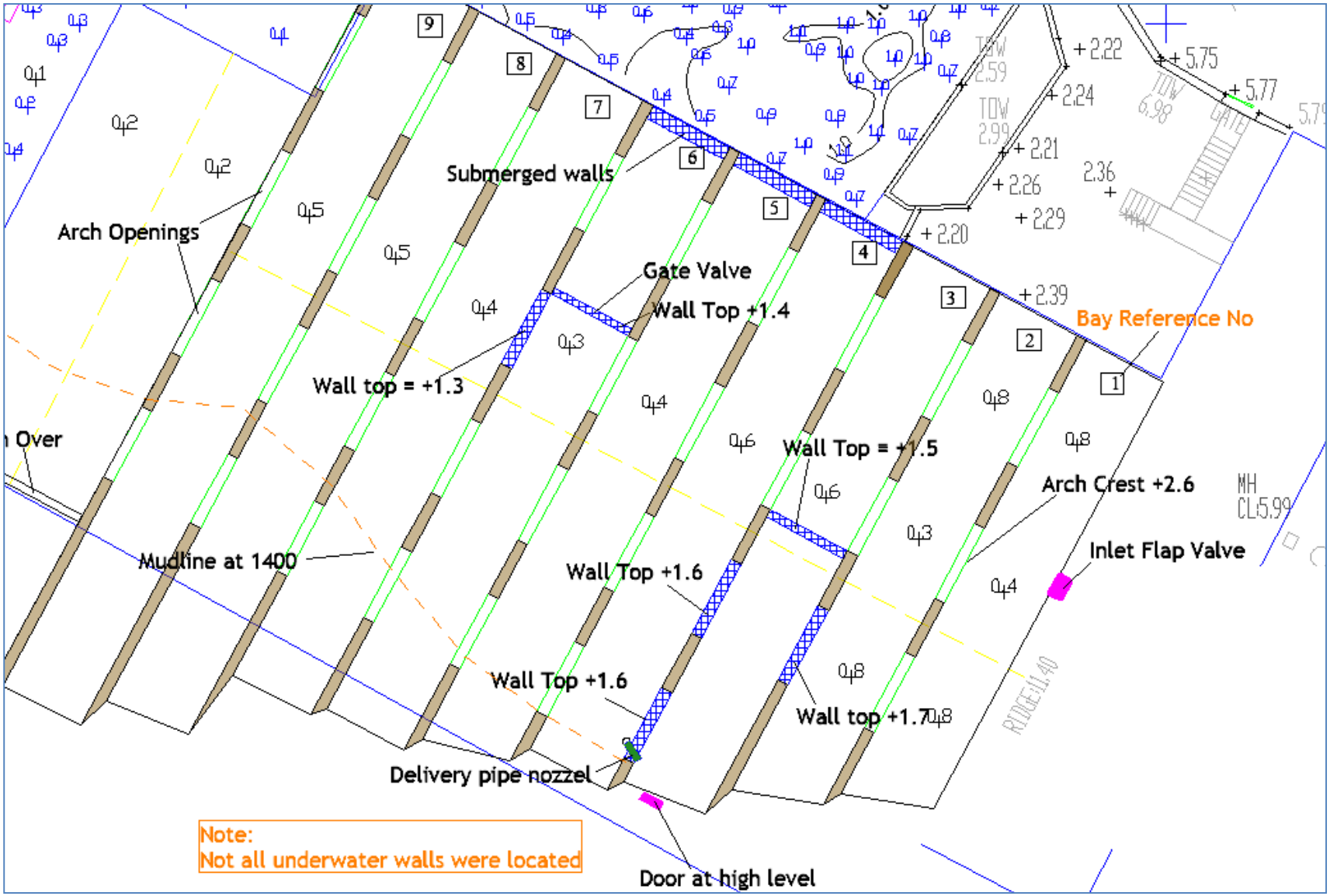


Figure 5 – Area under building

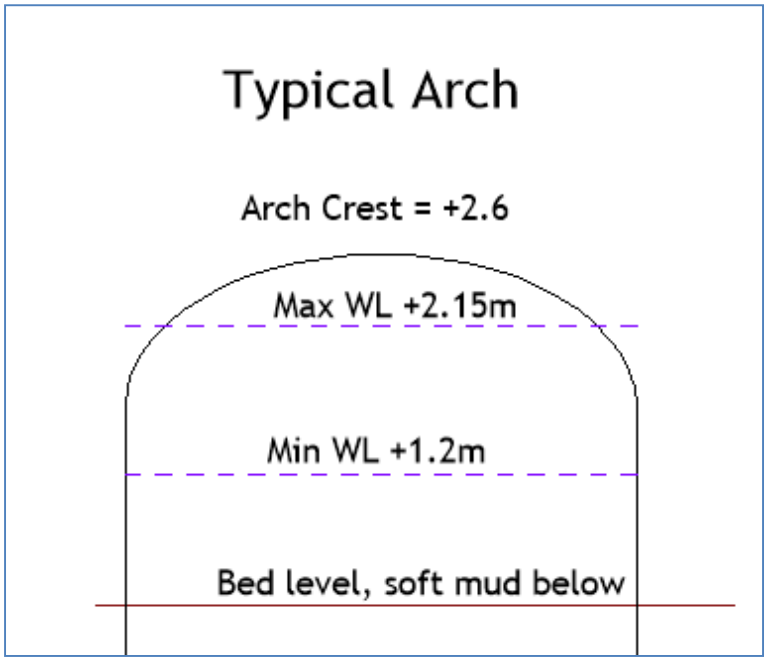


Figure 6 – Typical under-building arch dimensions (Max and min water levels are based on Figure 1)

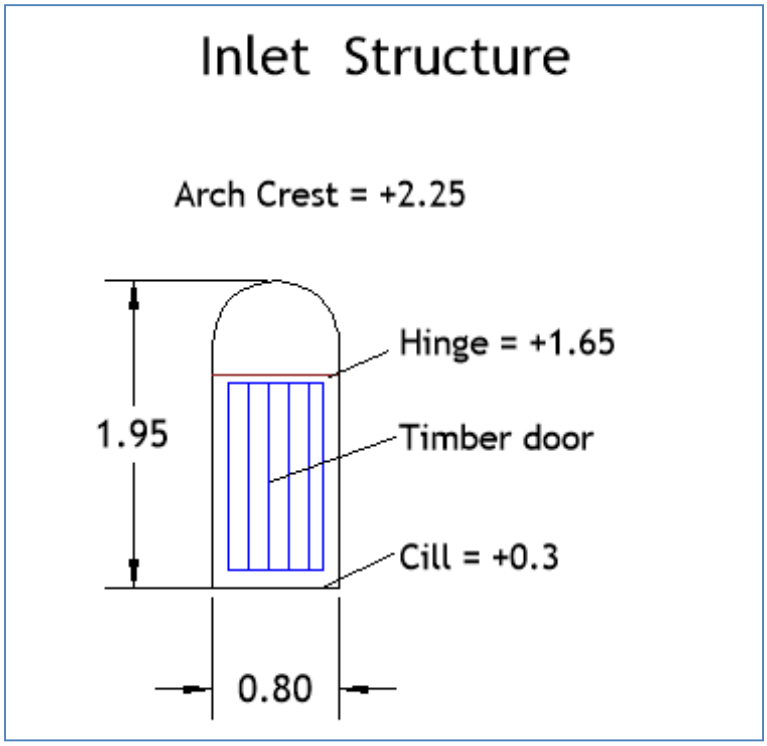


Figure 7 – Inlet water structure dimensions (waters were observed to be flowing in and out at this location during the survey, the underwater condition of the door is not known)

Photo 1 – Inlet flap valve located in recessed arch on south eastern wall in Bay 1

Photo 2 – End wall of Bay 1 constructed on limestone rock

Photo 3 – End wall of Bay 3 showing arched passage way above limestone rock

Photo 4 – Delivery pipe nozzle in Bay 4, pointed into Bay 3, submerged wall visible

Photo 5 – Gate valve in Bay 6, rectangular ope below

Photo 6 – Bay 10

Scale 1:250 on A3

Approx. locations of underwater piers

Approx. locations of underwater piers

Water extent

Obstruction

Obstruction

CONCRETE SURFACE

CONCRETE SURFACE

TARMAC SURFACE

Submerged walls

Arch Openings

Gate Valve

Wall Top +1.4

Wall top = +1.3

Arch Over

Wall Top = +1.5

Arch Crest +2.6

Bay Reference No

Mudline at 1400

Wall Top +1.6

Inlet Flap Valve

Wall Top +1.6

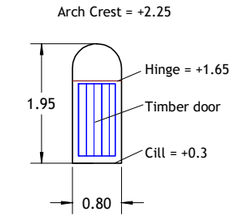
Wall top +1.7

Delivery pipe nozzel

Door at high level

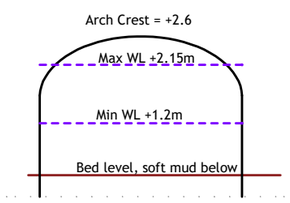
Note:
Not all underwater walls were located

Inlet Structure



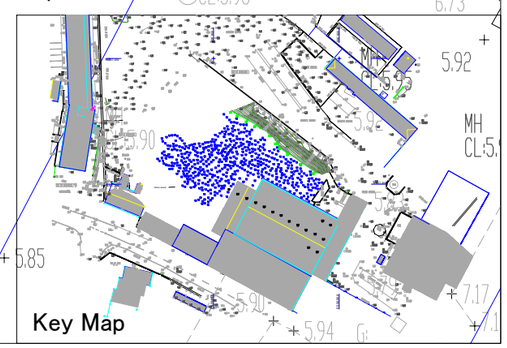
Scale 1:100

Typical Arch



Scale 1:100

N 657,200



No.	Revision	Drg. by	Chk. by
0	First issue	TFB	JFW

Grid: ITM | Vertical Datum: OSGM15

0m 5m 10m 15m 20m 25m

Scale: 1 : 250

Client:

Rogerson Reddan,
Park House,
Arthurs Quay,
Limerick

Drg by: TFB	Chk by: JFW	App. by: JFW
Scale 1:500 (A3)	Survey Date: February 12th 2021	

Drawing No. 1374-01

Revision 0

Surveyed by:

Irish Hydrodata Ltd.
Rathmacullig West
Ballygarvan
County Cork
Ireland

admin@hydrodata.ie
www.hydrodata.ie
T +353 (021) 4311255

Project:

Cleeve's site, Limerick City

Title:

Reservoir Survey

Notes:

1. Levels are in metres and decimetres.
2. Position of levels in reservoir are at decimal point in number.
3. Survey is mapped to Irish Transverse Mercator (ITM).
5. Levels are referred to OSGM15.
6. Water Level data from gauge on site.

APPENDIX 4

BIRD SURVEY RESULTS AND METHODOLOGY

BRIEFING NOTE

Project Reference	211052
Date	26.09.2022
Subject	2021/ 2022 Wintering Bird Surveys - Limerick 2030 Cleeves Riverside Quarter
Author(s)	Kevin Mc Elduff (B.Sc. (Env))

Background

This briefing note outlines the results of the 2021/ 2022 wintering bird surveys undertaken at St. Michael's Rowing club for Limerick Twenty Thirty Strategic Development DAC. The site of the Proposed Development is divided up into two parcels located at North Circular Road, Limerick City, Co. Limerick (Grid Ref: R 57051 57119).

Statement of Authority

A total of four wintering bird surveys were carried out by Kevin Mc Elduff (B.Sc. (Env.)) of MKO on 15/12/2021, 12/01/2022, 15/02/2022 and 14/03/2022. Kevin has also prepared this briefing note. This briefing note has been reviewed by Colin Murphy (B.Sc, M.Sc.) Colin is a Project Ecologist with over 2.5 years professional consultancy experience.

Methodology

Prior to the commencement of surveys, an initial field visit was undertaken to assess the habitats on site and plan the surveys, as well as to identify suitable vantage points. The survey area covered the development site and the area of shoreline within River Shannon and River Fergus Estuaries SPA, approximately 15m to the south of the Proposed Development site. The surveys to were undertaken at the site over four dates: 15/12/2021, 12/01/2022, 15/02/2022 and 14/03/2022. Surveys were undertaken monthly at alternate high/low tides. A combination of low and high tide counts has been used due to the differences in behaviour and site use between tidal states, with different species likely to be foraging and roosting in different areas of River Shannon and River Fergus Estuaries SPA and the surrounding terrestrial habitats, depending on the stage of the tidal cycle.

The surveys were undertaken by appropriately qualified ornithologists. All observations were recorded, and detailed point data was gathered for each species observation, with all bird species denoted using standard British Trust for Ornithology (BTO) codes and with the number of each species recorded next to each registration. The species recorded in the surveys were those covered by Irish Wetlands Bird Survey (I-WeBS) counts, i.e. all divers, grebes, cormorant, shag, herons, swans, geese, ducks, rails, crakes, waders, gulls and kingfisher. However, in addition to this, all other bird species, including all common and widespread passerines, were also recorded from within the proposed development site.

Wintering Bird Surveys

A total of eight bird species were recorded during the four surveys carried out during the 2021/ 2022 survey period: Black-headed gull, Cormorant, Heron, Lesser black-backed gull, Mallard, Mute swan, Oystercatcher and

Redshank. All birds were recorded outside the site, either feeding (F) on the River Shannon or roosting (R) on the riverbank and in the water (details below).

Three of these species (Black-headed gull, Cormorant, Heron, Lesser black-backed gull, Mallard, Mute swan, Oystercatcher and Redshank, Cormorant and Redshank) are Special Conservation Interests of the River Shannon and River Fergus Estuaries SPA which is located in close proximity to the site.

Breeding and wintering populations of Mute swan, Cormorant, Mallard, Black-headed gull and Lesser black-backed gull are amber listed, Redshank and Oystercatcher are red listed as per *Birds of Conservation Concern in Ireland 2020-2026* (Gilbert et al 2021).

Table 1 Results of 15/12/2021 wintering bird survey

15/12/2021 15:00 High Tide – Sunny – Cloud cover 40% – Low wind – Visibility 2km +		
Mute Swan (*Cygnus olor*)	8	Feeding
Cormorant *(Phalacrocorax carbo*)	4	Feeding
Mallard (*Anas platyrhynchos*)	6	Feeding
Black-headed gull (*Larus ridibundus*)	100	Feeding
Lesser black-backed gull (*Larus fuscus*)	16	Feeding

Table 2 Results of 12/01/2022 wintering bird survey

12/01/2022 9:00 Low Tide – Sunny – Cloud cover 50% – Low wind – Visibility 2km +		
Grey heron (*Ardea cinerea*)	4	Feeding
Black-headed gull (*Larus ridibundus*)	250	Feeding
Mute Swan (*Cygnus olor*)	8	Feeding
Cormorant *(Phalacrocorax carbo*)	15	Feeding
Mallard (*Anas platyrhynchos*)	6	Feeding
Redshank (*Tringa tetanus*)	1	Feeding
Oystercatcher (*Haematopus ostralegus*)	19	Feeding
Lesser black-backed gull (*Larus fuscus*)	6	Feeding

Table 3 Results of 15/02/2022 wintering bird survey

15/02/2022 7:05 High Tide – Cloud cover 90% – Moderate Wind – Visibility less than 2km		
Mute Swan (*Cygnus olor*)	8	Roosting/ Feeding
Black-headed gull (*Larus ridibundus*)	~1,250	Feeding
Mallard (*Anas platyrhynchos*)	5	Feeding
Cormorant *(Phalacrocorax carbo*)	110	Feeding
Lesser black-backed gull (*Larus fuscus*)	15	Feeding
Oystercatcher (*Haematopus ostralegus*)	75	Feeding

Table 4 Results of 14/03/2022 wintering bird survey

14/03/2022 11:00 Low Tide – Sunny – Cloud cover 30% – Low wind – Visibility 2km +		
Mute Swan (*Cygnus olor*)	14	Feeding
Cormorant *(Phalacrocorax carbo*)	9	Feeding
Mallard (*Anas platyrhynchos*)	11	Feeding
Black-headed gull (*Larus ridibundus*)	200	Feeding
Lesser black-backed gull (*Larus fuscus*)	25	Feeding/ Roosting

Conclusions of 2021/ 2022 Wintering bird surveys

The proposed development site does not provide suitable supporting habitat for SCI species associated with any SPA. No SCI species were recorded within the proposed development site during the course of the 2021/ 2022 wintering bird survey season.

Additional Surveys

While the wintering bird surveys carried out during the 2021/ 2022 survey period indicate that the proposed development site does not provide suitable habitat for SCI species nor does the site support any populations of SCI species, we recommend that wintering bird surveys be carried out for the upcoming 2022/ 2023 survey season. The purpose of these additional surveys is to ensure that the most up to date data is available for future planning applications to reduce risks.

APPENDIX 5

CEMP

AtkinsRéalis

Outline Construction Environmental Management Plan

Limerick City and County Council, in partnership with Limerick Twenty Thirty DAC

October 2025

1001172160003

CLEEVES RIVERSIDE QUARTER

Notice

This document and its contents have been prepared and are intended solely as information for Limerick City and County Council, in partnership with Limerick Twenty Thirty DAC and use in relation to the Construction Environmental Management Plan for the Cleeves Riverside Quarter Development.
AtkinsRéalis Ireland Limited assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

This document has 131 pages including the cover.

Document history

Document title: Outline Construction Environmental Management Plan

Document reference: 10117216DG0003

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
0	Working Draft	RG	RG	-	-	July 2025
1	Working Draft	RG/OW	RG/OW	DL	-	22/08/25
2	Working Draft	RG/OW	RG/OW	DL	-	03/09/25
3	Working Draft	RG/OW	RG/OW	DL	-	29/09/25
4	Draft	RG/OW	RG/OW	DL	-	06/10/25
5	Final	RG/OW	RG/OW	DL	-	17/10/25

Client signoff

Client	Limerick City and County Council, in partnership with Limerick Twenty Thirty DAC
Project	Cleeves River Quarter Development
Job number	100117216
Client signature/date	

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1. Introduction

1.1 Overview

This Construction Environmental Management Plan (CEMP) has been prepared by AtkinsRéalis on behalf of Limerick City and County Council, in partnership with Limerick Twenty Thirty DAC as part of the planning application for the Proposed Cleeves Riverside Quarter Development.

Limerick City and County Council, in partnership with Limerick Twenty Thirty DAC, intends to seek the approval of An Coimisiún Pleanála in accordance with Section 175 and 177AE of the Planning and Development Act 2000, as amended, for a mixed-use development that seeks the regeneration and adaptive reuse of a strategic brownfield site, as part of the Limerick City and County Council 'World Class Waterfront revitalisation and transformation project'.

The proposed development comprises Phase II, of an overall Masterplan with four phases of development proposed. Phase II is subsequent to ongoing stabilisation and repair of the Flaxmill protected structure (Phase I) which is being undertaken in accordance with a Section 57 Declaration. Phase III is intended to comprise an educational campus, inclusive of the adaptive reuse of the Flaxmill Building as part of that development and will be subject to a future separate application. Phase IV comprising the Shipyard site will be the final phase of development.

Two structures within the site are designated protected structures; the Flaxmill Building (PS Ref no.264 & NIAH No. 21512053) and the octagonal brick chimney (PS Ref no.265 & NIAH No. 21512059), which are to be retained.

1.2 Purpose Of CEMP

The purpose of this CEMP is to describe the measures that will be implemented by the contractor to give effect to the mitigation measures described in the planning application documents to avoid, minimise and control potential adverse environmental impacts associated with the construction of the proposed project and to ensure the proposed development site is managed in accordance with best practice environmental protection, during the construction phase. The CEMP will be a key contract document that the contractor will be required to implement in full to safeguard the environment through the identification, avoidance and mitigation of the potential negative environmental impacts which are associated with the Proposed Development.

This CEMP explains the construction techniques and methodologies which will be implemented during construction of the Proposed Development.

The works Contractor will undertake the works in accordance with the provisions of the CEMP. The CEMP will be updated by the contractor in consultation with the local authority in order to give effect to any relevant planning conditions, should permission be granted.

The CEMP aims to define good practice as well as specific actions required to implement mitigation requirements as identified in the following environmental reports and documents reviewed by AtkinsRéalis:

- HRA Planning (2025*), Environmental Impact Assessment Report*
- ARUP (2025) Flood Risk Assessment (FRA) Report
- ARUP (2025) Construction & Demolition Resource and Waste Management Plan (CDRWMP) Report

The party responsible for the preparation of the CEMP is likely to change over the life of a project. In the absence of Irish guidelines, the UK guidelines LA 120 Environmental Management Plans, March 2020 for CEMP were followed.

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1.3 Structure

This CEMP has been structured as follows:

- Section 1 outlines the purpose of the CEMP and introduces the proposed development/project;
- Section 2 describes in detail the proposed development/project;
- Section 3 outlines the minimum standards, legislation and guidance required of the Contractor during the development of the CEMP;
- Section 4 identifies the relevant roles and responsibilities for developing, implementing, maintaining and monitoring environmental management;
- Section 5 sets out the mechanisms through which environmental requirements will be managed;
- Section 6 sets out the general requirements of the CEMP;
- Section 7 provides a summary of minimum requirements that will be implemented by the Contractor; and,
- Section 8 sets out the procedures for the Emergency Response Plan.

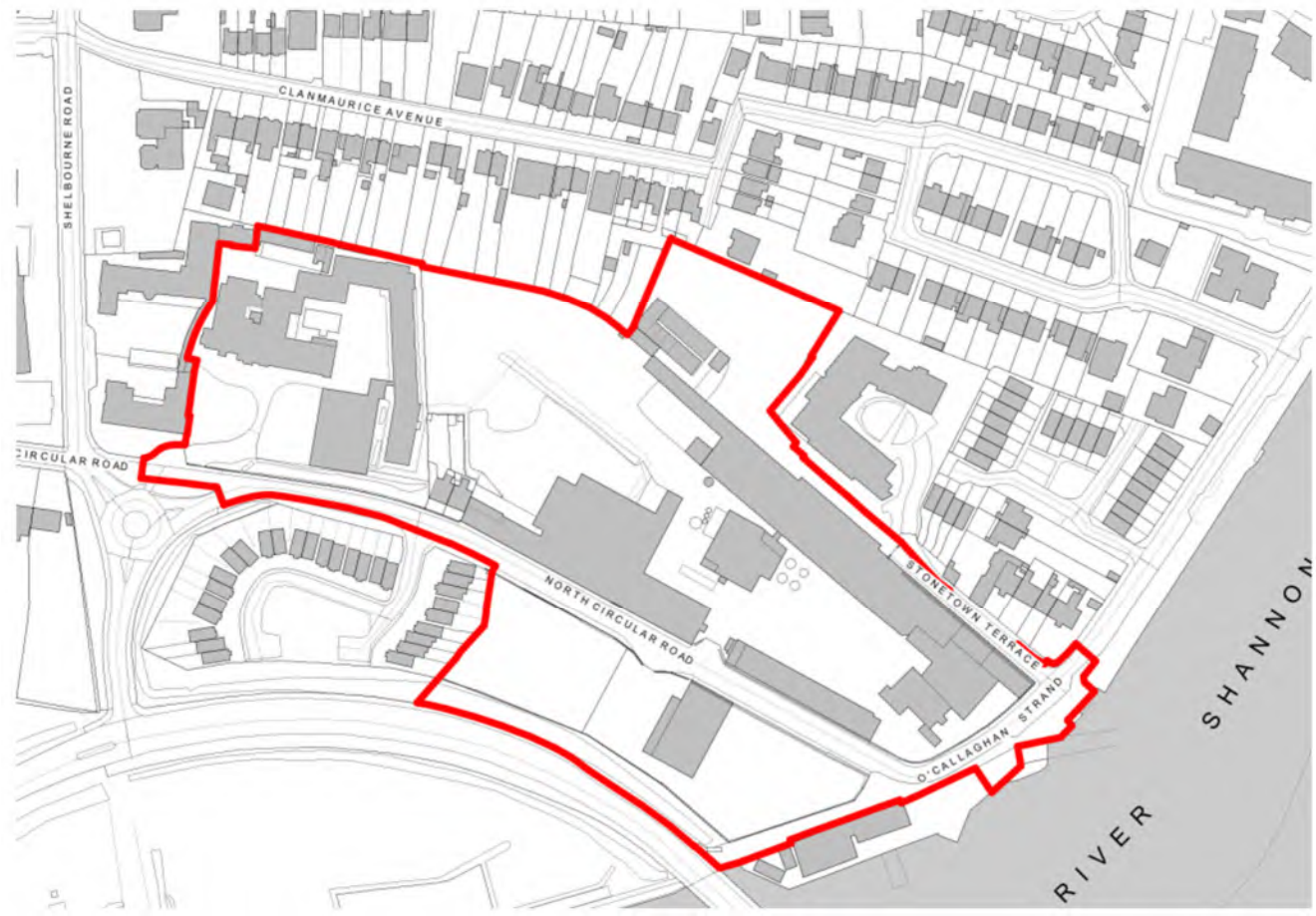

Figure 1-1 - Red Line Boundary of Proposed Development

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2. The Proposed Development

2.1 Site Description & Current Site Setting

The Proposed Development is ca. 5.09 hectares in size and located within the townland of Farranshone More, Limerick City, Co. Limerick.

The site, known locally as ‘Cleeves Riverside Quarter’ comprises the former industrial mill complex (‘Cleeves’) situated on the northern side of the River Shannon, Limerick City and occupies the area between; Stonetown Terrace Road to the northeast; O’Callaghan Strand to the southeast; Condell Road (R527) to the southwest; and, Salesian Primary School and the ‘Fernhill’ residential estate to the northwest and west respectively - all situated in the townland of Farranshone More in Limerick City. The site is dissected by North Circular Road where it extends between Shelborne Road Lower and O’Callaghan Strand. The full extent of the planning application site is detailed in Figure 1-1 above.

2.2 Site History and Surrounding Land Use

The site history and development of surrounding lands is presented in Table 2-1

Table 2-1 - Mapping of Site History of the Proposed Development

MapGenie 1829-1841	
MapGenie 1897-1913	

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MapGenie 1995 – The Proposed Development site outlined in red which shows development of residential and commercial areas.

MapGenie 1996-2000 – No changes to the lands within the Proposed Development or surrounding lands.

MapGenie 2001-2005 - No changes to the lands within the Proposed Development or surrounding lands.

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MapGenie 2006-2012 – No changes noted within the Proposed Development or surrounding lands

MapGenie 2013-2018 - No further changes noted.

Google Maps (2025) – No further changes noted.

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2.3 Proposed Development Description

The proposed development comprises Phase II, of an overall Masterplan with four phases of development proposed. Phase II is subsequent to ongoing stabilisation and repair of the Flaxmill protected structure (Phase I). Phase III is intended to comprise an educational campus, inclusive of the adaptive reuse of the Flaxmill Building as part of that development and will be subject to a future separate application. Phase IV comprising the Shipyard site will be the final phase of development.

Two structures within the site are designated protected structures; the Flaxmill Building (PS Ref no.264 & NIAH No. 21512053) and the octagonal brick chimney (PS Ref no.265 & NIAH No. 21512059), which are to be retained.

The proposed development includes:

A. Demolition of a number of structures to facilitate development including (i) Salesians Secondary School and Fernbank House; (ii) 2 no. houses on North Circular Road; (iii) Residual piers from the basin of the reservoir; (iv) Upper Reservoir on Stonetown Terrace comprising 2 no. concrete water tanks, pump house and liquid storage tank; (v) 1960's lean-to building structures adjoining the Cold Store (former Weaving Mill); (vi) remaining fabric of c20th rear lean-to of the Flaxmill Building; (vii) c.1960s office building adjoining the Packing Store and Cheese Plant on North Circular Road; (viii) Cluster of buildings including altered part of the Linen Store, the former Linen Store, Storage Building, and Office/Lab building at O'Callaghan Strand / Stonetown Terrace with partial retention of existing stone wall; (ix) warehouse on the Shipyard site; and (x) partial removal of stone boundary wall defining the Cleeves site adjoining O'Callaghan Strand / Stonetown Terrace and around the Shipyard site.

B Construction and phased delivery of:

i. Residential Development in 4 development 'zones' within the site ranging in height from 3 – 7 storeys (with screened service plant at roof level) comprising; (a) 234 no. residential units; (b) 270 no. student bedspaces with ancillary resident services at ground floor level; (c) 299sqm of commercial floorspace; and (d) a creche. The specific development details of each proposed development zone comprise the following:

- Salesians Zone – 1 no. building with 2 no. blocks extending to 6 and 7 storeys comprising 146 no. apartments (76 no. 1 bed; and 70 no. 2 bed); a creche; semi basement car and bicycle parking; reception area, plant rooms, and refuse storage, with screened external plant and photovoltaic panels at roof level; 20 no. 3 storey 3 bed triplexe units with photovoltaic panels at roof level; and 30 no. car parking spaces for the dedicated use of the adjoining Salesians Primary School.
- Quarry Zone – 1 no. Purpose Built Student Accommodation (PBSA) building with 3 no. blocks extending to 6 and 7 storeys comprising 270 no. bedspaces with study rooms, shared areas, exercise room, reception area, plant rooms, refuse storage and bicycle parking all at ground floor level and screened external plant and photovoltaic panels at roof level. Provision is made for telecommunication antennae on the roof top of one block. Consent is also sought for use of the PBSA accommodation, outside of student term time, for short-term letting purposes.
- Stonetown Terrace Zone – 1 no. building extending to 4 - 5 storeys comprising 38 no. apartments (6 no. studios; 12 no. 1 beds; and 20 no. 2 beds) with plant rooms and refuse storage at ground level, ancillary infrastructure at basement level at northern end of the block, with screened external plant and photovoltaic panels at roof level; 9 no. 3 storey 3 bed townhouses with photovoltaic panels at roof level; and a dedicated secure bicycle storage facility.
- O'Callaghan Strand Zone – 1 no. building extending to 4 / 5 storeys comprising 21 no. apartments (9 no. 1 bed and 12 no. 2 bed) with an open roof structure accommodating communal open space, plant and

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photovoltaic panels; and 299qm of commercial ground floorspace intended to accommodate Class 1, Class 2 and / or Class 3 uses, with provision for car parking in the undercroft.

ii. Dedicated mobility hub with canopy and photovoltaic panels including double stacker bicycle parking; and EV Charging spaces, within the Shipyard Zone. A dedicated pedestrian/cycle link connects North Circular Road with Condell Road. The remaining area of the zone shall accommodate temporary car parking and a temporary external event space to be used on a periodic basis as the need arises, pending future redevelopment proposals as detailed in the Masterplan (Stage IV).

iii. Extensive provision of Public Realm including creation of the Reservoir/Quarry Park, the Flaxmill Square and the Riverside Corridor. Significant areas of civic and green spaces are provided, incorporating formal and informal play space; nature based SuDs, permeability and access; and a riverside canopy with photovoltaic panels functioning as an outdoor event space and incorporating heritage interpretative panels

iv. 3 no. dedicated bat houses;

v. Telecommunication antennae on roof of Block 2A of the PBSA, including (a) 9 no. Support poles to support 2 no. antennae each; (b) 6 no. microwave dishes affixed to the plant screen; and (c) associated telecommunications equipment and cabinets (effectively screened). To facilitate technologically acceptable locations at the time of delivery, a micro-siting allowance of 3m is proposed on the roof top of Block 2A of the PBSA for the infrastructure.

vi. Provision of vehicular access/egress points including (a) utilisation of existing access points to the Salesians Zone, to the Flaxmill and Quarry Zones and to the Mobility Hub on the Shipyard Site Zone; (ii) reopening an existing (currently blocked) access point off O'Callaghan Strand; (iii) new access points to the proposed undercroft carparking at Salesians from the North Circular Road and at the end of Stonetown Terrace road which provides access to the Stonetown Terrace Zone; and (iv) emergency access only from Stonetown Terrace to the Flaxmill Zone;

vii. Provision of 30 no. dedicated car parking spaces to serve the Salesians Primary School; and

viii. All ancillary site development works including (a) water services, foul and surface water drainage and associated connections across the site and serving each development zone; (b) attenuation proposals; (c) raising the level of North Circular Road between Fernhill and O'Callaghan Strand; (d) refuse collection store (e) car and bicycle parking to serve the development; (f) public lighting; (g) all landscaping works.; and (h) temporary construction measures including (i) construction access to the Quarry site including provision of a temporary access across the reservoir; and (ii) temporary use of onsite mobile crusher.

2.4 Key Stages

The development is structured into nine distinct but overlapping stages. Depending on market conditions and delivery mechanisms, some stages may progress more quickly or slightly ahead of others, as detailed further in Section 2.5. Therefore it is possible that several contractors will be working on the proposed development site at the same time, depending on the final procurement process.

At this preliminary stage, the proposed development will involve the following key work stages:

- Appointment of the Contractor(s);
- Detailed Design Stage;
- Site preparatory works including the preparation of all required Detailed Safety and Health, and Environmental Management documents;
- Construction of Bat Houses;
- Site mobilisation;

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- Site Demolition and Enabling Works;
- Construction Stage (including flood protection works);
- Completion;
- Demobilisation; and,
- Operational Stage.

2.4.1 Construction Equipment

Details of machinery to be used on site will including the following standard site equipment:

- Tracked excavators / JCBs;
- Wheel Loaders;
- Bulldozers;
- Compact Track Loaders;
- Articulated Trucks;
- Tower Cranes (Mobile and / or Fixed);
- Dump Trucks;
- Excavators;
- Mobile Concrete Crusher;
- Piling Rig(s);
- Mobile pumps / generators;
- Power tools.

This is a non-exhaustive list and the equipment used onsite will depend on the specific construction phasing and methodology to be implemented by the Contractor(s) once appointed.

2.5 Construction Programme and Phasing

As previously noted, depending on market conditions and delivery mechanisms, some of the 9no. distinct (but overlapping stages) may progress more quickly or slightly ahead of others. Refer to Table 2-2. Therefore it is possible that several contractors will be working on the proposed development site at the same time, depending on the final procurement process. It is also noted that the final programme will potentially involve delivery of individual plots / zones independently within the development site boundary. Accordingly a preliminary strategy for delivery of individual plots / zones independently has been developed and is discussed in further detail below.

It is estimated that there will be 100-150 (max.) staff present within the development site, per stage, during peak construction. Therefore, if two stages were to advance concurrently, this could potentially result in up to 300 (max.) staff present. Site staff will include; management, engineers, construction crews, supervisors, environmental health and safety personal, and maintenance contractors.

Site development and building works will only be carried out between the hours of 07:00 to 18:00 Mondays to Fridays inclusive and between 08:00 and 14:00 hours on Saturdays. However, it is possible that the contractor may wish to carry out certain operations outside these hours i.e. Sunday or evening hours during long summer days etc. Such occurrences will be kept to a minimum and take place over a short timeframe and as such are unlikely to cause excessive disturbance. Deviation from these times will only take places when written approval is granted by LCCC in exceptional circumstances.

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If a grant of planning is received, the construction activities on site will commence in Q1 2027 with construction of bat houses. It is anticipated the Proposed Development will be completed in 2030. Refer to Table 2-2 for breakdown of Phasing timelines.

The development is structured into nine distinct but overlapping stages. Depending on market conditions and delivery mechanisms, some stages may progress more quickly or slightly ahead of others. For instance, Stage 8 is a priority for early delivery, as it will significantly enhance the site's appearance and help establish Cleeves as an attractive place to live, work, and enjoy leisure activities. Therefore, Stage 8 may begin earlier than planned, depending on the progress of Stages 6 and 7.

2.5.1 Construction Phasing and Duration

The construction phasing and timelines for each stage (Stage 1 to Stage 9) of the proposed development is presented below.

Table 2-2 - Construction Phasing, and Timelines

Stage	Description	Estimated Start and End	Construction Duration (months)
Stage 1	Construction of Bat Houses - A 3-month period is allocated exclusively to this stage to allow bats on-site to adjust to their new accommodation. No other construction activity will overlap with this stage.	Q1 2027	3months
Stage 2	Site Demolition and Enabling Works - This stage involves demolishing identified buildings and structures to facilitate development and installing enabling drainage infrastructure across the Flaxmill area. Temporary surface treatments will be applied to support access to the upper-level sites (Salesians and Stonetown). Asbestos removal, pre-condition surveys and removal of contaminated soils across the development will be undertaken during this stage of works.	Q2 2027 – Q2 2028	12-15months
Stage 3	Flood Protection Works - Raising the North Circular Road and implementing other flood protection measures will occur concurrently with Stage 2 and is expected to take 15 months.	Q2 2027 – Q2 2028	15months
Stage 4	Salesians Zone Development - Construction of apartments and townhouses, along with local public realm and communal open spaces, will begin midway through Stage 2	Q1 2028 – Q4 2029	18-24months
Stage 5	Stonetown Terrace Zone Development - This stage will likely begin alongside Stage 4 and take 15–18 months. Given its timeline, Stonetown Terrace is expected to be the first zone ready for occupation	Q1 2028 – Q2 2029	15-18months
Stage 6	O'Callaghan Strand Zone Development - Construction of apartments in this zone will begin midway through the Stonetown Terrace works and is expected to take 15 months, likely completing before the Salesians Zone	Q3 2028 – Q3 2029	15months

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Stage 7	Quarry Zone PBSA and Public Realm - This stage includes the construction of Purpose-Built Student Accommodation (PBSA) and associated amenities, as well as public realm improvements around the reservoir.	Q3 2028 – Q2 2030	24months
Stage 8	Flaxmill Plaza and Riverside Public Realm - Delivery of Flaxmill Plaza and riverside canopy works is anticipated to take 15 months. This stage will begin after the completion of Stonetown Terrace but before the Salesians Zone is finished. Completion is expected to align with the PBSA	Q2 2029 - Q2 2030	15months
Stage 9	Shipyard Mobility Hub - The final stage involves constructing the Mobility Hub on the Shipyard site, along with associated site works. This will commence once all other stages are complete and is expected to take 6 months	Q3 2030 - Q4 2030	6months

Refer to Figure 2-1 and Figure 2-2 for the general Phasing Plan of the Proposed Development, before and after the raising of North Circular Road and implementation of flood protection measures.

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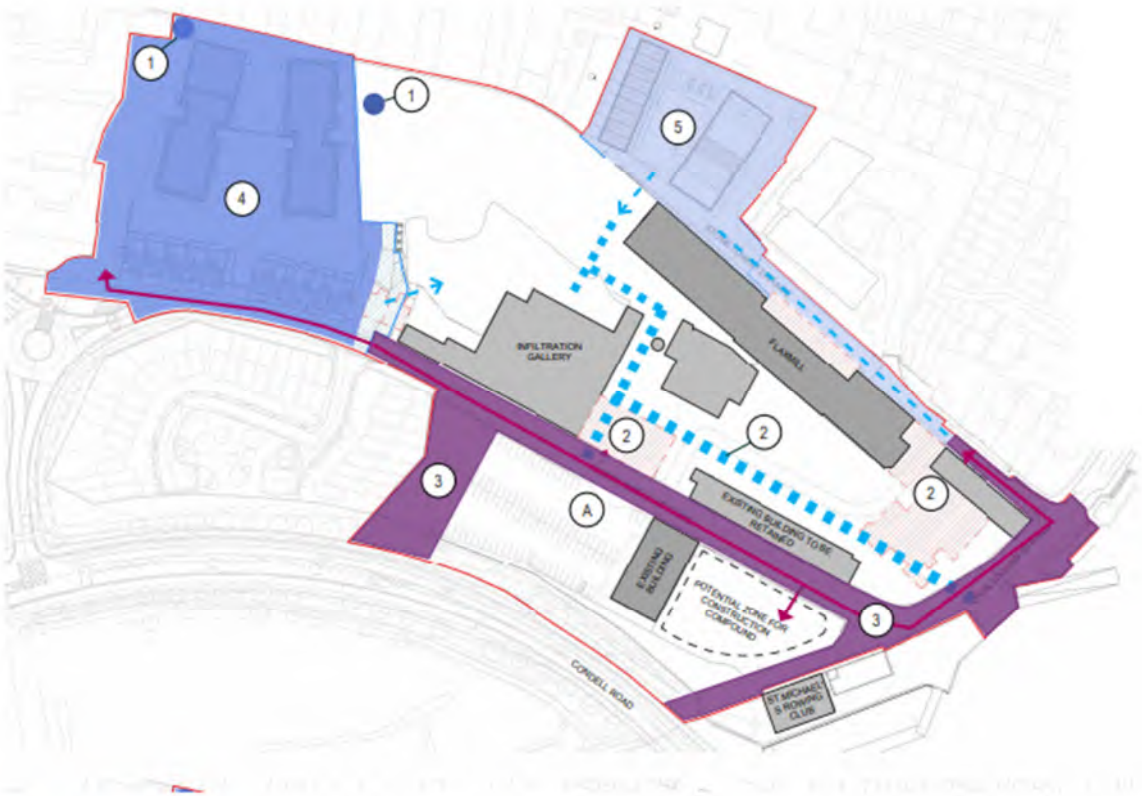
The development is structured into nine distinct but overlapping stages. Depending on market conditions and delivery mechanisms, some stages may progress more quickly or slightly ahead of others. For instance, Stage 8 is a priority for early delivery, as it will significantly enhance the site's appearance and help establish Cleeves as an attractive place to live, work, and enjoy leisure activities. Therefore, Stage 8 may begin earlier than planned, depending on the progress of Stages 6 and 7.

Maintaining flexibility in the delivery sequence is essential to ensure the development can adapt to changing market conditions. The anticipated sequence of stages is outlined below.

- **Stage 1 - Construction of Bat Houses.** A 3-month period is allocated exclusively to this stage to allow bats on-site to adjust to their new accommodation. No other construction activity will overlap with this stage.
- **Stage 2 - Site Demolition & Enabling Works:** This stage involves demolishing identified buildings and structures to facilitate development and installing enabling drainage infrastructure across the Flaxmill area. Temporary surface treatments will be applied to support access to the upper-level sites (Salesians and Stonetown). This stage is expected to take 12-15 months
- **Stage 3: Flood Protection Works:** Raising the North Circular Road and implementing other flood protection measures will occur concurrently with Stage 2 and is expected to take 15 months. These works must be completed before any residential units are occupied..
- **Stage 4: Salesians Zone Development:** Construction of apartments and to Construction of apartments and townhouses, along with local public realm and communal open spaces, will begin midway through Stage 2. This stage is expected to take 18-24 months.
- **Stage 5: Stonetown Terrace Zone Development:** This stage will likely begin alongside Stage 4 and take 15-18 months. Given its timeline, Stonetown Terrace is expected to be the first zone ready for occupation.



NOTE A: Dedicated residential car club spaces to be allocated on existing public surface car park on Shipyard, via existing entrance, in this scenario prior to raising of NCR and delivery of mobility hub; EV charging to be provided on residential plots, minimum of 6no.; existing surface car park other

Strategy Diagrams prepared for purpose of inserting into CEMP / related reports. Further engineering commentary to form part of CEMP and related planning reports.

Strategy in this scenario assumes the full public open space provision for upper residential sites (Salesians & Stonetown) in planning context is delivered in a later sequence, including play space for older children; Full residential communal open space provision for residents only including play space for small children included within individual residential plots

Figure 2-1 – Proposed Preliminary Phasing Plan – Stages 1 to 5 (refer also to Table 2-2) (prior to raising of North Circular Road and implementation of flood protection measures)

- **Stage 6: O'Callaghan Strand Zone Development:** Construction of apartments in this zone will begin midway through the Stonetown Terrace works and is expected to take 15 months, likely completing before the Salesians Zone.
- **Stage 7: Quarry Zone PBSA and Public Realm:** This stage includes the construction of Purpose-Built Student Accommodation (PBSA) and associated amenities, as well as public realm improvements around the reservoir. It is expected to take 24 months.
- **Stage 8: Flaxmill Plaza and Riverside Public Realm:** Delivery of Flaxmill Plaza and riverside canopy works is anticipated to take 15 months. This stage will begin after the completion of Stonetown Terrace but before the Salesians Zone is finished. Completion is expected to align with the PBSA.
- **Stage 9: Shipyard Mobility Hub:** The final stage involves constructing the Mobility Hub on the Shipyard site, along with associated site works. This will commence once all other stages are complete and is expected to take 6 months

Figure 2-2 - Proposed Preliminary Phasing Plan – Stages 5 to 9 (refer also to Table 2-2) (After raising of North Circular Road and implementation of flood protection measures)

2.5.1.1 Logistical and Construction Considerations (Stage 1 to 9)

The final construction strategy will potentially involve delivery of individual zones independently within the development site boundary. A preliminary strategy for delivery of individual zones independently has been developed. Logistical and construction considerations for each of the 9no. stages are presented in Figures 2-3 to 2-11. Such considerations include access / egress, location of site compounds, identification of flood zones, site hoarding as well as specific construction activities which will be required to facilitate the development at each key stage.

Subject to detailed planning at the construction stage, it will be the responsibility of each site contractor to assign the location of the site compound for each zone (as required). These compounds will be removed from any environmentally sensitive receptors. The final locations for proposed site office and welfare facilities will be confirmed in advance of the commencement of site works and will be agreed on by the Client and LCCC.

It is anticipated that the site office and welfare facilities (site compounds) will likely be located on the Shipyard site for most phases, with development in the O'Callaghan Strand Zone and in the Quarry Zone accommodating independent site compounds, following construction of the Mobility Hub within the Shipyard site. Refer to Figures 2-3 to 2-11. Further details in relation to specific vehicular construction access / egress are provided in Section 6.14 Construction Traffic and Site access.

All subcontractors as well as the main contractor and project managers will occupy offices within the construction compound. The site parking for all staff, contractors and visitors will also be located in this area.

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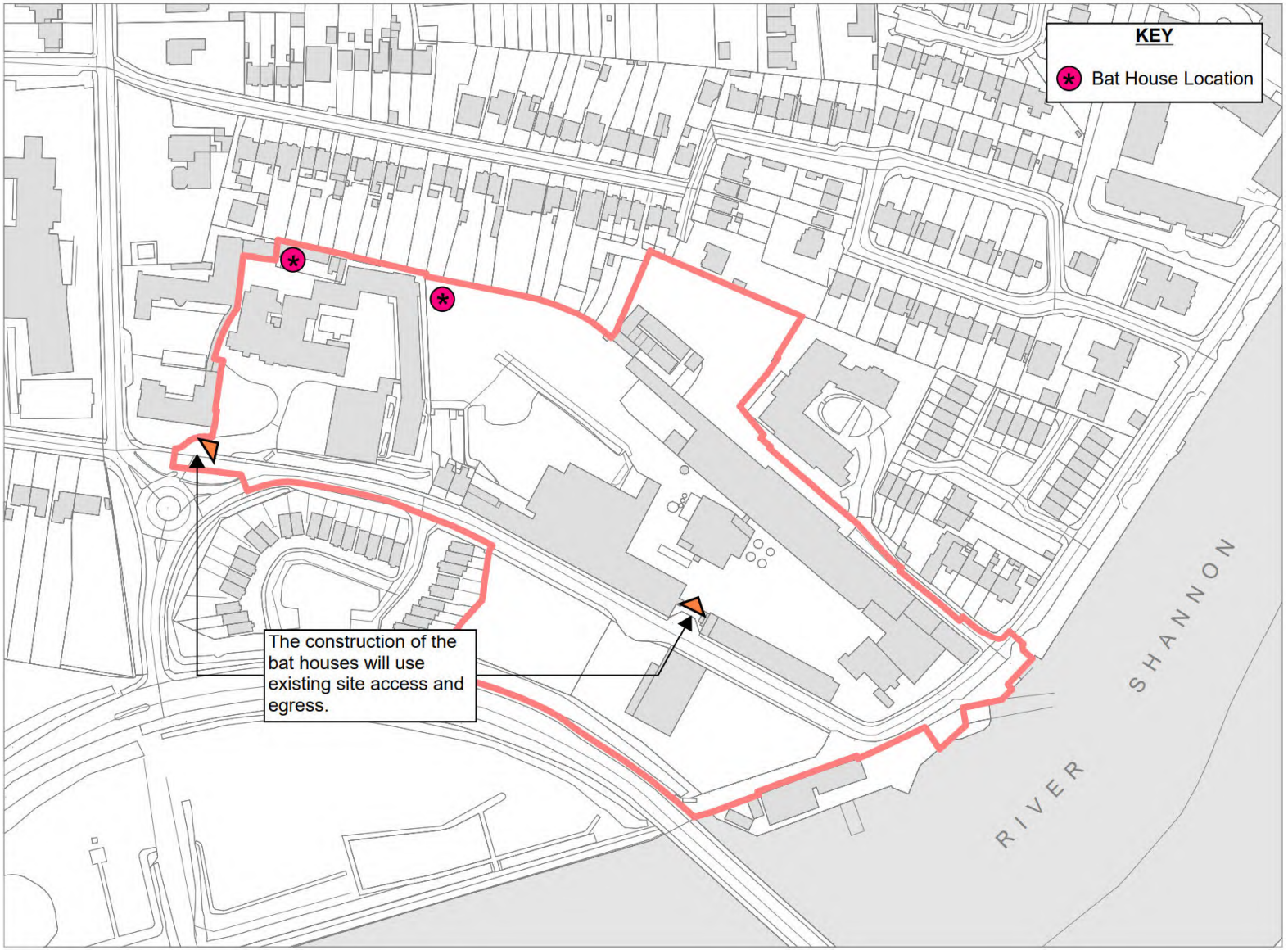

Figure 2-3 - Construction and Logistical Considerations Stage 1 - Bat Houses

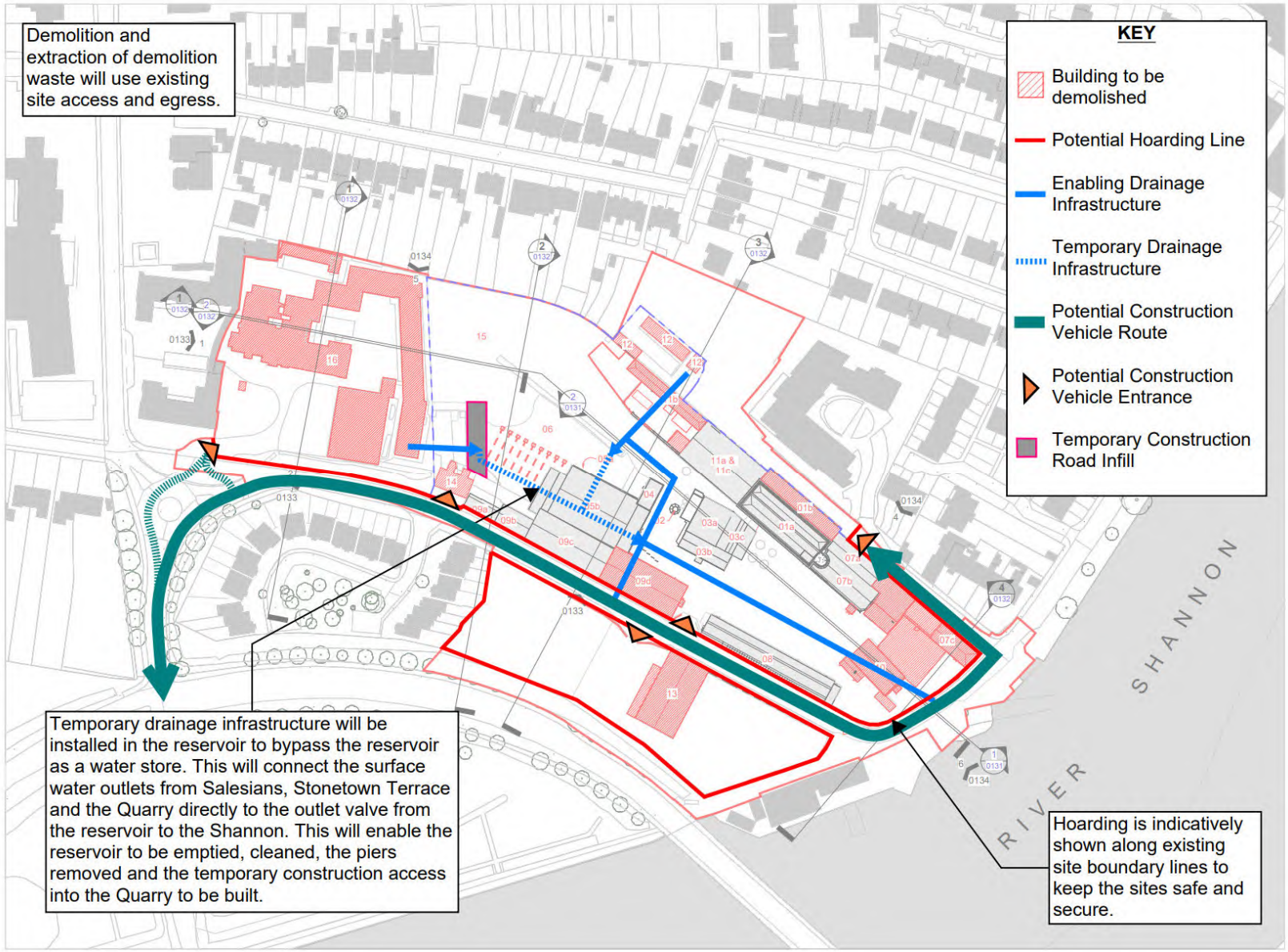

Figure 2-4 - Construction and Logistical Considerations Stage 2 - Demolitions and infrastructure works

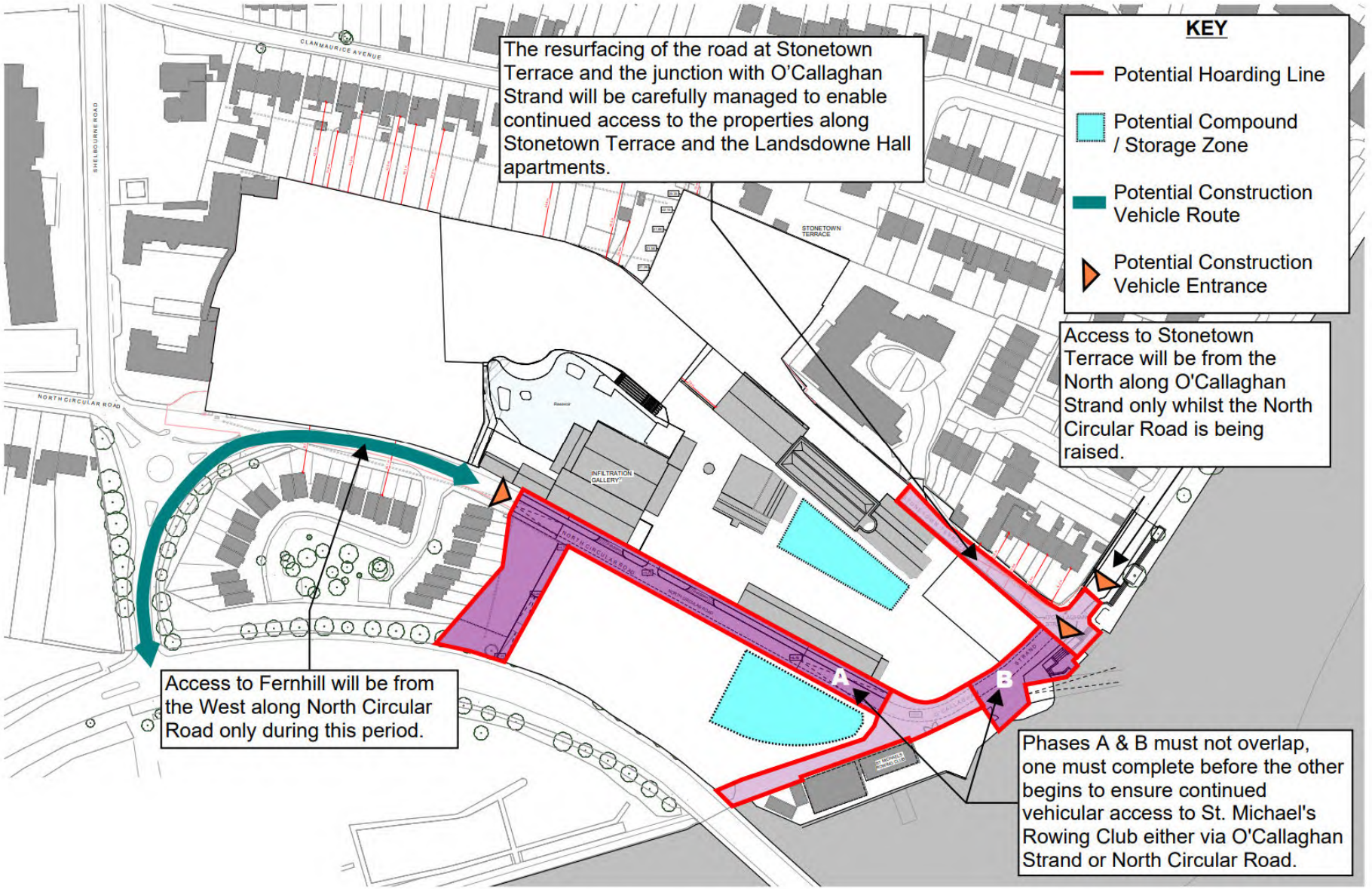

Figure 2-5 - Construction and Logistical Considerations Stage 3 - Flood Protection Works

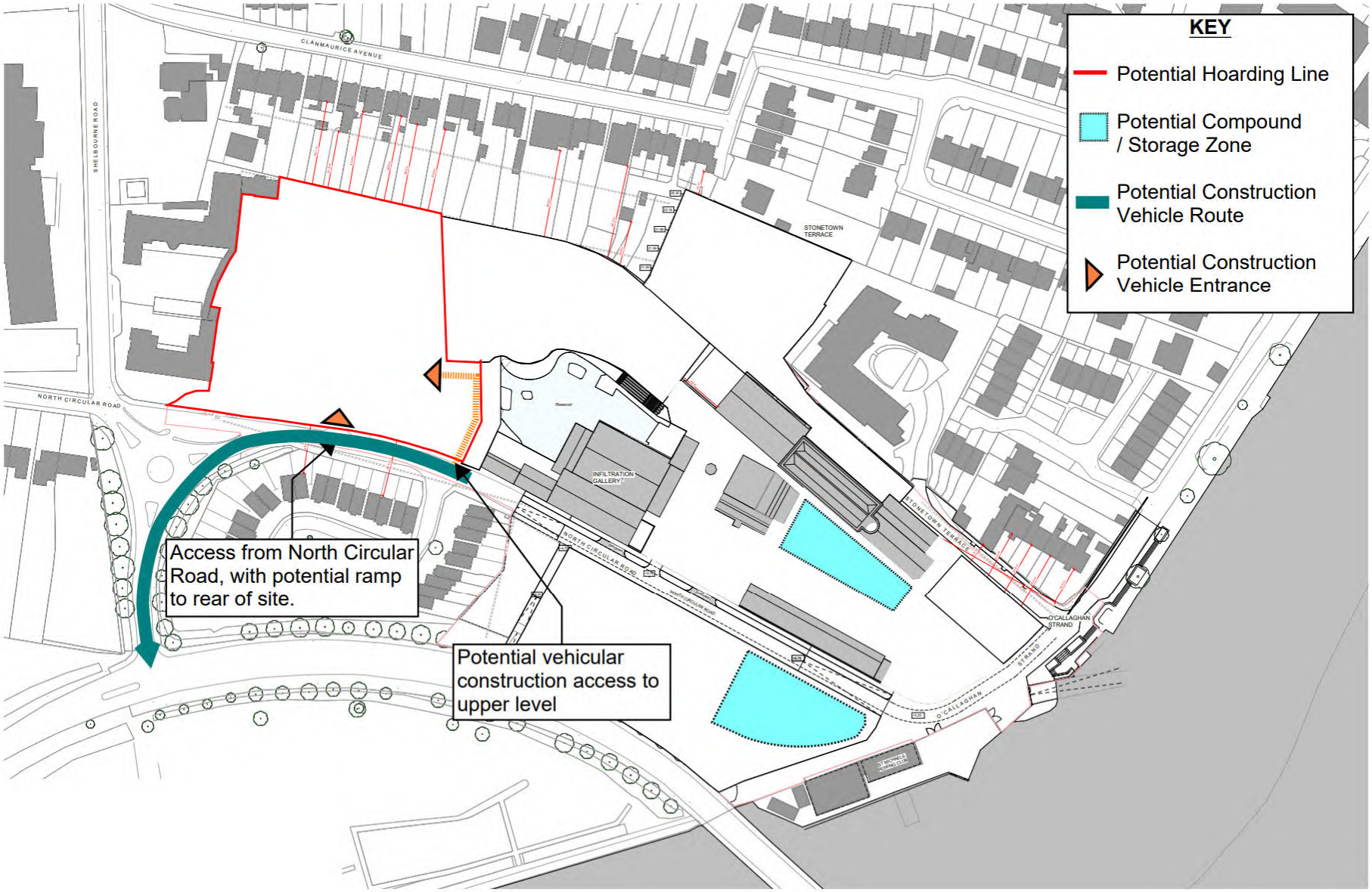

Figure 2-6 - Construction and Logistical Considerations Stage 4 - Salesians

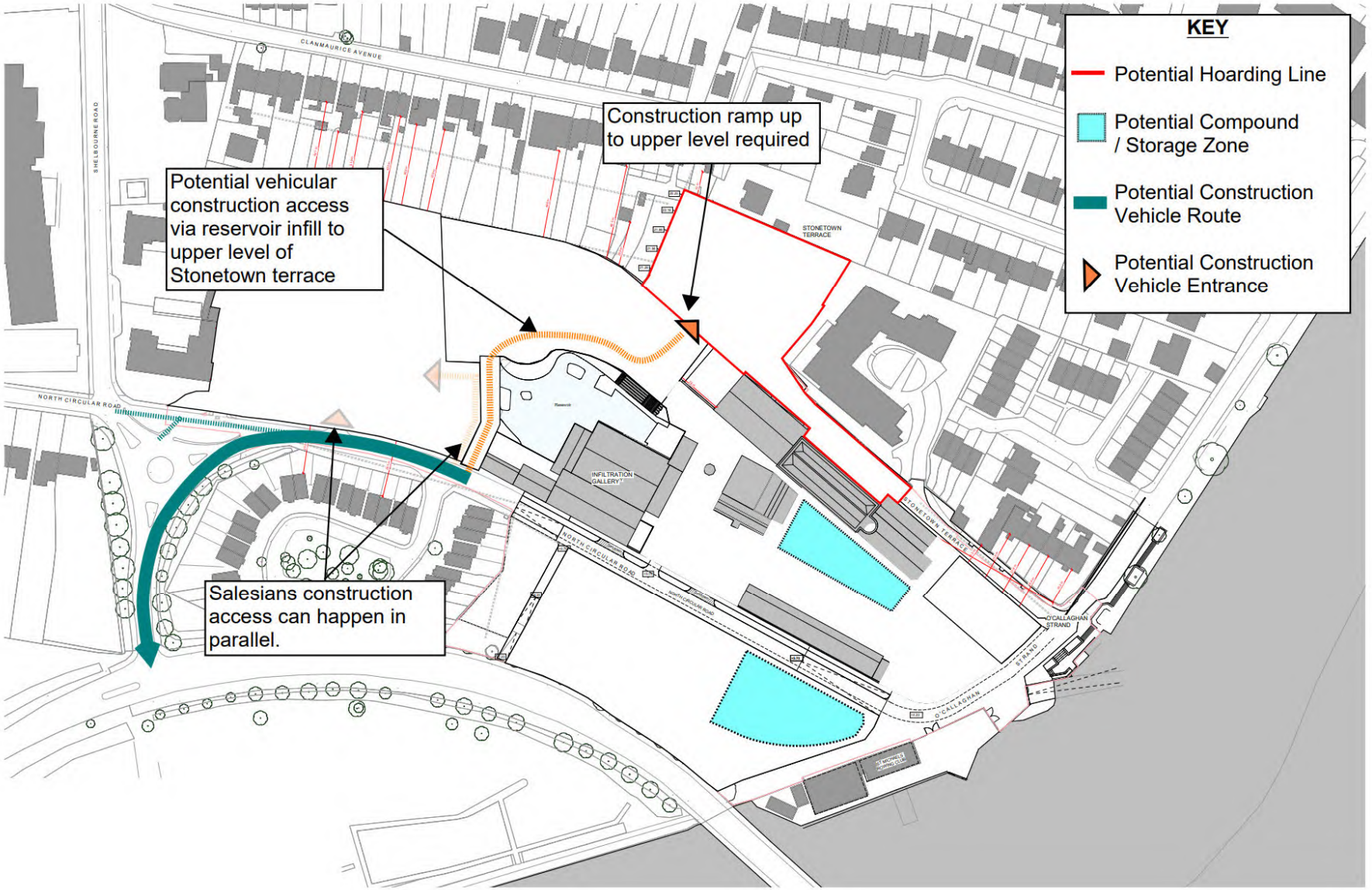

Figure 2-7 - Construction and Logistical Considerations Stage 5 - Stonetown Terrace

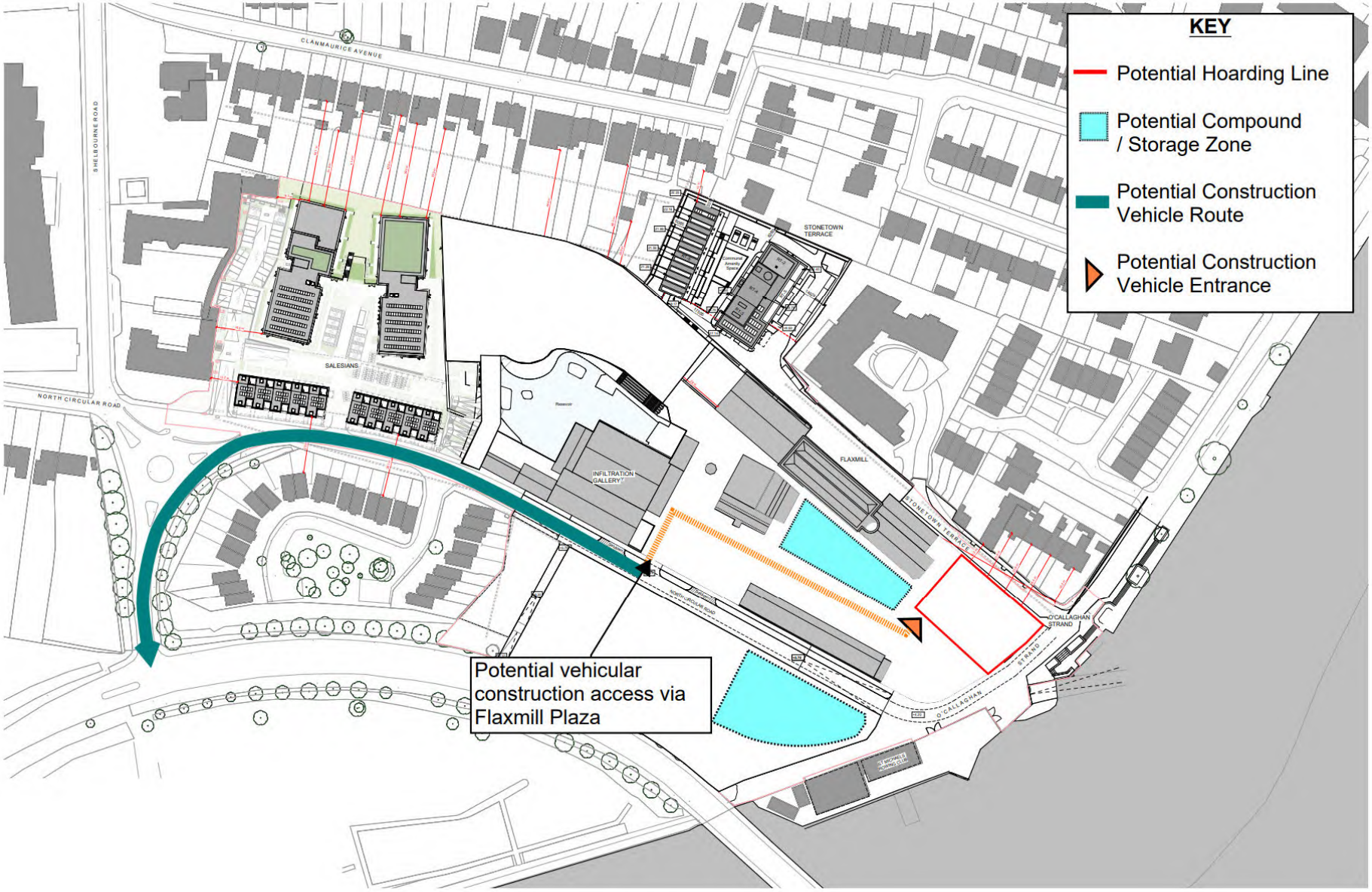

Figure 2-8 - Construction and Logistical Considerations Stage 6 - O'Callaghan Strand

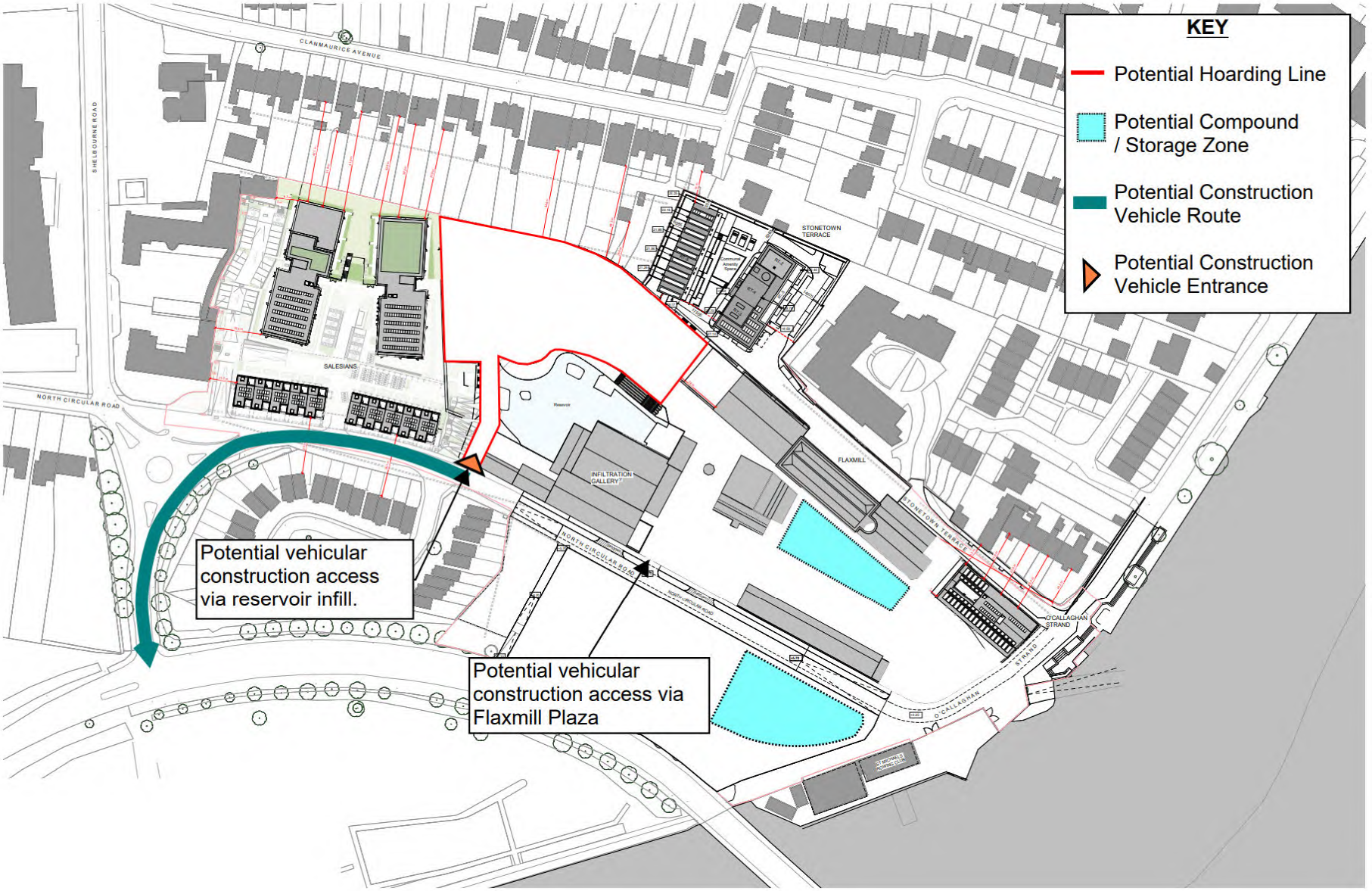

Figure 2-9 - Construction and Logistical Considerations Stage 7 - PBSA

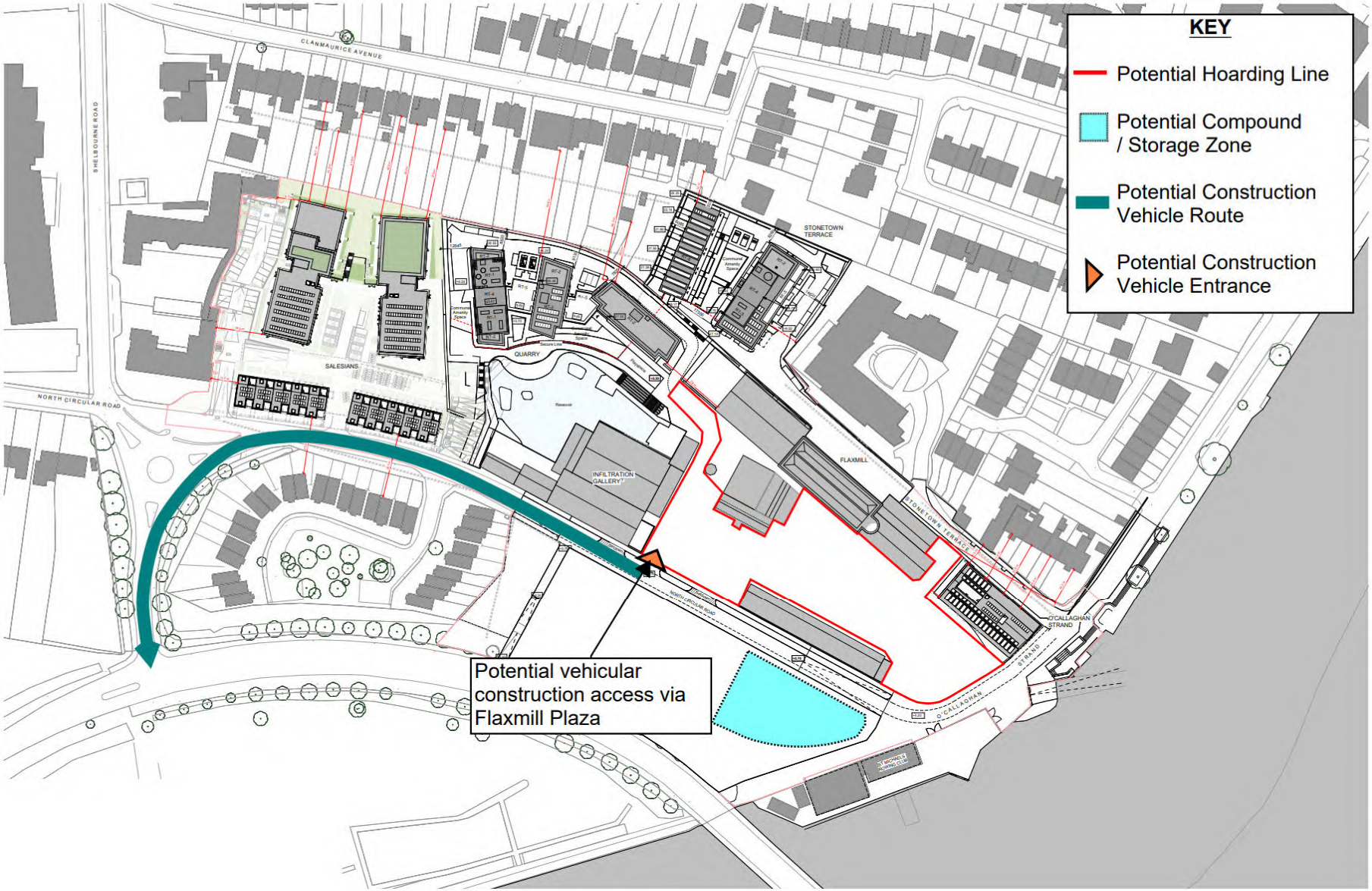

Figure 2-10 - Construction and Logistical Considerations Stage 8 - Flaxmill Plaza

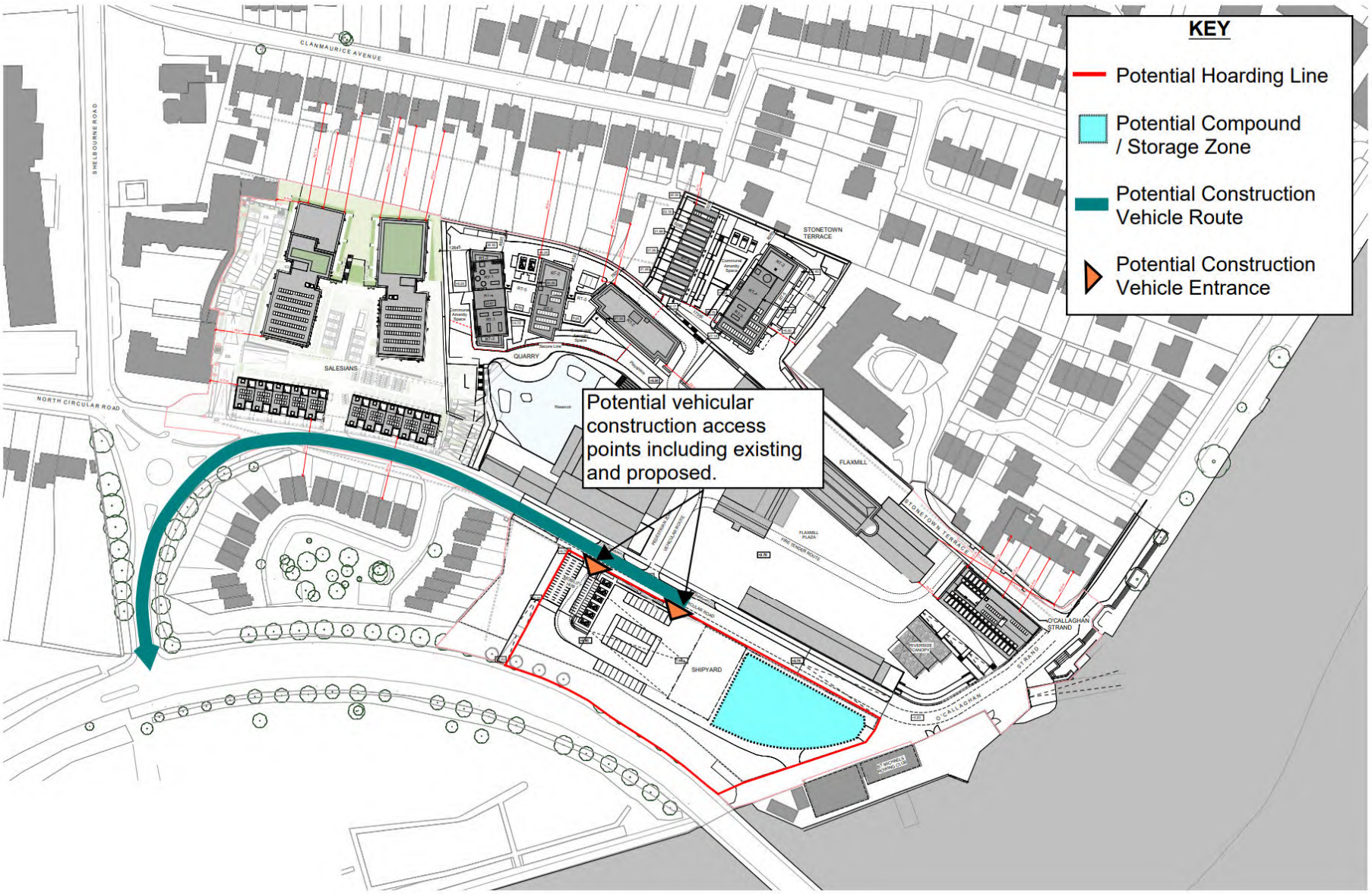

Figure 2-11 - Construction and Logistical Considerations Stage 9 - Shipyard Mobility Hub

2.5.2 Demolition & Construction Works and Methods

Site Establishment and Security

The first activity to be carried out at the site will be the establishment of the site facilities and security. The site office and welfare facilities (site compound) will likely be located on the Shipyard site for most phases, with development in the O'Callaghan Strand Zone and in the Quarry Zone accommodating independent site compounds, following construction of the Mobility Hub within the Shipyard site. All the subcontractors as well as the main contractor and project managers will occupy offices within the construction compound. The site parking for all staff, contractors and visitors will also be located in this area.

Erection of perimeter hoarding will take place at the start of the project alongside the site establishment and security works. The hoarding will be installed around each stage of development, except for dedicated access points. The extent of hoarding will be subject to detailed site sequencing of the development proposal and will ensure that areas under construction will be fenced off at all times. Gates will be provided at the access points and will be locked outside of working hours. Hoarding will consist of solid painted plywood on a timber frame or similar. Hoarding will be properly designed to be secure and durable and will be maintained until it can be dismantled on completion of the development (or stages of the development).

Site Access and Egress

The proposed haul route for demolition waste and construction materials and plant will be from the N18, via the Clonmacken Roundabout and the R527 Condell Road. This route ensures that construction traffic will avoid the city centre and residential areas. Banks persons will be deployed for extra-long deliveries and as specified in the contractor's construction management plan.

The construction trip generation has been compared against the existing traffic flows on the Salesians roundabout. It is expected that there will be no more than 20 additional construction vehicular trips per hour (10 in / 10 out). For robustness purposes, it has been assumed that 100% of construction vehicles travel through the Salesians roundabout. The construction traffic uplift results in a 2% increase in flows through the Salesians roundabout during the AM and PM peak periods. This is considered to be a marginal uplift, especially considering the robust trip generation assumption and the temporary nature of construction traffic.

Within the necessary constraints of performance, durability and cost, construction materials will be sourced from local suppliers and manufacturers, where possible. Transport of materials to site shall be carried out in accordance with the Contractor's Traffic Management Plan (TMP) with HGV's using designated haulage routes and timing of deliveries if necessary to avoid peak traffic periods. The construction phase of the proposed development will result in additional traffic on the roads in the vicinity of the development. Additional vehicles will comprise heavy goods vehicles, fuel trucks and light goods vehicles. The proposed haul route will be utilised by all construction related HGVs.

Site Clearance

To facilitate the earthworks operation, site clearance will have to be carried out to remove vegetation. No removal of habitats will occur outside of the masterplan area during the construction phase. Site clearance to facilitate the construction phase of the proposed development will be undertaken outside of the nesting bird season (1st March – 31st August) to ensure compliance with the Wildlife Act. Vegetation clearance of non-native species and ivy in proximity of the soprano pipistrelle roost identified within the quarry walls will be avoided, where unjustified. If vegetation clearance is required in this area, it will be carried out outside the bat activity season (April-October) and all clearance works supervised by an appropriately qualified ecologist to ensure that:

- All vegetation removal is justified
- The removal does not damage the existing roost crevice

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Temporary surface water management measures will be put in place prior to site clearance and stripping and will remain in place until the completion of the development, or until the completion of each stage / phase.

Demolition and Enabling Works

Significant demolition is proposed as detailed in Figure 2-12 **Error! Reference source not found.** to enable the regeneration and redevelopment proposal. Given the site's industrial legacy and the age of existing structures, there is a significant risk of encountering asbestos-containing materials (ACMs), which pose both environmental and human health hazards. Asbestos is a regulated hazardous material, and its presence directly influences waste classification and the mitigation measures required during redevelopment.

To establish a comprehensive understanding of Asbestos distribution and condition across the site, 2no. asbestos surveys were undertaken by Phoenix Environmental Safety Ltd. in 2015 and 2024. These surveys have informed the waste management strategy and health and safety planning for the proposed works. A summary of the findings is presented in Table 2-3 below.

Table 2-3 Construction Summary of asbestos survey findings

Aspect	2015 Survey	2024 Survey
Purpose	Initial baseline prior to redevelopment	Reassessment post partial demolition/remediation
Scope	Non-intrusive inspection of derelict buildings	Refurbishment /demolition -focused survey across the full site
Buildings with ACMs	Most buildings except buildings 13, 18 and 191	Most buildings except buildings 6, 18, 18 and 192
Common ACMs identified	Cement sheeting, insulation board, rope seals, floor tiles, CAF gaskets	Cement sheeting, insulation board, thermal insulation, felt, paper, rope seals, CAF gaskets
Extent of ACMs	Widespread across roofs, ceilings, and pipework	More detailed and extensive, including internal debris and concealed materials
New findings	Not applicable/Baseline	ACMs under floor coverings, thermal insulation residues, asbestos felt, and presumed ACMs in inaccessible areas

According to Phoenix Environmental Safety Ltd (2025) the following tasks are required to be completed in advance of commencement of any demolition works:

- Asbestos containing materials will be removed prior to the commencement of any works;
- A licensed asbestos removal contractor will be contracted for removal and disposal of asbestos waste; and,
- All asbestos removal works shall be undertaken in full compliance with the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006–2010 (S.I. No. 386 of 2006).

Refer to the full Phoenix Environmental Safety Ltd (2025) report in Appendix A for all asbestos related recommendations. The Contractor(s) will be required to ensure that all such recommendations are complied with.

Once all asbestos has been removed from site, proposed demolition works comprise the following scope:

[1] Asbestos Survey report ,2015.Summary of findings

[2] Asbestos Survey report 2024.Summary of Findings

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- Salesians Site - The totality of the Salesians school and Fernbank House are to be demolished to enable construction of 146 no. apartments, 20 no. townhouses and a creche, with 1,033sqm of communal open space and car parking. The existing 2 – 3 storey structure, with a total estimated building footprint of 3,395sqm wraps around the perimeter of the school site, with car parking dispersed throughout and no notable external amenity space. Demolition of the building is necessary to facilitate compact growth and the provision of apartment units in compliance with the Sustainable Urban Housing Design Standards for New Apartments 2025. It is proposed to undertake Building Recording of Fernbank House only having regard to its historic fabric.
- Quarry Site - Two Victorian Houses fronting onto North Circular Road are to be demolished to facilitate pedestrian and cycle access to the Cleeves site, and in particular, the public amenity offering provided by the reservoir in the Quarry area. This access also facilitates the only pedestrian / cycle connectivity point between the Cleeves and Salesians site, thereby enhancing permeability within the development. The two storey houses have a total estimated building footprint of 148sqm. It is proposed to undertake Building Recording having regard to their historic fabric.
- Stonetown Terrace Site - It is proposed to demolish the Upper Reservoir at Stonetown Terrace. This includes the two concrete water tanks (approximately 3m deep), pump house and liquid storage tank. There is a suspended RC walkway over the tanks that is in poor condition and has failed at one section. The pump house has a roof covered with asbestos sheets and a small masonry storage building beside the tanks is covered in asbestos sheeting. A masonry walled building with a timber truss roof and rusted tin sheet roofing is also to be demolished (total estimated building footprints: 246sqm). The building is two storeys from the lower Flaxmill Plaza part of the site and one storey from the higher Stonetown Terrace. This demolition will facilitate the construction of 36 no. apartments, 9 no. townhouses with 413sqm of communal open space and associated car parking. Further, demolition of mid and late c.20th building structures adjoining the Cold Store (former Weaving Mill) is necessary to facilitate pedestrian / cycle connectivity between Stonetown Terrace and the Flaxmill and Quarry Zones. The historic elements of the building are to be retained including the southwest facing elevation.
- Flaxmill Plaza Site - The c20th rear lean-to of the Flaxmill Building (total estimated building footprint: 295sqm) is to be demolished. The upper storey and roof shall be demolished as part of stabilisation and repair works to the Flaxmill undertaken as part of Phase I of the Masterplan. The remaining ground floor of the extension is to be demolished to provide for access to the upper site from Stonetown Terrace. c.1960s office building adjoining the Packing Store and Cheese Plant on North Circular Road is to be demolished (total estimated building footprint: 639sqm), with retention of earlier surviving fabric, including an earlier stone built single storey element that addresses the North Circular Road inclusive of the most western bay of the south facing elevation. The roof covering of this building appears to comprise asbestos sheeting.
- O'Callaghan Strand Site - Comprising a cluster of 4 no. buildings, the Linen Store & Offices / Dairy Buildings (total estimated building footprint: 1,630sqm) at O'Callaghan Strand / Stonetown Terrace will have selected demolition. The roof, walls and slab of the Linen Store are to be demolished, with retention and reuse of the external stone walls onto Stonetown Terrace and O'Callaghan Strand. The offices are to be retained, whilst the much altered single storey dairy building between the linen store and offices is to be demolished with the wall onto Stonetown Terrace to be retained. Later c20th flat and shallow pitched roof structure to be demolished. The boundary walls are to be retained with some additional openings added. These demolition works are necessary to facilitate the construction of 21 no. apartments and 256sqm of commercial floorspace intended to activate the Flaxmill Plaza. This demolition will also facilitate vehicular emergency access from Stonetown Terrace to the Flaxmill Plaza and North Circular Road in the event of a flood.
- Shipyard Site - It is proposed to demolish the 1990s reinforced concrete structure on the Shipyard Site with a total estimated building footprint of 687sqm.
- Residual piers will also be removed from the basin of the reservoir.

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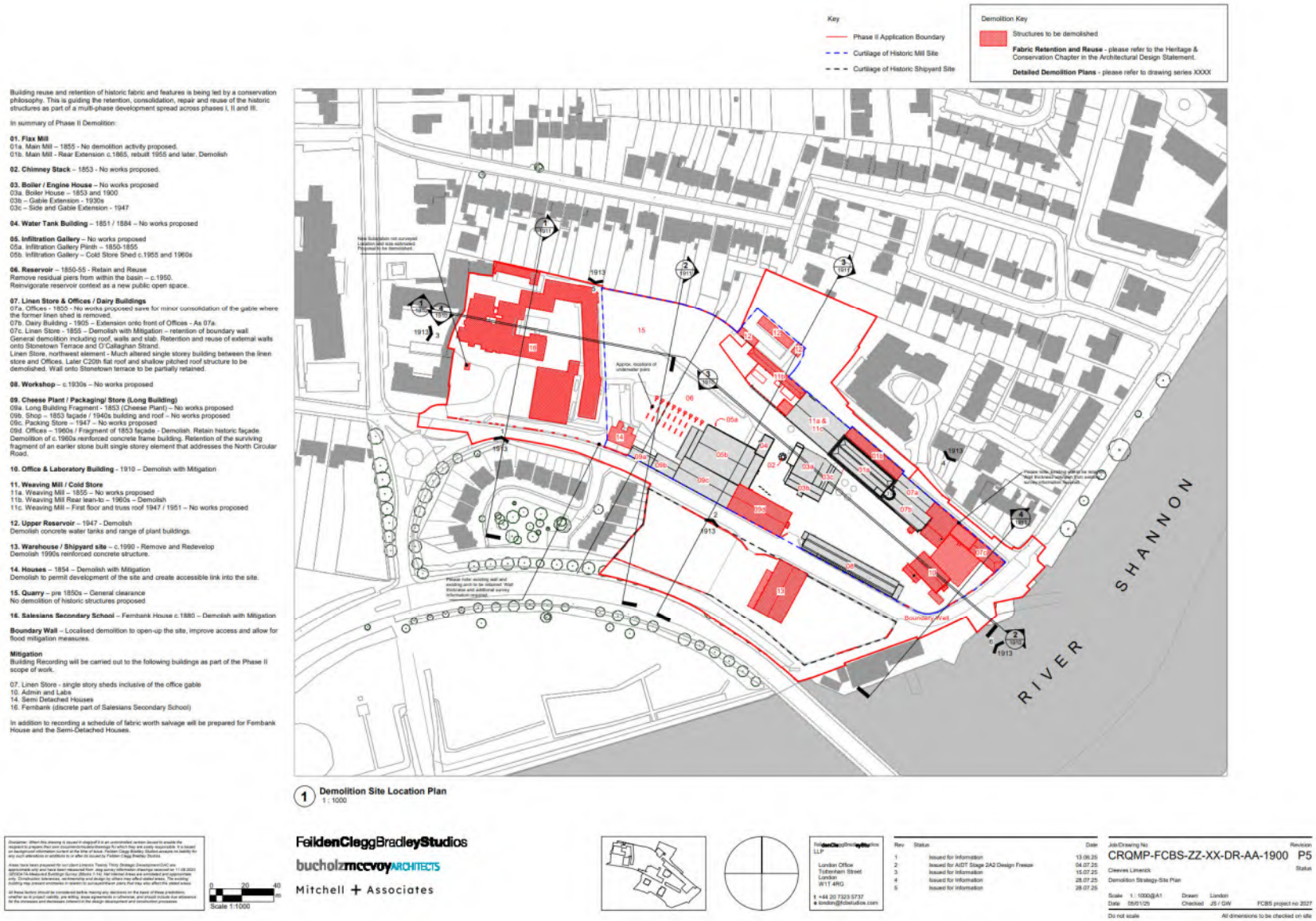

Figure 2-12 - Proposed Demolition Works

AtkinsRéalis - Baseline / Référence

Earthworks

A project-specific ground investigation (GI) was undertaken at the proposed development site by Priority Geotech Limited (PGL) from March to May 2025. The Ground Investigation Summary Report prepared by ARUP provides a summary of the findings of this GI, as well as previous GI undertaken at the site.

The stratigraphy of the site has been described as topsoil (one borehole) and made ground (surfacing material) composed of bituminous surfacing and concrete hardstanding underlain by made ground (fill material) composed of historical fill material, construction and demolition waste, and reworked subsoil material with anthropogenic material. Bedrock level is variable across the site, from 0.7 to 14.5 m BGL. This will necessitate rock ripping / breaking.

As part of the 2025 GI, geoenvironmental testing using Waste Acceptance Criteria (WAC) was undertaken of 61 no. samples from the site. This testing has demonstrated that there is a variable contamination risk across the site. Based on the soils analytical data (presented in further detail in Chapter 10 of the EIAR), 8no. contaminants of potential concern with regards to human health risk have been identified within the soils and made ground beneath the Site, summarized as follows:

- Asbestos Containing Material (ACM) in the form of Fibre/Clumps identified in 3no. samples (BH308, BH305 and BH306). Asbestos was also identified in 2no. samples (BH305 and BH306).
- Arsenic: Exceedances (with respect to the relevant soils Generic Assessment Criteria (GAC) were identified in 3no. samples (TP309, TP321 and BH309).
- Lead: Exceedances were identified in 11no. samples (BH307, BH311, BH310, TP303, TP322, TP317, TP320, TP321, BH309, and TP318)
- Benzene: One exceedance was identified at BH314.
- Naphthalene: One exceedance was identified at TP321.
- Fluoranthene: One exceedance was identified at TP321.
- Benzo[a]pyrene: Exceedances were identified in 4no. samples (BH311, TP303 and TP321).
- Total Petroleum Hydrocarbons (TPH): Potential sources of TPH measured by the presence of PAHs in the soil were identified in 3no. samples (BH311, and TP321).

However the above exceedances are either:

i) located within portions of the site where made ground / soils will require excavation (including ACM detections) and removal from site during the site enabling phase (and are included in the waste soil classification assessment completed, and within the presented cut and fill volumes) (refer to mitigation measures in Chapter 10 of the EIAR), or

ii) located at depth beneath the Shipyard Zone of the proposed development, where no residential development is proposed.

During the construction phase, excavated materials will be generated to achieve the required formation levels, for building foundations and substructures, internal road network and parking areas, and installation/diversion of site services and utilities. It is provisionally estimated that approximately 46,100m3 (or 98,120 tonnes) of excavated material will be generated. The made ground is considered unlikely to be suitable for reuse and all of this material is expected to require off-site disposal (26,800m3 or 50,920 tonnes). The excavated subsoils and rock are likely to be suitable for reuse, comprising 19,300m3 (or 47,200 tonnes).

Excavation of shallow bedrock will be undertaken during the works. At this preliminary stage it is understood that rock breaking will be required. Piling at specific locations (including Stonetown Terrace) will also be required. Refer to the Structural Report (ARUP, 2025) submitted as part of this planning application for further details. Excavated rock will be subject to crushing onsite (for site reuse) via mobile crusher.

Temporary concrete crushing activity will be carried out by the Contractor(s) in accordance with the requirements of Limerick City and County Council / EPA, ensuring that all required statutory permits / licences (Waste Facility Permit,

Certificate of Registration, or EPA Licence) are in place prior to commencement of such operations, and compliance of same during the relevant period of works.

Construction of Buildings and Townhouses
On completion of the bulk earthworks, construction of remaining building rising elements and/ or foundations for the buildings will commence. The exact construction sequence has not been determined, but it will be similar to what is described below:

- Completion of foundations and rising elements
- Construction of ground floor
- Erection of reinforced concrete frame
- Construction of floors and roof slab and rising elements between levels
- Facades
- Fit out

As detailed in the Structural Planning Report prepared by ARUP, the borehole, trial pit and probe data indicates that pad foundations and strip footings will be used to support superstructure walls and or columns and core walls. Lean mix upfill will be required from the underside of the pad foundations down to competent bearing stratum or rock. The only building that will require a piled solution is the Stonetown Terrace Apartments. Ground beams, pile caps and cores supported by piles are proposed for this building. Shallow pad foundations bearing on the shallow limestone bedrock are the likely foundation solution for structures in the Salesian's Zone, Quarry Zone and O'Callaghan Strand Zone portion of the site.

A brief description of the typical methodology for each foundation type is provided as follows:

- During the construction phase, pad and strip foundations will be built by first excavating the site to the required depth, followed by setting out and installing formwork to hold the shape of the foundation. Steel reinforcement is placed within the formwork, and concrete is poured to fill the trenches or pits. After the concrete cures, the formwork is removed, and the foundation is backfilled.
- Bored piles are carried out where the removal of spoil forms a hole for a reinforced concrete pile which is poured in situ. They are drilled using buckets and/or augers driven by percussion boring which involves a cutting tool which is dropped using a winch to cut out a cylinder of earth. The operation is repeated until the hole has been sunk to the required depth. At the required depth, concrete is poured using a tremie pipe method and the reinforcement is lowered into the concrete. As the concrete reaches the hole's upper level, the temporary casing is withdrawn.

Shallow pad foundations bearing on the glacial subsoils or shallow pile foundations bearing in the underlying competent limestone bedrock are the likely foundation solutions for structures in the Stonetown Terrace portion of the site.

Groundwater levels range from 2.5m (Salesian Apartments) to 6.6m (Stonetown Terrace) below FFL (based on available information during preliminary design stage); however according to ARUP (2025) groundwater levels vary seasonally and are likely to be 0.5 to 1.0 metres higher during winter months3. Continuous groundwater level monitoring is ongoing (CRQMP-ARUP-ZZ-ZZ-RP-S-0001) (ARUP, 2025). Groundwater control will be required for the proposed bored piles at Stonetown Terrace Apartments

[3] Groundwater strikes encountered during the PGL 2025 GI and subsequent groundwater level monitoring in standpipe installations, indicate that there is a low probability for groundwater ingress into excavations across the site. Continuous groundwater level monitoring is ongoing to determine tidal and seasonal fluctuations in the groundwater regime (CRQMP-ARUP-ZZ-ZZ-RP-S-0001) (ARUP, 2025).

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The existing heritage wall around the proposed O'Callaghan Strand building is proposed to be partially retained. The proposed foundation structure will be set back to avoid undermining or interacting with the existing heritage wall foundations. The proposed solution is to incorporate a series of ground beams which will extend to the perimeter to pick up the edge/corner columns, thus, allowing the pad footings to be set back circa 2.0m from the existing heritage wall.

Different structural schemes were considered for the apartment blocks, mindful of the need for future flexibility, to accommodate unforeseen circumstances and market conditions. Based on existing market and pricing circumstances, an in-situ structural scheme is proposed for all buildings, with the exceptions of the building on the Salesians site which will be pre-cast, using pre-manufactured concrete components to construct the building's framework. In the case of the PBSA on the Quarry site, components of the block will likely use pre-cast including longer span areas, linking the blocks.

Cranage
Cranes will be required on site. Mobile and/or fixed cranes will be used for some activities. All materials being lifted by crane will be controlled by guide ropes and will only be carried out under the strict supervision of appropriately qualified and experienced banksmen.

Biosecurity Measures
Topsoil will be stripped from areas to be developed, as necessary (and temporarily stockpiled in areas away from the identified flood risk zone), although given the brownfield nature of the site, this process will only be applicable to limited areas, as detailed within Chapter 5 – Biodiversity of the EIAR.

Japanese knotweed and Himalayan Knotweed have been recorded within the Application Site. An invasive species management plan has been prepared. The Contractor(s) will be required to ensure that all requirements as set out in the An invasive species management plan are complied with

All of the identified Japanese knotweed within the proposed development site will continue to be treated and any remaining contaminated soil will be removed from site to a licenced waste facility prior to construction works commencing. In the same way, any contaminated soil in proximity of the Shipyard found to be contaminated with Himalayan knotweed will be removed prior to any earthworks in this area. There is a responsibility on the Environmental Manager or Ecological Clerk of Works (ECoW) to regularly inspect and supervise maintenance of the environmental controls throughout the process.

Monitoring During Construction
Appropriate environmental monitoring requirements are detailed in Section 7 of this CEMP.

Construction Waste
Measures shall be undertaken to minimise the quantity of waste produced at the site and to handle the waste in such a manner as to minimise the effects on the environment. A CDRWMP has been prepared to ensure sustainable and effective waste management throughout the construction and demolition phases of the project. It will ensure that the management of waste arising is dealt with in compliance with the provisions of the Waste Management Acts 1996 – 2015 and amendments.

The waste management hierarchy to be adopted will be as follows:
- Prevention and Minimisation
- Reuse of Waste
- Recycling of Waste:
- Disposal

Refer to Section 2 for proposed site compound location options, for each stage of the development, as presented in Figures 2.3 to 2.11. A dedicated and secure area containing bins, and/or skips, and storage areas, into which all waste materials generated by construction site activities, will be established at each stage within the development.

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Waste materials generated will be segregated at the site compound, where it is practical to do so. Where the on-site segregation of certain waste types is not practical, offsite segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source. All waste receptacles leaving site will be covered or enclosed. The appointed waste contractor will collect and transfer the wastes as receptacles are filled.

The site Construction Manager will ensure that all staff are informed of the requirements for segregation of waste materials by means of clear signage and verbal instruction. Appointed employees will be made responsible for ensuring good site housekeeping.

2.6 Safety, Health and Environmental Considerations During Demolition and Construction Works

This section summarises the main environmental constraints that relate to the demolition and construction phases.

The appointed main contractor will implement a Construction, Health and Safety Plan during the lifecycle of the project, which will contain health and safety measures covering the below items at a minimum:

- Construction Health & Safety training requirements;
- Induction procedures;
- Emergency protocols; and
- Details of welfare facilities.

2.6.1 Noise

There are no statutory standards in Ireland relating to noise and vibration for construction works or for environmental noise relating to the operational phase. In the absence of specific statutory Irish guidelines, the assessment has referred to non-statutory national guidelines, where available, in addition to the most appropriate and commonly used international standards and guidelines relating to environmental noise and vibration.

Construction noise sources include construction plant and machinery that will operate over the course of the construction phase. Appropriate criteria relating to construction noise levels for the proposed development is taken from British Standard BS 5228-1 (BSI 2014) is the most widely accepted standard for this purpose in Ireland. Section 11.2 of the Limerick Development Plan (2022) requires the use of BS 5228 Parts 1 and 2 (BSI 2014) for the assessment of noise and vibration from construction and demolition activities and for the implementation of site mitigation measures where necessary.

The masterplan site is located north-west of the River-Shannon within an existing brownfield area. The north of the site is bound by residential dwellings, to south is bound by the R527 Condell Road, the east is bound by O Callaghan Strand and The River Shannon and the west by residential dwellings and the west by the Salesian Primary school.

The noise environment across the Masterplan and Applicant site is suburban in nature with road traffic and a mix of typical suburban from pedestrians, schools and residential areas. Highest noise levels are experienced along the southern portion of the Shipyard Site in immediate proximity to the R527 Condell Road. Across the masterplan and applicant site, noise levels are low to medium during both day and night-time periods due to distance from the surrounding road network and screening from existing boundary walls and site structures. The noise environment at the surrounding noise sensitive locations are typical of a suburban environment with distant road traffic and surrounding local activities contributing to the ambient and background noise environment.

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he construction phase of the masterplan site extends to the full extent of the site and would include demolition of the existing buildings, excavation to proposed ground levels, basement slab construction, concrete works, steel works, construction of the superstructures, landscaping and fit out works. In addition to the construction activities on site there will be construction traffic including movement of machinery and materials within and to and from the construction site. The construction works will be undertaken over a phased basis. The applicant site will be progressed prior to the completion of Phases III and IV of the Masterplan. A variety of items of plant will be in use during the various construction phases, all of which have the potential to generate high levels of potential noise or perceptible vibration to the surrounding environment. These will include breakers, excavators, loaders, cranes and static plant such as generators, compressors and pumps.

The construction phase for the applicant site will involve the same general construction activities as the overall Masterplan site, i.e. demolition works, excavation to base ground levels, basement slab construction, concrete works, construction of the superstructures, landscaping and fit out works in addition to construction traffic. The works will be undertaken on a phased basis during the construction phase of the application site. The same potential sources of noise and vibration associated with the Masterplan Site will occur during the construction of the Application Site.

2.6.2 Air Quality

This section describes the site setting with respect to Air Quality, based on the following:

- Guidance on the Assessment of Dust from Demolition and Construction v2.2 (Institute of Air Quality Management [IAQM] (hereafter referred to as the IAQM Guidelines) (IAQM, 2024);
- A Guide To The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1) (IAQM, 2020); and
- PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects (Transport Infrastructure Ireland [TII], 2022).

The receiving environment in terms of air quality is the same for the proposed development and overall masterplan development as they are located within the same general area. Air quality is unlikely to differ across the sites. The nearest representative weather station collating detailed weather records is Shannon Airport meteorological station, which is located approximately 18 km northwest of the site. Air quality monitoring programs have been undertaken in recent years by the EPA. The most recent annual report on air quality in Ireland is 'Air Quality In Ireland 2023' (EPA, 2024). The EPA website details the range and scope of monitoring undertaken throughout Ireland and provides both monitoring data and the results of previous air quality assessments. In terms of air monitoring and assessment, the proposed development site is within Zone C (EPA, 2024). The long-term monitoring data has been used to determine background concentrations for the key pollutants in the region of the proposed development. The background concentration accounts for all non-traffic derived emissions (e.g. natural sources, industry, home heating etc.). Representative EPA monitoring stations have been used to determine an estimate of the background air quality in the region of the proposed development.

Based on the above information the air quality in the Limerick area is generally good, with concentrations of the key pollutants generally well below the current limit values set out in Directive 2024/2881. The current pollutant concentrations at the majority of monitoring sites are also in compliance with the 2030 limit values set out in Directive (EU) 2024/2881 and the clean air strategy, however, concentrations are exceeding or approaching the limit values at some sites. Further measures will be needed at a national scale to reduce air pollution in future years. The EPA have indicated that road transport emissions are contributing to increased levels of NO_2 with the potential for breaches in the annual NO_2 limit value in future years at locations within urban centres and roadside locations. In addition, burning of solid fuels for home heating is contributing to increased levels of particulate matter (PM_{10} and $PM_{2.5}$). The EPA predict that exceedances in the particulate matter limit values are likely in future years if burning of solid fuels for residential heating continues (EPA, 2024).

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During the construction phase construction dust emissions have the potential to impact air quality. Dust emissions will primarily occur as a result of site preparation works, demolition of existing structures, earthworks and the movement of trucks on site and exiting the site. There is also the potential for engine emissions from site vehicles and machinery to impact air quality. Construction phase impacts will be short-term in duration. Engine emissions from vehicles accessing the site have the potential to impact air quality during the operational phase of the development through the release of nitrogen dioxide (NO_2) and particulate matter (as PM_{10} and $PM_{2.5}$).

2.6.3 Soils and Geology

Ground works will be required to clear the site and facilitate construction of building foundations, access roads, utilities and landscaping.

The development site works, or excavation works will not have a significant impact on the underlying bedrock geology.

Surplus subsoil generated from excavations for foundations, roads and drainage will be stockpiled and reused on site where possible. However, any subsoil that requires to be removed (including contaminated soils) will be taken for offsite reuse, recovery or disposal as required, in accordance with the CDRWMP.

Excavations will be supervised by a suitably qualified person to ensure any potential additional contaminated materials encountered are identified. Any potential additional contaminated soils encountered during the construction works will be isolated from clean material and stockpiled for testing by a suitably qualified person. In the event that contaminated material is identified on site, this material will need to be segregated from clean/inert material, tested, classified and disposed /managed as either non-hazardous or hazardous in accordance with the EC Council Decision 2003/33/EC 3 , which establishes the criteria for the acceptance of waste at landfills, and all relevant waste management legislation. The contractor will notify Limerick Twenty Thirty DAC, and Limerick City and County Council (LCCC) and provide a Hazardous/Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal/treatment, in addition to information on the authorised waste collector(s).

Subsoils beneath the subject site comprise several meters of made ground, underlain by clay and gravel deposits. Limestone bedrock is encountered within a depth of 4m at some locations, and deeper elsewhere across the site (GSI, 2025) (PGL, 2025). The Geological Survey of Ireland (GSI) have reported the present of calcite at the site (in the vicinity of the onsite reservoir) as follows: '*5ft. wide calcite vein with nearly clear crystals found in cutting foundations (1946)…only locality in Ireland of Iceland Spar variety of calcite'* (GSI, 2025). Exposed bedrock is present in the historic quarry located in the northern portion.

The site has had various stages of development; previous land uses include the quarry, a flax factory, and condensed milk production, and a sweet factory.

During the 2025 Ground investigation (PGL, 2025), C&D waste material (including red brick fragments, construction rubble, plastic, silicon, slate tile, and wiring) was identified in made ground beneath the proposed Stonetown Terrace development. In addition, physical / olfactory evidence of potential hydrocarbon contamination was identified within the exploratory hole records for the 2025 Ground investigation (PGL, 2025). 61no. representative environmental soil samples were collected during the 2025 Ground investigation (PGL, 2025).

Results are summarised as follows:

- Asbestos Containing Material (ACM) in the form of Fibre/Clumps identified. Asbestos was also identified in the form of Chrysotile.
- Arsenic levels range from 2.7mg/kg to 86mg/kg.

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- Lead levels range from 9.2mg/kg to 6,400mg/kg.
- Polycyclic Aromatic Hydrocarbons (PAHs): Naphthalene (1no. exceedance), Fluoranthene (1no. exceedance), and Benzo[a]pyrene (exceedances identified in 4no. samples).
- Benzene: 1no. exceedance.
- Total Petroleum Hydrocarbons (TPH): Potential sources of TPH measured by the presence of PAHs in the soil were identified in 3no. samples.

Based on these results (as detailed further in Chapter 10 – Land Soils and Geology of the EIAR), contaminated soils have been identified beneath the proposed Stonetown Terrace Building, O'Callaghan Strand Building, Flax Mill site (PBSA / Quarry Building) and the Shipyard site.

2.6.4 Water Management Plan

In assessing potential water quality impacts, the EPA advocates a 'risk-based approach', and states that 'the principal aim in dealing with contaminated land and groundwater related issues is to secure the protection of human health, water bodies (including groundwater) and the wider environment' (EPA, 2013). In accordance with this risk- based approach a preliminary Source-Pathway-Receptor (SPR) model has been derived for the Site. Six key receptors (in terms of surface water /groundwater quality) have therefore been identified as follows;

- Bedrock aquifer beneath the Site (a locally important aquifer (Lm) – Bedrock which is Generally Moderately Productive (including onsite Reservoir);
- Lower River Shannon SAC (site code 002165) located adjacent to the Site (which is also a classified Transitional Waterbody (Limerick Dock)) (via. direct connection (existing discharge outfall from onsite reservoir), and indirect groundwater pathway);
- Transitional Waterbody (Limerick Dock) (EPA Ref: IE_SH_25S012600) (via. direct connection (existing discharge outfall from onsite reservoir), and indirect groundwater pathway);
- Westfield Wetlands (which are part of the Lower River Shannon SAC (site code 002165), located 35m from site (via. potential direct connection (reported historic abstraction from spring to site) and indirect groundwater pathway).
- Fergus Estuary And Inner Shannon, North Shore pNHA (site code 002048) located adjacent to the Site, (via. direct connection (existing discharge outfall from onsite reservoir), and indirect groundwater pathway); and,
- River Shannon & River Fergus Estuaries SPA (site code 004077), located ca. 20m from Site (via. direct connection (existing discharge outfall from onsite reservoir), and indirect groundwater pathway).

The onsite reservoir is a key sensitive receptor, given that it is a open body of water (within excavated bedrock), with a proven discharge pipe which outfalls directly to the Limerick Dock waterbody, Lower River Shannon SAC, and River Shannon & River Fergus Estuaries SPA. There is also a potential direct connection from the onsite reservoir to the Westfields Wetlands (via. reported historic abstraction from Wetlands Spring). Furthermore, based on the results of the tracer testing, there is potential for a second connection pipe between the onsite reservoir and the Limerick Dock waterbody, Lower River Shannon SAC, and River Shannon & River Fergus Estuaries SPA.

In order address the potential risk of any potential water quality impacts to the onsite Reservoir, and connected surface waterbodies (Lower River Shannon SAC, the River Shannon & River Fergus Estuaries SPA, Fergus Estuary And Inner Shannon, North Shore pNHA, and Westfield Wetlands), the Contractor(s) will develop, implement and maintain a Water Management Plan.

The Water Management Plan will include but not be restricted to the specific mitigation measures as detailed in the following sections of the CEMP: 2.6.7. Flood Risk; 7.1.2 Waste management; 7.4.2. Pollution Prevention Management Plan; 7.5.2. Water Resources (and Energy Use) Management Plan; 7.11.2 Contaminated Land Control Management Plan; and 7.12.2 Soil Erosion and Sedimentation Management Plan, as well as any

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relevant planning conditions, and any relevant future additional requirements via. changes in legislation or best practice guidance.

The Contractor(s) will provide a copy of the Water Management Plan to LCCC for review and comment in advance of commencement of any demolition or construction works onsite.

2.6.5 Ecology

No protected habitats were recorded within the site. The value of the existing habitats on site relies primarily within their function to support the local fauna. Six bat species, as well as Myotis sp. were recorded commuting and foraging across the proposed works site during the bat surveys carried out, including Soprano pipistrelle, Common pipistrelle, Leisler's bat, Brown long-eared bat, Nathusius' pipistrelle and Lesser horseshoe bat. Mammal surveys have been carried out and it can be concluded that the site does not provide suitable habitat to support breeding protected mammals (i.e badger, otter), however otter is known to utilise the River Shannon which flows adjacent to the site. Wintering Bird surveys have been completed and the site (including the reservoir) does not provide suitable habitat to support SCI species associated with nearby SPAs, however common garden birds species are considered likely to use the site for breeding. No protected fisheries were recorded. The site is located in close proximity to the River Shannon, which is designated as part of the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA. The reservoir within the site is likely hydrologically connected to the above mentioned European sites.

A derogation licence from NPWS has been obtained for the heritage works (DER-BAT-2025-169). Bat monitoring is ongoing at the site as part of Phase 1 Heritage works in line with conditions from the derogation licence.

A derogation licence from the NPWS will be in place for the project in relation to bat disturbance and loss of habitat during construction. A derogation licence application has been submitted to NPWS (Refer to Appendix 7.4 of the EIAR) from the NPWS and will need to will be in place for the project. The derogation licence is issued by NPWS on a yearly basis, and therefore it is expected that multiple licences will be necessary. Each licence will be informed by monitoring undertaken at the site and will be specific to the works to be undertaken during the calendar year. NPWS will be informed of any progress made during construction with regular updates. Construction mitigations in relation to bats include the following:

- Prior to commencement, confirmatory inspections and bat activity surveys will be carried out to ensure no bats are present within the buildings. These will be catered to each specific building. If these cannot rule out the presence of bats, precautions will be taken during the demolitions (manual removals, delayed use of machinery to allow escape) and these will be undertaken under the supervision of an ecologist.
- Demolition works will not be carried out during the bat activity season (April-September) within buildings where active day roosts are found. Where pre-commencement confirmatory surveys identify any alternative roosts, demolition works will not be carried out in respect of these alternative roosts during bat activity season.similar timing mitigations will be applied.
- A toolbox talk will be carried out prior to works commencing by the project ecologist to inform working crews of the potential effects of the works on resident bats, and known roosting locations will be clearly pointed out.
- Prior to demolitions being carried out, alternative roosting resources will be set up to retain roosting availability on site. These will be in the form of three cathedine bat houses, suitable for LHB. Whilst two of the Cathedine night roosts will be located in areas relatively buffered from continuous construction activities, in the Victorian terrace garden and along an existing terrace looking over the reservoir, the third roost will be in the north-western corner of the Quarry Site. A 5m buffer will be created around it to avoid stockpiling and machinery in its immediate vicinity. This is primarily to avoid damage to the roost.
- Other available roosting spaces will be retained along the quarry wall, under the reservoir tunnels and in buildings not proposed for demolition. The permanent bat houses included in the design will also be set up prior to demolition or as soon as possible following site clearance.

- The use of the site by LHB will be monitored during construction using passive static detectors left on site and tuned to the specific frequency calls of the species, to reduce battery and storage *u*sage. A minimum of three detectors at the proposed bat house locations, or nearby, are proposed.

In relation to disturbance, otter are predominantly crepuscular in nature, and it is anticipated that construction activity will mostly be confined to daytime hours, thus minimising potential disturbance related impacts to the species.

Best practice noise mitigations are presented in Chapter 13 Noise and Vibration, of the EIAR. The following measures will also be implemented to limit disturbance to otter:

- All plant and equipment for use will comply with S.I. No. 632/2001 - European Communities (Noise Emission by Equipment For Use Outdoors) Regulations, 2001
- Operating machinery will be restricted to the proposed works site area.
- The use of artificial lighting will be avoided during construction works. Any unavoidable artificial lighting used to facilitate works will be blocked from spilling onto the River Shannon, using directional accessories or physical barriers.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
- Compressors will be of the “sound reduced” models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machines which are used intermittently will be shut down or throttled back to a minimum during those periods when they are not in use.
- Any plant such as generators or pumps which are required to work outside of normal working hours will be surrounded by an acoustic enclosure.

In addition, the applicant commits to the use of lights during construction (such that they are necessary) in line with the following guidance that is provided in the Dark Sky Ireland Lighting Recommendations:

- Every light needs to be justifiable,
- Limit the use of light to when it is needed,
- Direct the light to where it is needed,
- Reduce the light intensity to the minimum needed,
- Use light spectra adapted to the environment,
- When using white light, use sources with a “warm” colour temperature (less than 3000K, ideally 2700K).

2.6.6 Landscape and Visual Amenity

he lands occupying the site offer a mix of local scale landscape elements which represent a series of industrial uses stretching back to the mid-19th Century and which now largely supplant any former natural landscape features. The site is an amalgam of distinct zones, each of which is proposed for discrete aspects of development within this current planning application. These development zones reflect their underlying landscape qualities and differ from one another in terms of landform, elevation, exposure/enclosure, historical development, vegetation, built forms etc. The site is dissected by the North Circular Road, which separates the zones which are proposed to receive the bulk of development from the ‘Shipyard’ development zone, south of the road, which is earmarked for future development but with only temporary ‘meanwhile’ development proposed under this current planning application.

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Despite diminishing dependence on the river for transportation, the river has been central in the city's development and remains a major aspect of the city's landscape character and its personality. The larger part of the Cleeves site is physically enclosed by inward-looking buildings and surrounding boundary walls around, however it too shares these very strong connections with the River Shannon – visually, culturally and historically.

The Cleeves Masterplan site is located just north of the Condell Road, at the northern end of Shannon Bridge. It forms a part of the interface between the built city and the protected wetlands to the south and as such, it presents a marked contrast between the low-lying, soft riparian, semi-natural wetlands to the south-west and the more elevated land with its built development north of them. Visually this contrast was greatly accentuated by the insertion of Shannon Bridge between the two and is most apparent when looking northwards along the bridge or across the river from the quays along the south bank.

Potential impacts during the construction phase are related to works which are temporary or short term in nature, including site activity, and vehicular movement within and around the subject site. Vehicular movement may increase in the immediate area, and temporary vertical elements such as cranes, scaffolding, site fencing, gates, plant and machinery etc., will be required and put in place.

2.6.7 Flood Risk

The site has been assessed in accordance with the "The Planning System and Flood Risk Management" Guidelines. Refer to the Flood Risk Assessment Report (ARUP, 2025) submitted as part of this planning application. As part of the sequential test, the OPW flood hazard maps have been consulted, as have the Catchment Flood Risk Assessment Maps produced by the OPW.

The purpose of the report is to identify and assess the risk of flooding to and from the development site and to propose potential mitigation measures to manage flood risk throughout the lifetime of the development, taking the potential effects of climate change into account.

The key findings of the flood risk assessment (ARUP, 2025) are as follows:

- *The main risk of flooding to the site is tidal (high tides and tidal surges) from the River Shannon. Part of the site lies in areas of high to moderate risk of flooding (Flood Zones A or B). The Shipyard site and part of the Flaxmill site (Infiltration Galleries) are at high risk of tidal flooding (0.5% Annual Exceedance Probability AEP), parts of the Quarry site are at moderate risk of flooding (0.1% AEP) and the rest (majority) of the site is at low risk (<0.1% AEP). These areas correspond to Flood Zones A, B and C respectively.*
- *The site is at low risk of fluvial flooding from the River Shannon in the absence of a high tidal boundary. The Stonetown Terrace, Salesian and Quarry sites could potentially be at risk of flooding from overland flows originating from the adjacent residential development to the north.*
- *Groundwater levels within the site generally exhibit no substantive correlation with the tidal signal and the water levels in the reservoir (which themselves are correlated to the tidal signal). The exception to this is at a well location within made ground in very close proximity to the reservoir at the Quarry site, where the testing results showed that the groundwater levels are more closely related to the water levels in the reservoir (and by default, correlated to the tidal signal, noting the reservoir levels do exhibit a tidal influence, albeit a muted correlation i.e. as these levels are still well below the corresponding tide levels). Overall the risk of groundwater flooding is deemed low, particularly once the connectivity of the reservoir to the river is established and mitigated.*
- *Survey investigations have confirmed that the reservoir within the Quarry site discharges to the River Shannon. Ongoing analysis will further the understanding of the subsurface pipe network and its hydraulic connectivity to the river. It is evident from initial surveys that the flow and volumes passing through the network and reservoir are low and the tidal signal is muted, indicating a lower risk from tidal flooding. Upon completion of the network assessment, measures will be implemented to prevent backflow through the system. This shall include the strategic installation of non-return valves and/or decommissioning of redundant pipework.*

- *Highly vulnerable uses such as residential properties shall where possible be in areas at lower risk of flooding or raised upper levels. Residential areas have been located at Salesian site (low), Stonetown Terrace (low) and Quarry site (moderate). Residential plots are also proposed at the upper levels at the O'Callaghan Strand site.*
- *Flood Protection Level: Development to be protected against the 1 in 200-year tidal event with allowance for climate change and a suitable freeboard.*
- *Climate Change Allowance: +500mm for less vulnerable uses and +1000mm for highly vulnerable.*
- *Freeboard Allowance: +500mm*
- *Minimum Recommended Finished Floor Levels:*
  - Lower allowance (commercial uses): 5.7m AOD
  - Higher allowance (residential/habitable spaces): 6.2m AOD
- *Flood resilient and resistant construction can be used to achieve the required protection, if raising of flood levels is not practically achievable.*
- *Safe access and egress to be provided from all buildings for emergency vehicles. The Master Plan proposes that North Circular Road (NCR) be raised above 5.7m AOD to provide safe access and egress.*
- *There is a risk of overland flows entering the Salesians, Quarry and Stonetown Terrace sites from the north during a significant rainfall event. A new perimeter drain (open or piped) can intercept any offsite overland flows from adjacent properties to the north of the site to safely divert the flow away from the properties.*

The extent of predicted tidal flooding (CFRAM study) and flow paths (shown in blue) within the proposed development boundary are presented below (ARUP, 2025).

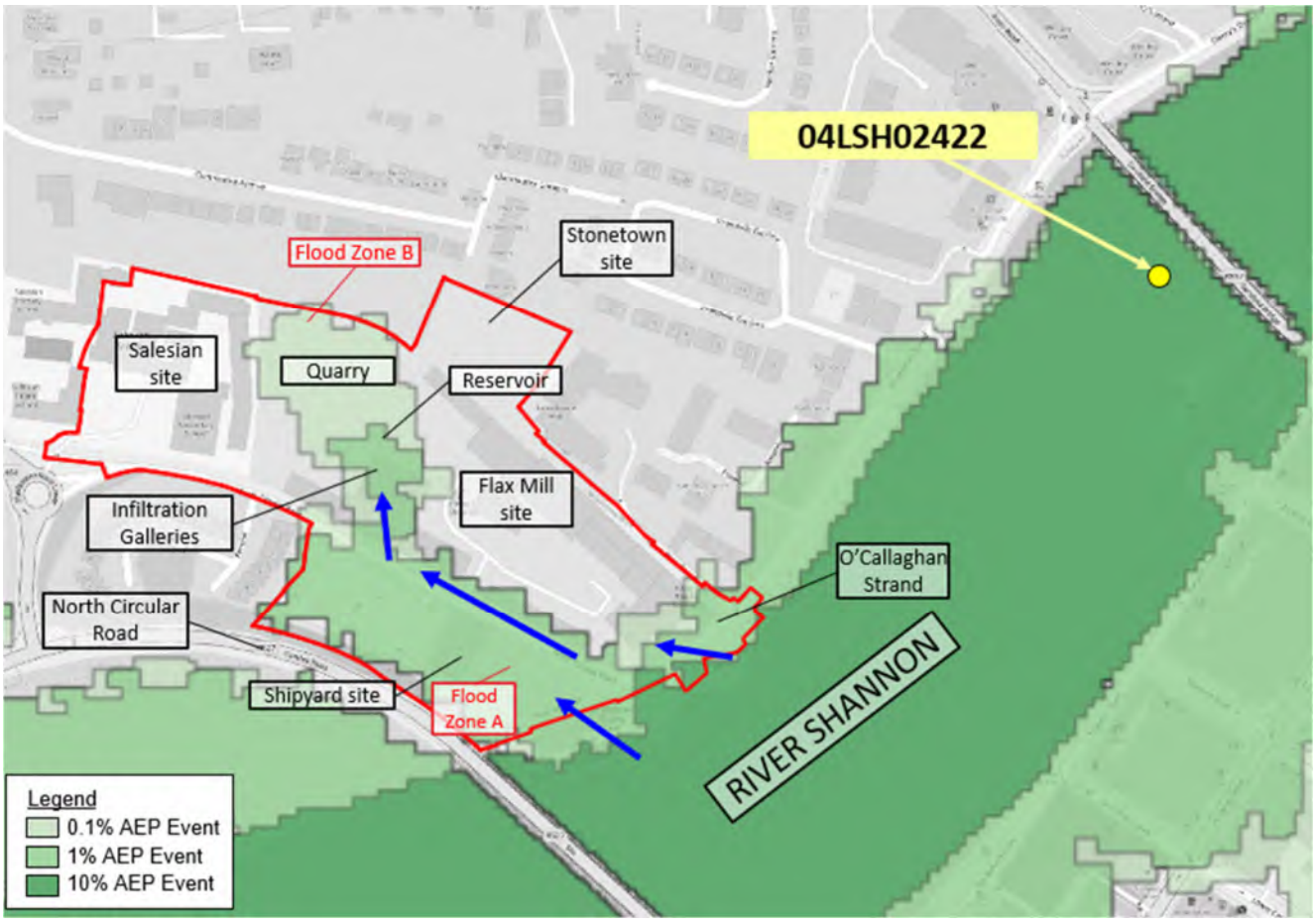

Figure 2-13 - Tidal flooding (CFRAM study) and flow paths (shown in blue). Site boundary shown in thin red line (ARUP, 2025)

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Refer to the flood risk assessment report (ARUP, 2025) submitted as part of this planning application for further details.

2.6.7.1 Construction Stage Flood Risk Management Plan

From a flooding perspective, the proposed construction compound at the Shipyard site, lies within the 0.5% AEP area for tidal flooding. However because it is a temporary construction and does not require planning, it is permitted to be in this location temporarily (ARUP, 2025).

Based on the extent of predicted tidal flooding (as presented in the above figure), the other construction compound at the Flaxmill site is located outside of the predicted flood zone. **All fuels, chemicals, oils, paints and any other hazardous materials will be stored within the construction compound at the Flaxmill site, which is located outside of the predicted flood zone.**

To mitigate flood risk (or unacceptable residual flood risk) during the construction period, the contractor will employ the following mitigation measures as part of the site preparation for the construction phase (ARUP, 2025):

- **Demolition & Construction Stage Flood Protection Measures**:
  - Elevating the site compound / site storage areas at the Shipyard site via fill placement to an appropriate level (i.e. 5.7m AOD based on the outcome of the FRA (ARUP, 2025).
  - Constructing and/or implementing temporary flood defences at the Shipyard site (i.e. civil works and/or proprietary flood defence products, or a combination of both) to an appropriate level (i.e. 5.7m AOD based on the outcome of the FRA (ARUP, 2025).
  - In the event of a tidal flood warning, materials stored in the Shipyard site compound will be removed immediately to avoid the risk of flooding to neighbouring properties.

- **Preparation of a Flood Emergency Response Plan for Construction Phase (FERP-CP)** – A FERP-CP will be developed by the Contractor(s) for the project, which will contain a detailed response plan to a tidal flood event on the Shannon occurring while construction was active on the site, which will include the following mitigation measures (noting this not necessarily to be an exhaustive list of measures) (ARUP, 2025):

  - Development of a FERP-CP in the first instance;
  - Definition of designated roles within the construction team / firm, and associated responsibilities with regard to the implementation of the FERP-CP;
  - Having an appropriate nominated person (e.g. site manager) who will be responsible for monitoring weather warnings, flood warnings, and storm-tide warnings (i.e. the 'Construction Phase Flood Manager') – this will be a part-time role that will only ever come into play on a periodic basis (or maybe not at all over the course of the construction phase);
  - Communication protocols to the site team to alert them to the possibility of a flood and the need to move any machinery, plant, equipment, etc, to an appropriate location within the site/site compound if safe to do so, and to evacuate the site;
  - General protocols around where and how machinery, plant, other equipment and materials are stored / stockpiled / located within the site compound(s), noting that all fuels, chemicals, oils, paints and any other hazardous materials will be stored within the construction compound at the Flaxmill site, which is located outside of the predicted flood zone.
  - Signage and other information on site drawing awareness to FERP-CP protocols (e.g. materials / plant / equipment storage, evacuation routes, etc).
  - The level of the compound and the materials storage areas are to be determined by the contractor and to be confirmed in the Flood Emergency Response Plan for Construction Phase (FERP-CP), taking into account the above mitigation measures, as well as the findings of the FRA (ARUP, 2025).

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The Contractor(s) will provide a copy of the FERP-CP (which will take into account any relevant planning conditions, and any relevant future additional requirements via. changes in legislation or best practice guidance) to LCCC for review and comment in advance of commencement of any demolition or construction works onsite.

2.6.8 Cultural Heritage

The subject site comprises brownfield portions with upstanding structures. There are no known archaeological monuments on any portion of the subject site nor its immediate vicinity. There are two protected structures on the site: a former flax mill and a brick chimney. There are other structures which are of high heritage significance and the subject site on the basis of its size and location close to the River Shannon has the potential to contain subsurface archaeology of any time period.

The Records of Monuments and Places records known archaeological in the vicinity of the site of development. It lists five sites on the northwest side of the River Shannon and within 1km of the site of development. A geophysical survey was commissioned as part of the preliminary works of the subject site (Howard, 2022). The survey detected anomalies to a depth of 2m and within open accessible grounds that comprised the site. A number of features were detected.

The National Inventory of Architectural Heritage lists two structures within the site of development (NIAH Ref: 21512053 – Factory; NIAH Ref: 21512059 – Chimney), described as follows:

- NIAH 21512053 (Factory) – Cleeve's Condensed Milk Factory originally Lansdowne Spinning Mill – is described as ‘Detached fifteen-bay four-storey stone factory building, built in 1853, facing west with a full-height bow end to south side elevation, and prolonged to south by a ten-bay two-storey block, and to north by a twenty-three bay single- and two-storey block, to which various twentieth-century alterations and interventions have been made.
- NIAH 21512059 (Chimney) – Cleeve's Condensed Milk Factory originally Lansdowne Spinning Mill – is described as ‘Freestanding octagonal-plan red brick chimneystack, built c. 1860, as part of the vast industrial complex. It was originally 150 feet high and was reduced by 30 feet in the 1960s. The factory is now in use as a dairy processing building.

The site assessment did not reveal any previously unrecorded archaeological heritage throughout the site. This was primarily due to almost all of the ground surface covered with hard surfaces of concrete or tarmac.

Collins and Coyne (2021) and Feilden Clegg Bradley Studios + Bucholz McEvoy (2024) have undertaken extensive built heritage assessment of the subject site.

No recorded archaeological sites have been identified within or near the development site. Previous unrelated archaeological investigations in the vicinity have yielded no archaeological discoveries. Unlike typical urban centres, the site has received limited development over time, with development having commenced from the early to mid-19th century, in which the quarry activities most likely occurred from the later part of the 18th century. Nonetheless, given the size of the site, the possibility remains of archaeology surviving at a subsurface level, either in whole or in part.

2.6.9 Traffic and Transportation

In relation to transport, the Contractor(s) will further develop the Construction Traffic Management Plan (CTMP) presented in Appendix B of this CEMP. All mitigation measures, as presented in Section 7 of this CEMP will be fully complied with by the Contractor(s) for the full duration of the proposed demolition and construction works.

3. Legislation and Guidance

All parties, contractors and consultants working on this project shall be subject to the laws of Ireland and the various international/regional protocols and agreements to which Ireland is a party. In the event that legislation is updated the latest version shall be followed. All relevant new legislation will be followed as appropriate. This document outlines most current legislation at the date of issue. It is the responsibility of the Contractor to ensure that they are up to date with the details of the latest iterations of legislation relevant to the project throughout the duration of the contract.

The Designer will be aware of all key environmental risks and associated measures set out within this CEMP, and the final detailed design will take due cognisance of these.

The Contractor will set out the detailed CEMP in a clear format and will address all key environmental risks and associated measures. The Contractor will be aware of and comply with the legislation and guidance set out in this document, any specific planning conditions which may be associated with the proposed development, and other relevant documentation as prescribed by the Employer and planning authority.

3.1 Legislation

It should be noted that the appointed Contractor will be required to be aware of their obligations under legislation. Such legislation, includes, but is not restricted, to:

- Planning and Development Act and subsequent amendments, 2000- 2025;
- Planning and Development Regulations 2001;
- The Birds Directive: Council Directive of 2 April 1979 on the conservation of wild birds (79/409/EEC);
- The Birds Directive: Council Directive 2009/147/EC on the conservation of wild birds;
- The Habitats Directive: Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora;
- The European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477 of 2011), as amended, 2015 (S.I. No. 355 of 2015);
- Water Framework Directive (WFD): Directive 2000/60/EC of the European Parliament and Council establishing a framework for Community Action in the field of water policy, as amended;
- European Communities Environmental Objectives (Surface Waters) Regulations, 2009, S.I. No. 272 of 2009, as amended, 2012 (S.I. No. 327 of 2012), 2015 (S.I. No. 386 of 2015), 2019 (S.I. No. 77 of 2019), 2021 (S.I. No. 659 of 2021), 2022 (S.I. No. 288 of 2022), 2023 (S.I. No. 410 of 2023), 2025 (S.I. No. 50 of 2025);
- European Communities Environmental Objectives (Groundwater) Regulations 2010, S.I. No. 9 of 2010, as amended, 2016 (S.I. No. 366 of 2016), 2022 (S.I. No. 287 of 2022);
- European Communities (Environmental Liability) Regulations, 2008, S.I. No. 547 of 2008, as amended, 2011 (S.I. No. 307 of 2011), 2015 (S.I. No. 293 of 2015);
- 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 (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014), as amended 2019 (S.I. No. 233 of 2019);
- European Union (Drinking Water) Regulations, 2014, S.I. No. 122 of 2014, as amended 2017 (S.I. No. 464 of 2017), as amended (S.I. No. 286 of 2022), 2023 (S.I. No. 99 of 2023);
- Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste, as amended 2018 (S.I. No. 851 of 2018);
- Waste Management Acts of 1996 to 2021;

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- The Water Pollution Acts of 1977 & 1998;
- Water Framework Directive (WFD): Directive 2000/60/EC of the European Parliament and Council establishing a framework for Community Action in the field of water policy, as amended;
- The Wildlife Acts 1976 to 2023;
- Water Policy Regulations 2003, S.I. No. 722 of 2003, as amended, 2005 (S.I No. 413 of 2005), 2008 (S.I No. 219 of 2008), 2010 (S.I. No. 93 of 2010) and Amendment (No. 2) Regulations, (S.I. 326 of 2010) & EU Water Policy Regulations 2014 (S.I 350 of 2014), 2018 (S.I. No. 261 of 2018), 2022 (S.I. No. 166 of 2022), 2025 (S.I. No. 52 of 2025);
- Water Conservation Regulations 2008, S.I. No. 527 of 2008;
- Guidelines on protection of fisheries during construction works in and adjacent to waters (IFI, 2016);
- Litter Pollution Act of 1997, as amended, 2017 (Bill 58 of 2017);
- Litter Pollution Regulations 1999, S.I. No. 359 of 1999);
- Waste Management (Facility Permit and Registration) Regulations 2007, S.I. No. 821 of 2007, as amended, 2008 (S.I. No. 86 of 2008), 2015 (S.I. No. 198 of 2015), 2019 (S.I. No. 250 of 2019), 2023 (S.I. No. 471 of 2023);
- Waste Management (Collection Permit) Regulations 2007, S.I. No. 820 of 2007), as amended, 2015 (S.I. No. 197 of 2015), 2016 (S.I. No. 24 of 2016), 2023 (S.I. No. 63 of 2023 & S.I. No. 104 of 2023);
- Waste Management (Licensing) Regulations 2004 (S.I. No. 395 of 2004) as amended 2010 (S.I. No. 350 of 2010);
- Environment (Miscellaneous Provisions) Act 2011, as amended 2015;
- Waste Management (Landfill Levy) Regulations 2008, S.I. No. 199 of 2008, as amended 2009, (S.I. No. 550 of 2009), 2010 (S.I. No. 31 of 2010), 2012 (S.I. No. 221 of 2012), 2013 (S.I. No. 194 of 2013), 2015 (S.I. No. 189 of 2015), 2019 (S.I. No.182 of 2019), 2023 (S.I. No. 398 of 2023), 2024 (S.I. No. 442 of 2024);
- Waste Management (Hazardous Waste) Regulations, 1998, as amended, 2000 (S.I. No. 73 of 2000);
- Waste Management (Shipment of Waste) Regulations 2007, S.I. No. 419 of 2007;
- Waste Management (Movement of Hazardous Waste) Regulations, 1998 (S.I. No. 147 of 1998);
- Waste Management (Transfrontier Shipment of Waste) Regulations 1998, as amended, 2014 (S.I. No. 861 of 2014);
- Waste Management (Tyres and Waste Tyres) Regulations 2007 (S.I. No. 664 of 2007), 2017, as amended (S.I. No. 400 of 2017) and 2018 (S.I. No. 96/2018);
- European Union Batteries and Accumulators Regulations 2014, S.I. No. 283 of 2014, as amended, 2014 (S.I. No. 349 of 2014), 2015 (S.I. No. 347 of 2015);
- Waste Management (Registration of Brokers and Dealers) Regulations 2008, SI No. 113 of 2008;
- Waste Management (Prohibition of Material Disposal by burning) Regulations 2009, S.I No. 286 of 2009, as amended 2013 (S.I. No. 504 of 2013), 2017 (S.I. No. 599 of 2017), 2019 (S.I. No. 684 of 2019), 2022 (S.I. No. 51 of 2022), and 2023 (S.I. No. 16 of 2023);
- European Communities (Waste Directive) Regulations 2011, S.I. No. 126 of 2011, as amended 2016 (S.I. No. 315 of 2016) and (S.I. No. 323 of 2020);
- European Waste Catalogue (EWC) and Hazardous Waste List 2002, 2015 and 2018;
- Waste Management (Food Waste) Regulations 2009, S.I. No 508 of 2009, as amended, 2015 (S.I. No. 430 of 2015), 2024 (S.I. No. 294 of 2024);
- Protection of the Environment Act 2003;
- European Union (Properties of Waste Which Render It Hazardous) Regulations 2015, S.I. No. 233 of 2015, as amended, 2018 (S.I. No. 383 of 2018);
- Air Pollution Act, 1987 (Air Quality Standards) Regulations, 1987, as amended, 2002 (S.I. No. 271 of 2002), 2011 (S.I. No. 180 of 2011), 2016 (S.I. No. 659 of 2016), 2022 (S.I. No. 739 0of 2022);
- Air Pollution Act, 1987 (Emission Limit Values for use of Asbestos) Regulations, 1990 (S.I. No. 28 of 1990);

- European Communities (Control of Emissions of Gaseous & Particulate Pollutants from Non-Road Mobile Machinery) Regulations 2007, S.I. No.147 of 2007, as amended, 2011 (S.I. No. 263 of 2011), 2012 (S.I. No. 407 of 2012), 2013 (S.I No. 417 of 2013), 2016 (S.I. No. 2016/1628);
- The EU Regulation 2037/2000 (CFC's, HCFC's, Halons) - Ozone Depleting Substances. Control of Substances that Deplete the Ozone Layer Regulations 2006, S.I. No 281 of 2006, as amended, 2011 (S.I. No. 465 of 2011);
- European Communities 2008/50/EC -Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive, 2008;
- Air Quality Standards Regulations 2011, S.I. No. 180 of 2011.
- EU Directive 2008/50/EC – Ambient air quality Directive European Communities (Ambient Air Quality Standards Regulations), 2022 (S.I. No. 739 of 2022);
- EU F Gas Regulations 2006, as amended, 2014, S.I. No. 517 of 2014, 2019 (S.I. No. 367 or 2019);
- Environmental Protection Agency Act 1992 (Noise) Regulations, 1994 S.I. 174 of 1994;
- Environmental Noise Regulations 2006, S.I. No. 140 of 2006, as amended 2018 (S.I. No. 549 of 2028), 2021 (S.I. No. 663 of 2021);
- European Communities (Noise Emission by Equipment for use Outdoors) Regulations, 2001, S.I No. 632 of 2001, as amended, 2006 (S.I No. 241 of 2006);
- European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Amendment Regulations 1996, S.I No. 359 of 1996 and 2001, S.I No. 632 of 2001);
- Local Government (Planning and Development) Act 1963 (S.I. No. 28 of 1963), as amended 1993 (S.I. No. 12 of 1993);
- European Communities Conservation of Wild Bird Regulations 1985, S.I. No. 291 of 1985, as amended, 1986 (S.I. No. 48 of 1986), 1995 (S.I. No. 31 of 1995), 1997, (S.I. No. 210 of 1997), 1998 (S.I. No. 154 of 1998), (S.I. No. 131 of 1999), 2005 (S.I. No. 716 of 2005), 2010 (S.I. No. 65 of 2010), 2011 (S.I. No. 626 of 2011), 2012 (S.I. No. 84 of 2012), 2013 (S.I. No. 281 of 2013), 2019 (S.I. No. 178 of 2019);
- Noxious Weed Act, 1936, S.I. No. 38 of 1936;
- Noxious Weed Order, 1937, S.I. No. 103 of 1937;
- Flora (Protection) Order, 2015 (S.I. No 356 of 2015), 2022 (S.I. No. 235 of 2022);
- The Forestry Act, 1946, S.I. No. 13 of 1946, as amended, 2009 (S.I. No. 40 of 2009) & Forestry Act, 2014 (S.I. No. 31 of 2014);
- Forestry Regulations, S.I. No. 191 of 2017, as amended 2020 (S.I. No. 31 of 2020, S.I. No. 39 of 2020 & S.I. No. 416 of 2020), 2023 (S.I. No. 445 of 2023);
- The National Monuments Act 1930, S.I. No. 2 of 1930, as amended, 2004 (S.I. No. 22 of 2004);
- European Union (Environmental Impact Assessment and Habitats) (Section 181 of the Planning and Development Act 2000) Regulations, 2013 (S.I. No. 403 of 2013), 2015 (S.I. No. 301 of 2015), 2019 (S.I. No. 418 of 2019);
- European Union (Environmental Impact Assessment and Habitats) (Environmental Impact Assessment) Regulations, 2018, S.I. No. 296 of 2018; and,
- Safety, Health and Welfare at Work (Exposure to Asbestos)(Amendment) Regulations 2006 (S.I. No. 386 of 2006), 2010 (S.I. No. 589 of 2010).

3.2 Industry Guidance

The Contractor will take due consideration of, and incorporate best practice guidance, including but not limited to the following:

- BS 5837/2012. Trees in relation to design, demolition and construction;
- BS 3998; 2010. Tree Work. Recommendations;
- CIRIA (2001). C532. Control of water pollution from construction sites. Guidance for consultants and contractors;

- CIRIA (2006). C648. Control of water pollution from linear construction projects. Technical Guidance;
- CIRIA (2008). C679. Invasive species management for infrastructure managers and the construction industry.;
- CIRIA (2015). C741. Environmental Good Practice on Site;
- CIRIA (2015). C753. The SuDS Manual;
- Environmental Protection Agency (2021). 'Best Practice Guidelines for the preparation of resources & waste management plans for construction & demolition projects'
- Invasive Species Ireland (2016). Best Practice Management Guidelines. Japanese knotweed;
- National Roads Authority (NRA) (2008). Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes;
- NRA (2005). Guidelines for the Treatment of Badger Prior to the Construction of National Road Schemes;
- NRA (2008). Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes;
- NRA (2006). Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes;
- NRA (2010). Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (Revision 1); and,
- Sustainability & Environmental Appraisal (March 2020) LA 120 Environmental management

4. Project Roles and Responsibilities

For the purposes of clarity, the roles and responsibilities of the project team for the proposed development will be determined at the very outset of the Construction Stages of this project. Key roles are listed below. These are typically performed by the Client, Engineer, and Contractor(s) as presented below. Specific details will be determined upon the Detailed Design and Contract Stage.

Table 4-1 - Roles and Responsibilities

Employer	**Planning Agents**
The Client: Limerick Twenty Thirty DAC Tel: TBC Contact: TBC	The Planner: HRA Planning Tel: TBC Contact: TBC
Employers Representative (Designer)	Civil, Structural and Environmental Team
The Engineer: TBC Tel: TBC Contact: TBC	Consultant: TBC Tel: TBC Contact: TBC
Project Supervisor for the Design Process (PSDP)	Contractor(s)
The Engineer: TBC Tel: TBC Contact: TBC	The Contractor(s): TBC Tel: TBC Contact: TBC
Project Supervisor Construction Stage (PSCS)	
The Contractor(s): TBC Tel: TBC Contact: TBC	

4.1 The Client/Employer

Limerick Twenty Thirty DAC will be responsible for ensuring that competent parties are appointed to undertake the construction and that sufficient resources are made available to facilitate the appropriate management of risks to the environment.

In addition to the above, the employer (Limerick Twenty Thirty), will also provide an employer's environmental representative. This officer will be a suitably qualified ecologist or environmental scientist and will work closely with the contractor's representative to ensure that all environmental/ecological requirements are adhered to and fully monitored. The employer's representative will visit the site on a weekly basis (at a minimum) during the construction phase. An audit of the works will be undertaken during these weekly visits, and it will be ensured that the prescribed methods are employed. Any potential impacts additional to those predicted will be highlighted and if necessary, additional measures put in place to prevent them. Any deviance from the agreed methodology will be highlighted and if necessary rectified.

4.2 Environmental Manager

An Environmental Manager will be appointed by the Contractor to ensure that the CEMP is effectively implemented. The Environmental Manager will be a suitably qualified, competent and experienced professional that will perform the necessary tasks, review environmental procedures and consult with the members of the construction team and stakeholders as required. The Environmental Manager will be responsible for:

- Ensuring that the CEMP and all relevant documents such as environmental control plans are developed, implemented and maintained on site;
- Updated the CEMP to address any subsequent planning conditions relevant to the proposed development.
- Ensuring compliance with the Conditions of the Planning Permission and any other relevant permits/ consents required;
- Ensuring that construction occurs in accordance with the relevant environmental requirements and that such compliance is adequately recorded and documented;
- Conducting regular environmental inspections and compiling an environmental compliance report on a monthly basis;
- Attending site and stakeholder meetings as required;
- Keeping up-to-date with relevant environmental best practice and legislative changes;
- Ensuring all staff have undertaken adequate environmental inductions, awareness briefings and training;
- Dealing with environmental complaints; and
- Managing and responding to environmental incidents and ensuring that all incidents are recorded and reported in an appropriate manner.

4.3 Construction Director

The Construction Director will be responsible for the overall execution and organisation of all environmental related activities, as appropriate. Some responsibilities of the Construction Director will comprise the following:

- Overall responsibility for the implementation of the CEMP;
- Allocating the correct resources in order to ensure the successful implementation of the CEMP; and,
- Assisting in the management review of the CEMP for suitability and effectiveness.

4.4 Construction Manager

The Construction Manager is directly responsible to the Construction Director in assisting with the successful execution of the Proposed Development. The responsibilities of the construction manager in respect of the CEMP comprise the following:

- To report to the Construction Director on the on-going performance and development of the CEMP;
- To discharge his/her responsibilities as per the CEMP; and,
- To support and augment the Construction Management Team through the provision of adequate resources and facilities for the duration of the implementation of the CEMP.

4.5 Ecological Clerk of Works

An Ecological Clerk of Works (ECoW) will be appointed by the Contractor to ensure that the ecological plan is effectively implemented. The representative will be a suitably qualified ecologist or environmental scientist. All operatives working on the site will be made fully aware of the environmental responsibilities, conditions and requirements along with a full description of the methods to be employed. This information will be imparted at a dedicated site induction prior to commencing work on the site. The induction of any new staff will include an environmental induction. A checklist will be filled in on a weekly basis to show how the measures above have been complied with. Any environmental incidents or non-compliance issues will immediately be reported to the project team and that the project team will take corrective action if necessary. The construction management team will be regularly monitoring the works and will be fully briefed and aware of the environmental constraints and protection measures to be employed. The contractor's environmental representative will work closely with the Employers Environmental Representative as described below.

The ECoW will be responsible for:

- Monitoring the construction works and identifying any additional or refined mitigation measures (i.e. 'adaptive management measures required), in relation to any ecology;
- Reporting the findings of monitoring, including any adaptive management measures recommended and the effectiveness of same;
- Delivering site induction and training on ecological aspects to all construction personnel prior to commencement of construction activities;
- The implementation of ecological mitigation measures;
- Updating, renewing and returning the derogation licence in place throughout construction.

4.6 Resource Manager

Prior to the commencement of site works, the contractor will nominate a suitably qualified Resource Manager with expertise in waste and resource management to implement the CDRWMP (ARUP, 2025). The nominated Resource Manager will be responsible for implementation of the CDRWMP. In the event of the Resource Manager leaving the project team, the contractor will nominate a suitable replacement. Further details of the role and responsibilities of the Resource Manager are set out in the planning stage CDRWMP, submitted under separate cover as part of the application

5. Environmental Management Procedures

5.1 General

The Contractor will be required to have a recognised environmental management system such as ISO 14001:2015 or be able to demonstrate that they are actively working towards implementing such a system.

The works Contractor will undertake the works in accordance with the provisions of the CEMP. The CEMP will be updated by the Contractor to address any subsequent planning conditions relevant to the Proposed Development and will be reviewed by the Employer and/or the Employer's Representative. The Contractor will review and update the CEMP as appropriate and shall issue an updated CEMP. A record of the review and any recommendations will also provide (for review and approval by the Employer and/or the Employer's Representative) Environmental Control Plans (ECPs), which will be maintained and updated in accordance with the CEMP. ECPs will include (if applicable), but will not be restricted to:

- Air Quality Control Plan;
- Construction Noise and Vibration Control Plan;
- Pollution Prevention Control Plan;
- Water Resources and Energy Use Control Plan;
- Ecological Control Plan;
- Light Pollution Control Plan;
- Archaeological and Cultural Control Plan;
- Traffic Management Control Plan;
- Contamination Land Control Plan; and,
- Soil Erosion and Sedimentation Control Plan.

Guidance on the development of the Control Plans is located in Section 7 of this document.

5.2 Environmental Policy

Contractors shall have an environmental policy dated and signed by the most senior person in the company. The policy shall:

- Be appropriate to the nature, scale and environmental impacts of the organisations activities, products and services;
- Include a commitment to continual improvement in environmental performance;
- Include a commitment to comply with all applicable legislation and with other requirements to which the organisation subscribes which relate to its environmental aspects;
- Provide a framework for setting and reviewing objectives and targets;
- Be documented, implemented and maintained;
- Be communicated to all persons working for or on behalf of the organisation; and
- Be available to the public.

5.3 Environmental Aspects

Contractors are expected to use a qualitative approach to identify and evaluate potential environmental aspects along with any controls to prevent or mitigate environmental damage. A simple risk matrix (as follows) facilitates quick reference and assignment of risk levels for each environmental aspect:

- Extreme/serious risk;
- High risk;
- Moderate risk; and,
- Low risk.

All environmental aspects rated as High or Extreme/Serious will be classified as significant and will require control or mitigation measures to manage the risk. All environmental aspects covered by a legal requirement, for example an Environmental Permit condition will also be classified as significant even if the risk is low or moderate.

Table 5-1 - Example of Qualitative Risk Matrix

					Probability				
Severity	**People**	**Assets**	**Environment**	**Reputation**	**Impossible / Rare**	**Improbable / Possible**	**Probable / Likely**	**Very Likely / Often**	**Certainty/ Frequent**
Catastrophic	Multiple fatalities or permanent total disabilities	Extensive damage	Massive effects	International impact				Extreme / Serious Risk	
Severe / Major	Single fatality or permanent total disability	Major damage	Major effect	National impact		High Risk			
Critical / Moderate	Major injury or health effects	Local damage	Localized effect	Considerable impact					
Marginal / Minor	Minor injury or health effects	Minor damage	Minor effect	Minor impact		Moderate Risk			
Negligible / Insignificant	Slight injury or health effects	Slight damage	Slight effect	Slight impact	Low Risk				

Table 5-2 - Example of Aspects and Impacts Register

Environmental Aspect	Environmental Impact	Risk Rating	Control / Mitigation Measures	Risk Rating After Control
Use of fuel storage tanks on site	Potential contamination of water and land	High Risk	Double skinned tank, bunding, location on hard standing, emergency spill procedure and equipment and training	Moderate Risk

5.4 Training, Awareness and Competence

The Contractor (and their sub-contractors) will be selected with due consideration of relevant qualifications and experience. The Contractor will be required to employ construction staff with appropriate skills, qualifications and experience appropriate to the needs of the works to be carried out during construction.

A site induction will be provided to all construction staff before they commence work on site. Where appropriate, the Contractor will identify specific training needs for the construction workforce and will ensure that appropriate training requirements are fulfilled. A baseline level of environmental awareness will be established though the site induction programme. Site inductions will cover the following as a minimum:

- Introduction to the Environmental Manager;
- The requirements of the CEMP and consequences of non-compliance;
- The requirements of due diligence and duty of care;
- Identification of environmental constraints and potential impacts of the work;
- Procedures associated with incident notification and reporting including procedures for dealing with damage to the environment; and,
- The benefits of improved environmental and sustainability performance; and the potential consequences of departure from specified procedures, work instructions and method statements.

5.5 Meetings

The Environmental Manager will be responsible for arranging and holding monthly meetings with the Employer and/or the Employer's Representative. The Environmental Manager will develop and distribute minutes on monthly meetings accordingly.

5.6 Monitoring and Inspections

For the duration of the contract, the environmental performance of the Contractor will be monitored through site inspections and audits. The programme for monitoring, inspections and audits shall be specified in the contract. The Contractor shall develop, implement and maintain an Environmental Inspections and Monitoring Plan.

Records of all inspections carried out will be recorded and all actions will be closed out in a reasonable time. If additional monitoring and inspections are required due to any subsequent planning conditions, these will be added to the CEMP.

5.6.1 Monitoring

Mitigation and monitoring will be carried out so that construction activities are undertaken in a manner that does not give rise to significant negative effects.

The results of all environmental monitoring activities will be reviewed by the Environmental Manager on an ongoing basis to enable trends or exceedance of criteria to be identified and corrective actions to be implemented as necessary.

5.6.2 Inspections

Inspections of construction activities will be carried out by the Environmental Manager on a daily basis to ensure all necessary environmental measures relevant to the construction activities are being effectively implemented by construction staff, ensuring legal and contractual conformity.

5.6.2.1 Daily Inspections:

The daily inspections will include, but not be limited to, checking that:

- The site boundary is marked out and respected;
- All waste is appropriately stored and segregated;
- Waste skips are covered to prevent wind-blown litter;
- Drip trays are in place for all stored equipment and plant;
- All chemicals/fuels are stored with appropriate containment/bunds/cover;
- Construction noise is within permitted limits and does not create a nuisance;
- Dust does not create a nuisance; and,
- Fencing/hoarding is secure.

5.6.2.2 Weekly Inspections

The inspections will include, but not be limited to confirming that:

- Daily checklists have been completed;
- Waste storage areas have been checked and there is no build-up of waste materials;
- Spill kits have been checked and contain all relevant materials;
- The performance of all pollution control equipment has been checked and the equipment is working effectively;
- Noise reduction/monitoring equipment has been checked and is operating effectively;
- Septic tanks are not overfull/discharging; and,
- Special control measures identified in Permit/Planning Conditions and CEMP are adhered to.

5.7 Nonconformity and Corrective and Preventative Action

The Contractor shall establish, implement and maintain procedures to deal with actual and potential non-conformities and for taking corrective and preventative action.

Non-conformities will be identified through:

- Internal contractor audits;
- Audits by the Employer and/or the Employer's Representative;
- Audits undertaken by external certification bodies;
- Audits undertaken by regulatory authorities; and,
- General observations.

The Contractor procedures shall define the requirements for:

- Identifying and correcting non-conformities;
- Mitigating the environmental impacts of non-conformities;
- Investigating non-conformities including identify root causes and implementing appropriate actions to avoid their reoccurrence;
- Evaluating the need for actions to prevent non-conformities and implementing appropriate actions designed to avoid their reoccurrence;
- Setting realistic timeframes for undertaking effective corrective and preventative actions;
- Recording the results of corrective and preventative actions taken; and,
- Reviewing the effectiveness of corrective and preventative actions.

All actions identified will be appropriate to the nature and magnitude of the issue and the environmental impacts encountered.

5.8 Reporting

The Contractor will be required to submit a report, the frequency to be agreed with the Contractor and Employer and/or the Employer's Representative to the Employer and/or the Employer's Representative for review and approval. The report shall address the following as minimum:

- Summary of compliance with the CEMP including identification of any non-conformances;
- Interpretation of the result of ongoing monitoring;
- Detailed description of any issues and/or non-conformances identified during inspections and/or audits;
- Record of incidents and corrective actions (including Corrective Actions Reports as appropriate);
- Synopsis of environmental complaints received/queries raised by stakeholders; and,
- Records of environmental training undertaken (as appropriate).

5.9 Environmental Records

The Contractor shall maintain records of all environmental documentation including monitoring, test results, method statements and plans. All records will be kept up-to-date and be made available for audits, inspections and periodical reporting. The Contractor will maintain the following environmental records (as a minimum) that will be made available for inspection to the Employer and/or the Employer's Representative and the relevant authorities if required:

- Management plans;
- Records of environmental incidents;
- Environmental reports;
- Records of environmental training;
- Register of environmental complaints;
- Corrective Action Reports;
- Environmental inspection and audit reports;

- All monitoring data;
- Waste and chemical inventories; and,
- Health and Safety records.

6. General Requirements

The Contractor will be legally required to ensure compliance and to avoid and/or reduce significant adverse effects that have been identified where practicable.

6.1 Site Safety Compliance

The Contractor shall be responsible for overall management of the site for the duration of the proposed works and will progress their works with reasonable skill, care, diligence and to proactively manage the works in a manner most likely to ensure the safety and welfare of those carrying out construction works.

The Contractor shall comply with all relevant Statutory requirements such as the 2005 Safety Health and Welfare at Work Act, The Construction Regulations (SI 291 of 2013), the General Application Regulations (SI 299 of 2007), etc. (and any amendments thereof).

In addition, the Contractor shall comply with all the reasonable safety requirements of the Client, the Project Supervisor for the Design Process and the Project Supervisor for the Construction Stage.

6.2 Good Housekeeping

The Contractor will employ a 'good housekeeping' policy at all times. This will include, but not be restricted, to the following:

- General maintenance of working areas and cleanliness of welfare facilities and storage areas;
- Provision of site layout map showing key areas such as first aid posts, material storage, spill kits, material and waste storage, welfare facilities etc;
- Maintain all plant, material and equipment required to complete the construction work in good order, clean and tidy;
- Keep construction compounds, access routes and designated parking areas free and clear of excess dirt, rubbish piles, scrap wood, etc. at all times;
- Details of site managers, contact numbers (including out of hours) and public information signs (including warning signs) will be provided at the boundaries of the working areas;
- Provision of adequate welfare facilities for site personnel;
- Installation of appropriate security, lighting, fencing and hoarding;
- Effective prevention of oil, grease or other objectionable matter being discharged from the working area;
- Provision of appropriate waste management at each working area and regular collections to be arranged;
- Excavated material generated during construction will be reused on site as far as practicable and surplus materials/soils shall be recovered or disposed of to a suitably authorised waste facility site;
- Effective prevention of infestation from pests or vermin;
- No discharge of site run-off or water discharge without agreement of the relevant authorities; and,
- Maintenance of public rights of way, diversions and entry/exit areas around working areas for pedestrians and cyclists where practicable and to achieve inclusive access.

6.3 Consents and Licenses

All statutory consents and licences required to commence on-site construction activities will be obtained ahead of works commencing, allowing for the appropriate notice period. These will include, but are not limited to:

- Site notices;
- Derogation Licences;
- Waste Permits / Licences including for onsite crushing activities;
- Construction commencement notices; and
- Licence to connect to existing utilities and mains sewers, where required.

6.4 Site Compound

It is anticipated that the site office and welfare facilities (site compound) will likely be located on the Shipyard site for most phases, with development in the O'Callaghan Strand Zone and in the Quarry Zone accommodating independent site compounds as required. Refer to Figure 2-1 and 2-2.

Refer to logistical and construction considerations which illustrate indicative locations for access, egress, site compounds, hoarding etc. for each stage (Stage 1-9) in Figures 2-3 to 2-11 in Section 2 of this document.

Site access for all personnel and visitors will be strictly controlled and all visitors will report to the site compound prior to entering the construction area. The site compound will be fenced to keep public out of working area and will be secured. Regular inspections of the hoarding will be undertaken to ensure that the safety of any vehicles or personal are not compromised.

6.5 Hours of Working

6.5.1 Core Working Hours

The timing of construction activities, core working hours and the rate of progress of construction works are a balance between efficiency of construction and minimising nuisance and significant defects. The core construction working hours for the Proposed Development will be:

- Monday to Friday: 07:00 to 18:00;
- Saturdays: 08:00 to 14:00;
- Sundays & Bank Holidays: No works activities shall take place on site.

6.5.2 Start-up and shutdown

The Contractor may require a period of up to one hour before and one hour after core working hours for start-up and shutdown activities in working areas. Activities permitted may include deliveries and unloading of materials, movement of staff to their place of work, maintenance and general preparation works. The use of plant machinery likely to cause disturbance, will not be permitted outside of the core working hours.

6.5.3 Additional working hours

It may be necessary in exceptional circumstances to undertake certain activities outside of the construction core working hours. Any construction outside of the construction core working hours will be agreed by the Contractor in advance with Limerick Twenty Thirty DAC , and Limerick City and County Council and scheduling of such works shall have regard to nearby sensitive receptors.

In the case of work required in an emergency or which if not completed would be unsafe or harmful to workers, the public or local environment, Limerick Twenty Thirty DAC and Limerick City and County Council will be informed as soon as reasonably practicable of the reasons and likely duration and timing (outside of the core working hours).

6.6 Security

Security will be the responsibility of the Contractor who will provide adequate security to prevent unauthorised entry to or from the site. Given the scale of demolition works onsite, it is noted that some materials generated during the works will be valuable (e.g. scrap metal). The Contractor will utilise the existing buildings for the storage of such materials (where suitable), subject to health, safety and risk assessments in order to prevent visibility of valuable materials and risk of potential trespass and theft.

The following measures will be used to prevent unauthorised access:

- Install CCTV and security systems where required;
- Consult with neighbouring properties and local crime prevention officers including Limerick City and County Council and An Garda Siochana on site security matters where required;
- Prevent access to restricted areas and neighbouring properties by securing equipment on site such as ladders and scaffolding; and,
- When there is no site activity, close and lock site gates and set appropriate site security provisions as required.

Refer to logistical and construction considerations which illustrate indicative locations for access, egress, site compounds, hoarding etc. for each stage (Stage 1-9) in Figures 2-3 to 2-11 in Section 2 of this document.

6.7 Hoarding and Fencing

A site boundary in the form of hoarding or fencing will be established around each of the working areas before any significant construction activities commences in that working area. The hoarding/fencing shall provide a secure boundary to what can be a dangerous environment for those that have not received the proper training and are unfamiliar with construction operations.

Site hoarding also performs am important function in relation to minimising nuisance and effects including:

- Noise emissions (by providing a buffer);
- Visual impact (by screening the working areas, plant and equipment); and,
- Dust minimisation (by providing a buffer).

Refer to logistical and construction considerations which illustrate indicative locations for access, egress, site compounds, hoarding etc. for each stage (Stage 1-9) in Figures 2-3 to 2-11 in Section 2 of this document.

6.8 Services and Utility

Welfare facilities (canteens, toilets etc.) will be available within the construction compound and this will remain in place for the construction of the proposed development. The offices and site amenities will initially need to have their own power supply (generator), water deliveries and foul water collection until connections are made to the mains networks.

Electrical connections will be made by suitably qualified personnel following consultation with the relevant authorities and will be cognisant of subsequent construction works. High voltage connections will be established for heavy duty equipment and site facilities, as required.

Site services shall be installed as part of the works. Working areas will be powered by mains supplies or diesel generators where an electrical supply is not available.

Site welfare facilities will be established to provide sanitary facilities for construction workers on site. The main contractor will ensure that sufficient facilities are available at all times to accommodate the number of employees on site. Foul water from the offices and welfare facilities on the site will have the foul water collected by a licensed waste sewerage contractor before connection to the sewer line can be made.

The Contractor will be responsible for undertaking their own surveys to establish full extent of underground services prior to the commencement of construction to support any surveys already undertaken as part of early design work and statutory consent applications.

6.9 Material Handling and Storage

Key materials will be ordered by specific order for the project, a 'Just in Time' delivery system will operate to minimise storage of materials, the quantities of which are unknown at this stage.

Aggregate materials such as sands and gravels will be stored in clearly marked receptacles in the compound area within the site. Liquid materials will be stored within temporary bunded areas, doubled skinned tanks or bunded containers (all bunds will conform to standard bunding specifications – BS EN 1992-3:2006) to prevent spillage.

Construction materials will be brought to site by road. Construction materials will be transported in clean vehicles. Lorries/trucks will be properly enclosed or covered during transportation of friable construction materials and spoil to prevent the escape of material along the public roadway.

The majority of construction waste materials generated will be soil from excavation works. Material will be removed from site regularly to ensure there is minimal need for stockpiling.

Refer to logistical and construction considerations which illustrate indicative locations for access, egress, site compounds, hoarding etc. for each stage (Stage 1-9) in Figures 2-3 to 2-11 in Section 2 of this document.

6.10 Lighting

Construction work will generally be confined to the Core Working Hours, which for most of the year occurs during daylight hours and therefore lighting will not be required for the majority of construction work. There will however be occasions where the provision of portable lighting will be required.

Following studies carried out regarding the potential ecological impact during the demolition and construction works, and the identification of foraging bats in the area, the following measures will apply in relation to site lighting during demolition and construction:

- Light fitting temperature used will be set to a maximum of 2700K to accommodate the local wildlife requirements. This colour temperature allows for better visual comfort for the wildlife.
- As per the permanent strategy, lighting columns have be kept at or below 4m and have a specified directional beam to reduce back spill to reduce unnecessary illumination on bat foraging areas. 3.5m columns will be used along the quarry wall as this is the main bat foraging area within the site.
- Low-level bollard light fittings will be preferred to temporary lighting columns, especially in the Quarry and along the northern boundary, to reduce high-level light within bat foraging areas.
- The column lighting will be cowled and angled downwards to minimise spillage to surrounding properties and other sensitive receptors.
- Lighting will be provided with a minimum luminosity sufficient for safety and security purposes. Where practicable, precautions will be taken to avoid shadows cast by the site hoarding on surrounding roads, footpaths and amenity areas.

- Motion sensor lighting and low energy consumption fittings will be installed to reduce usage and energy consumption.
- Lighting will be positioned to not cause destruction or confusion to pass motorists, river users or navigation lights for air or water traffic.
- The Contractor will need to maintain control and ensure all lights are turned off when not required.
- The security strategy will be developed to reduce potential requirement for evening lighting.

6.11 Reinstatement of Working Areas on Completion

The Contractor will reinstate all working areas as work proceeds during construction. All plant, equipment, materials, temporary infrastructure and vehicles will be removed at the earliest opportunity and the surface of the ground restored as near as practicable to its original condition.

On completion of construction works the Contractor will ensure that all waste and polluting material is removed from the site and is disposed of using appropriately authorised contractors. The Contractor shall, as appropriate, undertake visual and ecological rehabilitation of site compound and other areas no longer to be used by the Contractor. Following site clearance and rehabilitation the Employer or Employer's Representative will undertake a final inspection of the site. Any environmental issues identified during the final inspection will be raised with the Contractor. Mitigation measures and timeframes for completion will be agreed between the Contractor and the Employer's Representative in line with agreed procedures prior to final sign off.

6.12 Health and safety

The Contractor will ensure all relevant health and safety, fire safety and security requirements are in place prior to the commencement of construction and in accordance with the relevant legislation requirements in addition to the specifications of Limerick Twenty Thirty DAC.

Relevant Irish and EU health and safety legislation will be complied with at all times by all construction staff and personnel during construction. Further, the Contractors will also have to ensure that all aspects of their works comply with good industry practice and all necessary consents, licenses and authorisations have been put in place for the proposed development.

6.13 Visitor Management

Visitors will only be allowed to enter the main site compound via a designated pedestrian access points. A dedicated, secured footpath to the site office will be established at the gate for registration and obtaining PPE prior to entering the site. A log will be maintained by security to control access to the site. Visitors will be required to attend a site-specific induction to allow access to the compound and/or construction site unless being accompanied by an inducted member of the site team.

Visitors will then be taken by an inducted member of the construction team to the required area of the site.

6.14 Construction Traffic and Site Access

The proposed construction vehicle routes for the site will require a traffic management plan to be agreed upon with, Limerick Twenty Thirty DAC, Limerick City and County Council (LCCC) and TII prior to site workings beginning. A Construction Stage Traffic Plan will be prepared post-planning. Advanced warning signs will be placed at sufficient distances to taper off the entry and exit points. Pedestrian marshals will be used as and when required. The proposed

construction vehicle routes for the site are shown in Figures 2-3 to 2-11 in Section 2 of this document (noting the site access constraints associated with Stonepark Terrace).

The traffic plan will be such that it will minimise the interaction between the construction site and the local residential areas. Traffic management will be undertaken for the site works in accordance with the principles outlined below and shall comply at all times with the requirements of:

- Department of Transport Traffic Signs Manual 2010 – Chapter 8 Temporary Traffic Measures and Signs for Roadworks
- Department of Transport Guidance for the Control and Management of Traffic at Road Works (2010)
- Any additional requirements detailed in Design Manual for Urban Roads & Streets (DMURS)

It should be noted that construction traffic generated during the Construction Phase tends to be outside of peak hours. All construction activities will be agreed with LCCC's Roads Department prior to the commencement of the Construction Phase. In general, the impact of the construction period will be temporary in nature. HGV vehicle movements per hour during the busiest period of construction works are estimated at a peak of 20 HGVs per hour arriving and leaving, but the exact figure will be confirmed by the contractor. Refer to logistical and construction considerations which illustrate indicative locations for access, egress, site compounds, hoarding etc. for each stage (Stage 1-9) in Figures 2-3 to 2-11 in Section 2 of this document.

The following key requirements will also be adhered to by the contractor(s) during each stage:

- During Stage 1, the construction of the proposed 3no. bat houses will use the existing site access and egress. Refer to Figure 2-3
- During Stage 2, demolition and extraction of demolition waste will use existing site access and egress, with a new proposed access point along NCR (following demolition of 2no. houses to create accessible link into the site, referred to as Structures 14 in proposed demolition plan, Figure 2-12). Refer to Figure 2-4.
- During Stage 3:
  - Vehicular construction access to Fernhill will be from the west along NCR only during this period.
  - The resurfacing of the road at Stonetown Terrace and the junction with O'Callaghan Strand will be carefully managed to enable continued access to the properties along Stonetown Terrace and the Landsdowne Hall apartments.
  - Vehicular construction access to Stonetown Terrace will be from the north along OCS only whilst the NCR is being raised.
  - The raising of the required section of the NCR (Phase A) and the required section of OCS (Phase B) will not overlap. One phase of road infilling will be completed before the other begins to ensure continued vehicular access to St. Michaels Rowing Club at all times during the works, either via. OCS or NCR. Refer to Figure 2-5.
- During Stage 4 (Salesians development), vehicular construction access will be from NCR, with potential ramp to rear of the site. Potential vehicular construction access to upper level of site will be provided via. new Stage 2 access point along NCR. Refer to Figure 2-6.
- During Stage 5 (Stonetown Terrace development), vehicular construction access will be from NCR, with vehicular construction access to Salesians construction site occurring in parallel, at the same access / egress points along NCR. Construction access will be provided to the upper level of Stonetown Terrace, via the proposed temporary reservoir infilling works. A construction ramp to the north of the site will also be required to access the upper level of Stonetown Terrace. Refer to Figure 2-7.
- During Stage 6 (O'Callaghan Strand development), vehicular construction access / egress will be from NCR, via. Flaxmill Plaza. Refer to Figure 2-8.
- During Stage 7 (PBSA development), vehicular construction access / egress will be from NCR, via. temporary reservoir infill, and via. Flaxmill Plaza . Refer to Figure 2-9.

- During Stage 8 (Flaxmill Plaza development), vehicular construction access / egress will be from NCR, via. Flaxmill Plaza . Refer to Figure 2-10.
- During Stage 9 (Shipyard Mobility Hub development), vehicular construction access / egress will be from NCR, via 2no. (existing and proposed) points to the Shipyard Mobility Hub site. Refer to Figure 2-11.

6.14.1 Construction Traffic Management

Below is a list of the proposed traffic management measures to be adopted during the construction works.

- Warning signs / Advanced warning signs will be installed at appropriate locations in advance of the construction access locations;
- Construction and delivery vehicles will be instructed to use only the approved and agreed means of access; and movement of construction vehicles will be restricted to these designated routes;
- Appropriate vehicles will be used to minimise environmental impacts from transporting construction material, for example the use of dust covers on trucks carrying dust producing material;
- Speed limits of construction vehicles to be managed by appropriate signage, to promote low vehicular speeds within the site;
- Parking of site vehicles will be managed and will not be permitted on public road, unless proposed within a designated area that is subject to traffic management measures and agreed with LCCC;
- A road sweeper will be employed to clean the public roads adjacent to the site of any residual debris that may be deposited on the public roads leading away from the construction works;
- On site wheel washing will be undertaken for construction trucks and vehicles to remove any debris prior to leaving the site, to remove any potential debris on the local roads;
- All vehicles will be suitably serviced and maintained to avoid any leaks or spillage of oil, petrol or diesel. Spill kits will be available on site. All scheduled maintenance carried out off-site will not be carried out on the public highway; and
- Safe and secure pedestrian facilities are to be provided where construction works obscure any existing pedestrian footways. Alternative pedestrian facilities will be provided in these instances, supported by physical barriers to segregate traffic and pedestrian movements, and to be identified by appropriate signage.
- Pedestrian facilities will cater for vulnerable users including mobility impaired persons. The mitigation measures will therefore ensure that the presence of construction traffic will not lead to any significant environmental degradation or safety concerns in the vicinity of the proposed works. Furthermore, it is in the interests of the construction programme that deliveries, particularly concrete deliveries are not unduly hampered by traffic congestion, and as a result continuous review of haulage routes, delivery timings and access arrangements will be undertaken as construction progresses to ensure smooth operation.

6.14.2 Traffic Queuing

Material deliveries and collections from site will be planned, scheduled and staggered to avoid any unnecessary build-up of construction works related traffic. Deliveries to site shall be booked in advance using a delivery schedule, so as to prevent lorry congestion on the road networks surrounding the site. Alternative safe routeways shall be established for traffic and pedestrians where existing routeways have to be altered, removed or worked on during the project.

It has been robustly assumed that during construction of any one zone, there will be no more than 20 additional construction vehicular trips per hour (10 in / 10 out).

A preliminary Traffic management plan (TMP) has been developed for this planning application and is presented in Appendix B of this CEMP.

Please note that it will be the appointed contractor's responsibility to prepare a detailed construction traffic management plan which includes conditions imposed by Limerick City and County Council (LCCC).

7. Environmental Management and Controls

It should be noted that this section provides a summary of minimum requirements that will be developed by the Contractor when preparing the Detailed CEMP. The Contractor(s) will also take account of all supporting documentation issued with this planning application, including the full EIAR (including implementation of all relevant EIAR mitigation measures), as submitted, all relevant planning conditions attached to any grant of planning, and any changes /updates to relevant statutory requirements and best practice standards when preparing the Detailed CEMP.

The mitigation measures relevant to each environmental factor outlined in Chapters 6.0 to 20.0 of the EIAR, as well as the CEMP, will be implemented during the Construction Phase of the development and will collectively mitigate the risk of major accidents and disasters during this time.

The Construction Phase of the Proposed Development will be carried out in accordance with best practice site management measures relating to health and safety and emergency response. These measures are described in the CEMP.

Appropriate assessment of the chimney and quarry during construction and developmental phases are proposed to reduce the risk of major accident and / or disaster.

7.1 Waste & Utilities Management

Construction and demolition activities produce a broad range of wastes, which will be outlined in the CDRWMP.

This section identifies the potential types of waste which will arise from construction and provides guidance on the management, control and disposal of waste and utilities.

7.1.1 Risk Identification

Table 7-1 - Example of Waste Management Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all sensitive receptors within or adjacent to the construction site.	Mark up on a site plan with the location of all adjacent housing/commercial centres, schools and educational establishments, agricultural land and other potential receptors. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for high risk activities such as waste storage areas.
02	Identify the construction activities and sources that will result waste production and waste storage, segregation and disposal requirements.	These could include excavations, chemical and materials use, waste storage and bulking areas etc,
03	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage waste: Prevent - Do not generate the waste in the first place. Re-use – Can you re-use without treatment?

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	Recycle – Make sure that wastes are properly segregated to aid recycling. Disposal with energy recovery. Disposal without energy recovery.

7.1.2 Waste & Utilities Management

Contractors will develop, implement and maintain a Waste Management Plan that is in compliance with Limerick City and County Development Plan 2022-2028, and EPA (2021) *'Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects'*. The plan will include but not be restricted to the mitigation measures below (Table 7.2).

Table 7-2 – Waste & Utilities Management Mitigation Measures

Activity	Mitigation Measures
Waste EIAR Chapter (Demolition Phase Mitigation Measures)	Mitigation measures aim to minimize the impact on the environment of the proposed development through good material resource efficiency practices. All materials consumed and waste generated by will be managed in accordance with circular economy principles and the waste hierarchy, with prevention, reuse, recycling, and other recovery methods favored over disposal. A Pre-demolition Waste Audit (PDWA) was prepared in 2025 by AtkinsRéalis. This will be updated based on a survey of the structures on the site prior to commencement of demolition works, in accordance with the EU Construction & Demolition Waste Management Protocol including guidelines for pre-demolition and pre-renovation audits of construction works. Proposed mitigation measures to support optimal rates of reuse, recycling and recovery, and waste prevention, in accordance with circular economy principles and waste hierarchy principles include but are not limited to the following; • In accordance with circular economy principles waste generated will be considered for reuse on site or off -site where applicable. These include - Re-using blockwork on site or off site. If this is deemed not feasible , inert waste (concrete and blockwork) will be crushed and graded into recycled aggregate that can be re-used for back fill on site or elsewhere - Metal components will be considered for recycling to produce high-quality metal products - uPVC downpipes in good condition will be re-used off site - Timber components in acceptable condition, i.e. internal doors will be first considered for reuse either on or off site - A Resource Recovery Plan mapping out the materials streams proposed to be re-used and recycled along with the proposed outlets / end uses should be developed for material arisings in specific buildings or structures which have been identified as having medium / high reuse or recycling potential • Demolition material that is not suitable for reuse on site or which is surplus to requirements, will be stockpiled, tested and classified. Where feasible classification for reuse on other construction site(s) will be considered. Where the material is not suitable for reuse, it will be categorised in accordance with the EPA waste classification guidelines. • Demolition material that is deemed hazardous will be treated at an authorised facility either in Ireland or abroad. Export of hazardous waste from the proposed

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	development outside of the State is subject to the Waste Shipment Regulation, as described above. Export of hazardous waste from site outside the state will comply with the procedures set out in this legislation • All waste arising from the proposed development will be managed in line with the principles and objectives set out in the CDRWMP (ARUP 2025) ensuring compliance with best practice in prevention, segregation, recovery and disposal and align with regional waste infrastructure principles and policy . • Licensed local waste management facilities will be contracted to manage waste arising from demolition works As part of the asbestos management strategy, mitigation specific measures have been proposed by Phoenix Environmental Safety Ltd in their 2025 Asbestos Survey Report. These measures include, but are not limited to • Asbestos containing materials should be removed prior to the commencement of any works • A licensed asbestos removal contractor should be contracted for removal and disposal of asbestos waste; and • All asbestos removal works shall be undertaken in full compliance with the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006–2010 (S.I. No. 386 of 2006). The appointed contractor will adhere to all regulatory requirements and follow the recommendations outlined in the survey report, including the implementation of robust control measures to prevent exposure to asbestos material.
Waste EIAR Chapter (Construction Phase Mitigation Measures)	Effective waste management during the construction phase is essential to minimise environmental impacts, ensure regulatory compliance, and promote sustainable construction practices. The proposed development will generate various waste streams, including surplus materials, packaging, and general construction debris. To address these, a range of mitigation measures will be implemented to reduce, reuse, and responsibly dispose of waste throughout the construction period as proposed in the CDRWMP (ARUP 2025). These measures will be guided by relevant legislation, regional waste policies, and best practice standards, and will be integrated into the overall Construction Environmental Management Plan (CEMP). The following mitigation measures will be implemented during the construction phase: • All waste management procedures implemented onsite during the construction phase will be in accordance with the CDRWMP (AtkinsRéalis, 2025) submitted as part of this planning application. In advance of commencement onsite, the Contractor will prepare a project specific Detailed CRWMP which will further develop this plan, and will provide specific details in terms of proposed permitted haulage contractors, and permitted / licenced waste disposal / recovery facilities; • Scheduling and planning the delivery of materials will be carried out on an ‘as needed’ basis to limit any surplus materials; • Materials will be ordered in sufficient dimensions so as to optimise the use of these materials onsite, and will be carefully handled and stored so as to limit the potential for any damage; • Where feasible, sub-contractors will be responsible for the provision of any materials they require onsite in order to help reduce any surplus waste; • Waste materials generated will be segregated at the site compound, where it is practical to do so. Where the on-site segregation of certain waste types is not practical, offsite segregation will be carried out.

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	• There will be skips and receptacles provided to facilitate segregation at source and • All loaded trucks entering and exiting the Site will be appropriately secured and covered • Excessive temporary works will be avoided. Existing facilities will be reused as appropriate. • Paints, sealants and hazardous chemicals will be stored in secure, bunded locations and • The contractor will ensure that only licensed waste contractors are engaged for the transport of waste, and that all waste is directed to appropriately licensed waste facilities or treatment, recovery, or disposal, as required.
Waste EIAR Chapter Monitoring	During the construction phase, waste management activities will be monitored by the Contractor's appointed Resource Manager to ensure full compliance with the mitigation measures outlined in this report, as well as all relevant waste management legislation and local authority requirements. The Contractor will be responsible for maintaining comprehensive waste records throughout the duration of the construction phase. All waste volumes transported off-site will be tracked and monitored, with documentation retained on-site and made available for review as required
Utilities EIAR Chapter Mitigation Measures	The following mitigation measures will also be implemented during the demolition phase: • A project-specific Detailed Construction Environmental Management Plan (CEMP) will be prepared by the appointed Contractor prior to the commencement of demolition / construction works. This document will take account of all of the environmental considerations (including water, dust and noise nuisance control; soil/stockpile management; temporary groundwater management; appropriate site management of compound area; fuel, oil and chemical storage and use; and waste management) set out in the Outline CEMP submitted as part of this planning application; • All works will be carried out in strict accordance with the guidelines of the relevant stakeholders (specifically ESB, eir and Uisce Éireann), Health and Safety and any additional site specific requirements; • A copy of all available existing, and as built utility plans will be maintained onsite during the demolition phase, and; • The underground power lines and foul water mains within the existing Uisce Éireann services, located onsite will be clearly marked and all Site personnel will be made aware of the known location of any onsite underground or over ground services during the construction phase. The following mitigation measures will be implemented during the construction phase: • A project-specific Detailed Construction Environmental Management Plan (CEMP) will be prepared by the appointed Contractor prior to the commencement of construction works. This document will take account of all of the environmental considerations (including water (specifically stormwater run-off), dust and noise nuisance control; soil/stockpile management; temporary groundwater management; appropriate site management of compound area; fuel, oil and chemical storage and use; and waste management) set out in the Outline CEMP submitted as part of this planning application; • All newly installed utilities/services will be assessed, tested and certified as required prior to being fully commissioned;

- The construction compounds will include adequate temporary welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the compound will be removed off site to an appropriately licensed facility for disposal until a connection to the public foul drainage network has been established;
- Connections to the existing and proposed foul networks will be coordinated with the relevant utility provider. All works associated with the existing and proposed utilities for the proposed development will be carried out in strict accordance with the guidelines of the relevant stakeholders (specifically ESB, eir and Uisce Éireann), Health and Safety and any additional site specific requirements;
- A copy of all available existing, and as built utility plans will be maintained onsite during the construction of the proposed development. The underground power lines and foul water mains within the existing Uisce Éireann services, located onsite will be clearly marked and all Site personnel will be made aware of the known location of any onsite underground or over ground services during the construction phase and,
- Street Lighting will be implemented in accordance with the lighting report prepared by Arup (2025).
- Telecommunications infrastructure will be installed in accordance with the ISM (2025) report, submitted as part of this planning application.

Monitoring

The Contractor will be responsible for maintaining records and documentation for the full duration of the demolition and construction phase, including all relevant paperwork during commissioning of new services.

7.2 Air Quality & Climate

Construction activities have the potential to impact on air quality through the creation of dust and emissions to air from vehicles and plant, along with activities including infilling of soil, excavation of trenches, stockpiling and movement of materials may all contribute to generating ambient dust. This section identifies the potential causes of air pollution which may arise from construction and provides guidance on the management and control of emissions from site.

7.2.1 Risk Identification

Contractors shall undertake a qualitative risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.3.

Table 7-3 - Example of Air Quality Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all sensitive receptors within or adjacent to the construction site.	Mark a site plan with the location of all adjacent housing/commercial centres, schools and educational establishments, agricultural land and other potential receptors. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for high risk activities such as material storage areas, re-fuelling points and haul routes.

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	Risk Assessment	Example Procedure
02	Identify the construction activities and sources of pollution that will result in emissions to air.	These could include excavations, concrete use, transport, materials storage, traffic management etc.
03	Evaluate the risk of the construction activities resulting in emissions to air.	Assess the likelihood of an activity causing pollution. Assess the significance of the harm pollution would cause to a particular receptor. For example, the impact of dust in a populated urban area would be significantly greater than dust in an unpopulated rural area.
04	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: Remove the risk (different construction methods/activities). Control the source (modify construction methods, covers for storage areas). Protect the receptor (provide hard standing and covering for compounds/storage areas, filter, control, contain emissions, ensure appropriate environmental permits are in place). Put emergency procedures in place.

7.2.2 Air Quality & Climate Management Plan

Contractors will develop, implement and maintain an Air Quality Management Plan. The plan will include but not be restricted to the mitigation measures below (Table 7.4).

Table 7-4 - Air Quality & Climate Mitigation Measures

Activity	Mitigation Measures
Air Quality EIAR Chapter Mitigation Measures	The proposed development has been assessed as having a high risk of dust soiling and ecology impacts and a low risk of dust related human health impacts during the construction phase as a result of demolition, earthworks, construction and trackout activities (see Section 14.5.1 of Chapter 14 of the EIAR). Therefore, the following dust mitigation measures shall be implemented during the construction phase of the proposed development. These measures are appropriate for sites with a high risk of dust impacts and aim to ensure that no significant nuisance occurs at nearby sensitive receptors. These measures are also applicable to rock breaking activities that are required on site. The mitigation measures draw on best practice guidance from Ireland (DCC (2018), DLRCC (2022)), the UK (IAQM (2024),Defra (2012), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997). These measures will be incorporated into the Construction Environmental Management Plan (CEMP) prepared for the site. The measures are divided into different categories for different activities (see Table below). **Construction Dust Management Measures** Mitigation Type / Location / Description of Mitigation or Monitoring Measures Communications / Construction Compound/Site Boundary and throughout (as required) / • An Environmental Manager (EM) will be in assigned by the appointed contractor. The EM will be responsible for co-ordinating the day-to-day management of environmental impacts during the Construction Phase. The EM will be responsible

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			for performing inspections as deemed necessary and manage responses to environmental incidents. The name and contact details of the EM will be responsible for construction dust management and air quality issues will be displayed at the construction compound/site boundary hoarding, as well as head/regional office contact details. • A complaints register will be kept by the appointed contractor detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out. • Previously established community engagement with neighbouring business will continue for the remainder of the construction works.
	Construction Works Area Management	Construction Compound/Site Boundary and throughout (as required)	• Construction compounds will be laid out so that machinery and dust causing activities such as stockpiles are located away from receptors, as far as is practicable. • The appointed contractor will provide a site hoarding of 2.4m height along noise sensitive boundaries, at a minimum, at the Construction Compounds, which will assist in minimising the potential for dust impacts off-site. Construction works area fencing, barriers and scaffolding will be kept clean using wet methods. • Stockpiles will be covered to prevent wind whipping. • Any chutes and conveyors will be enclosed, and skips will be covered. • Drop heights from any conveyors, loading shovels, hoppers and other loading or handling equipment will be minimised. Fine water sprays will be used on such equipment where visible dust plumes are generated. • Cutting, grinding or sawing equipment will be fitted with or used in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. • Equipment will be readily available in the construction works areas site to clean any dry spillages. Spillages will be cleaned up as soon as reasonably practicable after the event using wet cleaning methods. • An adequate water supply for effective dust or particulate matter suppression and mitigation will be ensured, and non-potable water will be used where possible and appropriate.

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			• Construction works area runoff of water or mud will be managed as per the Surface Water Management Plan
	Operating Vehicles / Machinery	Construction Compound/Site Boundary and throughout (as required)	• Engines of all vehicles will be switched off engines when stationary - idling vehicles are not permitted. • The use of diesel- or petrol-powered generators will be avoided and mains electricity or battery powered equipment will be used where practicable. • A Construction Traffic Management Plan (CTMP) has been developed as part of the CEMP to minimise use of the Local Road Network. The CTMP will be adhered to be the appointed contractor. • The appointed contractor will prepare a Construction Stage Mobility Management Plan (CSMMP) to actively discourage personnel from using private vehicles to travel to the Proposed Scheme. The CSMMP will promote the use of public transport, cycling and walking by personnel. Private parking at the Construction Compounds will be limited. Vehicle-sharing will be encouraged, subject to public health guidelines, where travel by private vehicle is a necessity (e.g. for transporting heavy equipment).
	Demolition Activities	Areas where demolition is required	• During the demolition process, any cutting, grinding or sawing equipment will be fitted or used in conjunction with a suitable dust suppression technique such as water sprays or local extraction. • Prior to demolition blocks will be soft stripped inside buildings (retaining walls and windows in the rest of the building where possible, to provide a screen against dust), as necessary. • Drop heights from conveyors, loading shovels, hoppers and other loading equipment will be minimised, if necessary fine water sprays will be employed. • Explosive blasting will be avoided, and appropriate manual or mechanical alternatives will be used. • The control of dust emissions from crushing processes will be by the use of suppression and appropriate siting of equipment. Crushers will be fitted with water suppression system over the crusher aperture. Correct operation of high pressure, low volume water sprays over the feed area will provide adequate dust control of the crushing process.

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			• Deposits of dust on external parts of any crushing plant will be cleaned off at the end of each working day in order to minimise the potential for wind entrainment.
	Earthworks Activities	Areas where earthworks are required	• Materials with the potential to produce dust, such as excavated material, will be removed from the construction works area as soon as possible, unless being re-used within the construction works area. Management of extracted material is detailed in the Construction and Demolition Resource and Waste Management Plan. • Areas exposed by earthworks will be re-vegetated to stabilise surfaces as soon as practicable. Hessian, mulches or trackifiers will be used where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. Cover will only be removed in small areas during work and not all at once. • During dry and windy periods and when there is a likelihood of dust nuisance (defined under “Monitoring” measures below), water-based dust suppression (e.g. bowser) will operate to ensure soil moisture content is high enough to increase the stability of the soil and thus suppress dust.
	Construction Activities	Areas where construction is required	• Sand and other aggregates will be stored in bunded areas and will not be allowed to dry out, unless this is required for a particular process. • Smaller supplies of fine power materials bags will be sealed after use and stored appropriately to prevent dust escaping.
	Measures specific to trackout (transport of dust and dirt from the construction works areas onto the public road network)	Construction Compound/Site Boundary and throughout (as required)	• A speed restriction of 15 kph will be applied as an effective control measure for dust for on-site vehicles. • Vehicles transporting loose materials (e.g. spoil or sand) entering and leaving the Proposed Scheme works areas and construction compounds will be covered with tarpaulin to prevent escape of materials during transport. Before entrance onto public roads, trucks will be checked to ensure the tarpaulins are properly in place. • Where construction work area or construction compound conditions result in large amounts of mud building up on truck wheels, wheel washing will be carried out for trucks before they use the public road network. • Water-assisted dust sweeper(s) will be used at the access points to a construction compound and the immediate adjoining local road, to remove, as necessary, any material tracked out of the compound.

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			• Any on-site haul routes will be inspected for integrity and necessary repairs to the surface will be carried out as soon as reasonably practicable.
	Monitoring	Construction Compound/Site Boundary and throughout (as required)	• To determine if any short-term dust impacts will occur, a minimum of daily visual inspections for dust soiling of receptors (including roads, and surfaces such as street furniture, cars and windowsills) adjoining the construction works areas will be undertaken. Inspection results will be recorded in the site inspection log. Cleaning will be provided, if necessary, such as in the event of a dust complaint resulting from the Proposed Scheme construction works. • The potential for dust generation increases when rainfall is less than 0.2 mm/day and at wind speeds of greater than 10 m/s. To determine if these conditions are likely to affect the site, the weather forecast will be consulted daily, specifically the hourly forecasts for wind speeds as well as 12-hour rainfall radar showing anticipated amounts of precipitation in mm. • The frequency of site inspections by the EM responsible for dust management will be increased to a minimum of twice daily during the above conditions. The effectiveness of dust control methods will be monitored via visual inspections and work that would generate dust (e.g. moving materials from stockpiles or transferring loose dry materials from trucks) will be limited in so far as is practicable during these weather conditions.

Air Quality EIAR Chapter – Monitoring Requirements	The following monitoring measures are proposed to ensure the dust mitigation measures are working satisfactorily: • To determine if any short-term dust impacts will occur, a minimum of daily visual inspections for dust soiling of receptors (including roads, and surfaces such as street furniture, cars and windowsills) adjoining the construction works areas will be undertaken. Inspection results will be recorded in the site inspection log. Cleaning will be provided, if necessary, such as in the event of a dust complaint resulting from the Proposed Scheme construction works. • The potential for dust generation increases when rainfall is less than 0.2 mm/day and at wind speeds of greater than 10 m/s. To determine if these conditions are likely to affect the site, the weather forecast will be consulted daily, specifically the hourly forecasts for wind speeds as well as 12-hour rainfall radar showing anticipated amounts of precipitation in mm. • The frequency of site inspections by the EM responsible for dust management will be increased to a minimum of twice daily during the above conditions. The effectiveness of dust control methods will be monitored via visual inspections and work that would generate dust (e.g. moving materials from stockpiles or transferring loose dry materials from trucks) will be limited in so far as is practicable during these weather conditions. • Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors (as identified in Section 14.3.3, Chapter 14 of the EIAR) during the construction

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phase of the proposed development is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/m^2/day during the monitoring period of 30 days (+/- 2 days). Monitoring shall ensure that the dust mitigation measures are working satisfactorily as construction works progress.

Climate EIAR Chapter Mitigation Measures

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. In relation to mitigating construction phase GHG emissions, the Circular Economy Statement, Construction and Demolition Resource and Waste Management Plan (CDRWMP) and Chapter 18 Material Assets – Waste Management (submitted as part of the planning application) detail strategies for managing demolition and construction waste and minimising GHG emissions. These are summarised below.

During the construction phase the following best practice measures will be implemented on site to prevent significant GHG emissions and reduce impacts to climate:

- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods.
- Ensure all plant and machinery are well maintained and inspected regularly.
- Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site.
- The CDRWMP provides a detailed breakdown of the estimated resource and waste arisings from the proposed deconstruction and demolition works, and a strategy for the management of these streams (which will minimise demolition and construction waste sent of landfill). Recycling of materials will be promoted to and reduce the environmental footprint of the site.
- Sourcing materials locally will be prioritised. This will help to reduce transport related CO_2 emissions and helps support local suppliers, further promoting economic sustainability.
- Material choices and quantities will be reviewed during detailed design, to identify and implement any lower embodied carbon options, where feasible. For example, a 30% minimum clinker replacement in cement may be utilised in line with the requirements for public bodies.
- The Salesians Individual town house units will be built of timber frame. Timber is not as carbon intensive as other materials and is a preferable structural material to traditional concrete blocks. Both the Climate Change Advisory Council (CCAC) and National Climate Action Plan advise for the use of timber framed buildings as a construction method. Timber frames have the additional benefit of having absorbed carbon from the atmosphere during their growth and providing a long-term carbon sink during their lifetime in the building.

In terms of impact on the proposed development due to climate change, during construction the Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will be required to mitigate against the effects of fog, lighting and hail through site risk assessments and method statements.

Climate EIAR Chapter Monitoring Requirements	Monitoring and reporting of the embodied carbon in the construction phase will be conducted. The aim of monitoring will be to seek further ways to minimise climate impacts. Monitoring will include contractual obligations, in line with the most recent Climate Action Plan and sectoral targets, for the successful tenderer to ensure that the proposed development stays in line with updated aims. Commitments to monitor GHG emissions during the construction phase will also be secured through the final Construction Environmental Management Plan (CEMP). Monitoring will include embodied carbon of construction materials, water usage, power and fuel usage, and waste generation (including reuse and recycling rates). Where monitoring shows that the proposed development is not meeting its targets, further mitigation will be put in place. Monitoring should also include reviewing potential for extreme weather events which may cause damage during construction. Contractors' Environmental Management System (EMS) will include measures to address risks during such events i.e. flooding.

7.3 Construction Noise and Vibration

Construction activities can produce a significant amount of noise and vibration with the potential to impact adversely on a range of receptors. This section identifies the potential causes of noise and vibration which may arise from construction and provides guidance on management and control.

7.3.1 Risk Identification

An example risk assessment is shown in Table 7.5.

Table 7-5 - Example of Noise and Vibration Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all sensitive receptors within or adjacent to the construction site.	Mark up on a site plan the location of all nursing homes, housing/commercial centres, schools and educational establishments, agricultural land and other potential receptors. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for noisy activities or activities likely to cause vibration such as generators, compressors, haul routes and drilling.
03	Identify the construction activities that may affect the receptors identified.	These could include excavations, dewatering, traffic movements, warning sirens, use of machinery and plant etc.
04	Evaluate the risk of the construction activities impact on receptors.	Assess the likelihood of an activity causing noise pollution. Assess the significance of the noise impact on particular receptors. For example, the impact of noise from construction activities adjacent to housing would be significantly greater than the impact of noise in an uninhabited rural area.
05	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods, substitution of materials for less noisy options). 2. Control the source (modify construction methods, provide adequate baffling). 3. Protect the receptor using noise barriers, screening etc

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Risk Assessment	Example Procedure
	4. Put emergency procedures in place.

7.3.2 Noise and Vibration Management Plan

Contractors will develop, implement and maintain a Noise and Vibration Management Plan.

Table 7-6 - Noise and Vibration Mitigation Measures

Activity	Mitigation Measures
Chapter 13, EIAR	Best practice noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid significant impacts at the nearest sensitive buildings. The best practice measures set out in BS 5228-1 and BS 5228-2 (BSI 2019) will be complied with. The above documents include guidance on several aspects of construction site mitigation measures, which include: • Selection of quiet plant; • Noise control at source; • Screening; • Liaison with the public, and; • Monitoring. Noise control measures that will be considered include the selection of quiet plant, use of enclosures and screens around noise sources and site boundaries, limiting the hours of work and noise and vibration monitoring. Selection of Quiet Plant The potential for any item of plant to result in exceedance of construction noise thresholds will be assessed prior to the item being brought onto the site. The least noisy item of plant will be selected wherever practicable (e.g. plant items with sound attenuation incorporated). Should a particular item of plant already on the site be found to exceed the construction noise thresholds, the first action will be to identify whether the item can be replaced with a quieter alternative. The appointed contractor will evaluate the choice of excavation, breaking, piling or other working method taking into account various ground conditions and site constraints. Where alternative lower noise generating equipment are available that will provide equivalent structural / excavation / breaking results, these will be selected to control noise within the relevant thresholds, where it is practicable to do so. The decision regarding the type of excavation technique or other construction activity to be used on a site will normally be governed by a range of engineering and environmental constraints. In these instances, it may not be possible for technical reasons to replace an item of plant with a quieter alternative. In some instances, the adoption of a quieter method may prolong the overall process, with the net result being that the overall disturbance to the community will not necessarily be reduced. Noise Control at Source The following measures will be implemented, if required, by the appointed contractor to control noise at source. These measures relate to specific site considerations: • For mobile plant items such as dump trucks, cranes, excavators and loaders, the installation of an acoustic exhaust, utilising an acoustic canopy to replace the normal engine

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Activity	Mitigation Measures
	cover and / or maintaining enclosure panels closed during operation can reduce noise levels by up to 10 dB; • For percussive tools such as pneumatic breakers and tools a number of noise control measures include fitting a muffler or sound reducing equipment to the breaker 'tool' and ensuring any leaks in the air lines are sealed; • Use of rotary drills and 'bursters' activated by hydraulic or electrical power to facilitate quieter methods for excavation of hard material. • Removal of larger sections of demolished buildings by lifting out and breaking at areas away from noise sensitive boundaries; • For piling plant, noise reduction can be achieved by enclosing the driving system in an acoustic shroud. For steady continuous noise, such as that generated by diesel engines, it is possible to reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover; • Mobile and stationary plant will be switched off or throttled back to a minimum when not in use (engines, motors and generators). Lorries, trucks and concrete vehicles will not be permitted to queue outside site compounds with engines left idling; • Where compressors, generators and pumps are located in proximity to NSLs and have the potential to exceed the construction noise thresholds, these will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation; • Resonance effects in panel work or cover plates can be reduced through stiffening or the application of damping compounds, while other noise nuisance can be controlled by fixing resilient materials in between the surfaces in contact; • For all materials handling, ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials; • All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures; • Where practicable, equipment powered by mains electricity or battery shall be used in preference to equipment powered by internal combustion engines or locally generated electricity; and • Plan the site layout to ensure that reversing is kept to a minimum. Screening Screening is an effective method of reducing construction noise levels at a receiver location and can be used successfully as an additional measure to other forms of noise control. The effectiveness of a noise screen will depend on the height and length of the screen, its mass, and its position relative to both the source and receiver. BS 5228–1 states that on level sites the screen should be placed as close as possible to either the source or the receiver. The construction of the barrier will be such that there are no gaps or openings at joints in the screen material. The site will incorporate a solid site hoarding line of minimum 2.4m in height around its perimeter which will be maintained in situ for the duration of the construction phase. Where necessary, this hoarding height will be increased in height to assist in reducing noise levels at adjacent noise sensitive buildings. Erection of localised demountable enclosures or screens will be used around breakers or drill bits when in operation in proximity to NSLs with the potential to exceed the construction noise thresholds. Annex B of BS 5228–1 (Figures B1, B2 and B3) provide typical details for temporary and mobile acoustic screens, sheds and enclosures that can be constructed on-site from standard materials. A well placed and designed mobile temporary screen around a breaker or excavation can effectively reduce noise emissions by 10 dB(A).

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Activity	Mitigation Measures
	In addition, careful planning of the construction site layout will also be considered. The placement of site buildings such as offices and stores between the site and sensitive locations can provide a good level of noise screening. Hours of Work Standard construction working hours are between 07:00 to 18:00 hrs Monday to Friday inclusive and between 08:00 and 14:00 hrs on Saturdays. However, it is possible that the contractor may wish to carry out certain operations outside these hours i.e. Sunday or evening hours during long summer days etc. Such occurrences will be kept to a minimum and take place over a short timeframe and as such are unlikely to cause excessive disturbance. Deviation from these times will only take places when written approval is granted by LCCC in exceptional circumstances. Liaison with the Public For the proposed development, the duration of demolition, piling and excavation and any required ground breaking will be short in relation to the length of construction work as a whole, and the amount of time spent working near to sensitive areas can represent only a part of the overall period. The contractor will establish clear forms of communication between the contractor and adjacent NSLs to the works, so that residents or building occupants are aware of the likely duration of activities likely to generate noise or vibration that are potentially significant. A community Liaison Plan will be developed by the developer in liaison with the local residents and the adjacent Salesians Primary school and a single point of contact nominated to engage with LCC. Monitoring During the construction phase, the contractor will carry out noise and vibration monitoring at representative sensitive locations to evaluate and inform the requirement and / or implementation of noise and vibration management measures. Noise and vibration monitoring systems will be installed at the site prior to any works taking place and will be maintained in continuous operation throughout the construction period. The system will be configured to trigger alerts in the event that the set limit values relating to the control of significant noise effects are approaching, as per Chapter 13 of the EIAR and for the avoidance of any cosmetic damage to buildings as per Table 13.4, Chapter 13 of the EIAR. As a minimum, a vibration monitor will be installed be installed adjacent to the Flaxmill complex and brick chimney, adjacent to these protected structures. Vibration Control On review of the likely vibration levels associated with construction activities, construction activities associated with the proposed development will not give rise to vibration that is either significantly intrusive or that would give rise to structural or cosmetic damage to buildings. Notwithstanding, is recommended that a review of any foundations relating to protected structures is undertaken prior to any significant excavations commence to ensure all direct connections between these structures and the proposed construction areas are severed to avoid any bridging and vibration transmission. Vibration from construction activities will be limited to the values set out in Table 13.4, Chapter 13 of the EIAR to avoid any form of potential cosmetic damage to buildings and structures.

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Activity	Mitigation Measures
	In the case of vibration levels giving rise to human response, impacts are significantly reduced once the source of vibration is known and good communications are in place. As such, in order to minimise any potential impacts to adjacent building occupants, the following measures shall be implemented during the Construction Phase. • A clear communication programme will be established by contractor to inform adjacent building occupants in advance of any potential intrusive works which may give rise to vibration levels likely to result in significant effects as per Table 13.5, Chapter 13 of the EIAR. The nature and duration of the works will be clearly set out in all communication circulars as necessary; and • Appropriate vibration isolation shall be applied to plant (such as resilient mounts to pumps and generators), where required and where feasible. **Monitoring** During the construction phase the contractor will carry out noise monitoring at representative NSLs to evaluate and inform the requirement and / or implementation of noise and or vibration management measures. Monitoring will be undertaken in line with 13.7.1.6, Chapter 13 of the EIAR. During the construction phase, noise monitoring equipment will be installed along the site boundaries in closest proximity to the surrounding NLS. Noise monitoring will be conducted in accordance with the International Standard ISO 1996: Acoustics – Description, measurement and assessment of environmental noise Part 1 (2016) and Part 2 (2017). The result of the monitoring programme will be used to determined compliance with the construction noise thresholds and to inform the requirement and / or implementation of noise and or vibration management measures. It is recommended that noise control audits are conducted at regular intervals throughout the construction programme in conjunction with noise monitoring. The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions and to identify opportunities for improvement, where required. Vibration monitoring will be installed at the base of the two on-site protected structures during excavation works. It is also recommended to install vibration monitoring equipment along the western site boundary in proximity to the Salesians Primary School.

7.4 Prevention of Soil and Water Pollution

Construction activities have the potential to cause pollution to groundwater and/or soils and surface water. This section identifies the potential causes of pollution which may arise from construction and provides guidance on the management and control.

7.4.1 Risk Identification

Contractors shall undertake a qualitative pollution risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is presented in Table 7.7.

Table 7-7 - Example of Soil and Water Pollution Risk Assessment

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	Risk Assessment	Example Procedure
01	Identify the location of all sensitive receptors within or adjacent to the construction site.	Mark up on a site plan with the location of all water courses, surface water features, boreholes, field drains, ecologically sensitive areas, surface and foul drainage systems and other potential receptors. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for high risk activities such as chemical/fuel storage areas, refuelling points, haul routes and wash out areas.
02	Identify sensitive receptors off site or downstream of the construction project that could potentially be affected by the works. For example water courses, ecologically sensitive areas.	Undertake baseline assessment of water, ground and surface water quality prior to construction. Establish monitoring regime during construction as appropriate. Refer to Planning Environmental Considerations Report.
03	Identify the construction activities and sources of pollution that may affect the water receptors identified.	These could include excavations, dewatering, water course crossings, as well as general sources of pollution such as surface water runoff, chemical/fuel storage, wash down areas, fuelling areas and concrete use.
04	Evaluate the risk of the construction activities polluting the identified water receptors.	Assess the likelihood of an activity causing pollution. Assess the significance of the harm pollution would cause to a particular water receptor. For example the impact of polluting a water receptor used for potable water would be significantly greater than the pollution of a foul water system.
05	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods/activities). 2. Control the source (change location, modify construction methods, provide adequate bunding for fuel and other storage areas, install measures such as silt fences or ditches to control runoff). 3. Protect the receptor (provide hard standing for compounds/storage areas, filter, control, contain discharges, ensure appropriate environmental permits are in place). 4. Put emergency procedures in place.

7.4.2 Pollution Prevention Management Plan

Contractors will develop, implement and maintain a Pollution Prevention Management Plan. The Plan will include but not be restricted to the mitigation measures below (Table 7.8).

Table 7-8 - Surface Water Mitigation Measures

Activity	Mitigation Measures
General	Ensure that appropriate permits/consents are in place prior to commencing any dewatering activities (if required). Sample collections as required, such as for wastewaters and discharges to the ground and surface waters to facilitate characterisation of contaminants in the event of a leakage or spill that may impact soil or groundwater quality.

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Activity	Mitigation Measures
	Appropriate sampling of discharges, if required, to include key parameters to ensure discharges meet appropriate criteria. Carry out regular inspections/audits of hazardous materials usage, handling and storage areas and regular/thorough maintenance of vehicles and hydraulic systems and sanitary/welfare facilities. Avoid impacting adjacent sites by ensuring all contractors activities, equipment and waste storage is confined to the approved site boundary. Where waste waters do not meet approved quality criteria they will be contained and disposed of via an approved disposal route. Ensure regular and controlled disposal of waste using appropriately authorised contractors. Weekly checks will be carried out to ensure surface water drains are not blocked by silt, or other items, and that all storage is located at least 10m from surface water receptors; A regular log of inspections will be maintained, and any significant blockage or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not reoccur.
Protection of Water - Water Quality	There will be no '*in water'* works carried out within the designated River Shannon SAC during the demolition and/ or construction works, under any conditions. With the exception of the existing discharge pipe to the River Shannon SAC (via. the onsite Reservoir), there will be no discharge of water directly to the River Shannon SAC during the demolition and/ or construction works. A surface water management plan will be prepared for approval by LCCC prior to construction commencing. Excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours and sampling. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor; Implementation of an appropriate earthworks handling protocol during construction. No stockpiling will be permitted within a 20 m buffer zones around the reservoir or the River Shannon SAC; Silt reduction measures on site will include a combination of silt fencing and settlement measures; A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate; Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination; Movement of material will be minimised to reduce the degradation of soil structure and generation of dust; Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations; Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site; The contractor will comply with all permit conditions, environmental regulations and legislation with regards to the safe storage and handling of hazardous substances.
Cement/Concrete Works	Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil;

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Activity	Mitigation Measures
	No wash-down or wash-out of ready-mix concrete vehicles will be carried out at the site within any buffer zones. Wash-outs will only be allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from site by road tanker or discharged to foul sewer subject to agreement with UE / LCCC;
Hydrocarbons and other Construction Chemicals	The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of spill control procedures and equipment. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with; Provision of spill kit facilities across the Site; Where mobile fuel bowsers are used, the following measures will be taken: ▪ Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use; ▪ The pump or valve will be fitted with a lock and will be secured when not in use; ▪ All bowsers to carry a spill kit and operatives will have spill response training; and, ▪ Portable generators or similar fuel containing equipment will be placed on suitable drip trays. Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound which will be away from surface water gulleys or drains minimum 20 m buffer zone. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area. Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal. Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage. All drums to be quality approved and manufactured to a recognised standard. If drums are to be moved around the Site, they will be secured and on spill pallets; and drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

7.5 Water Resources (and Energy Use)

7.5.1 Risk Identification

Contractors shall undertake a qualitative water resources and energy use assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.9.

Table 7-9 - Example of Water Resources and Energy Use Risk Assessment

	Risk Assessment	Example Procedure
01	Identify all items and activities on the construction site with high water and/or energy demands.	Mark up on a site plan with the location of all items and activities with high water and/or energy demands.

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	Risk Assessment	Example Procedure
		This will help the planning of the overall layout of the construction site and enable the identification of efficiency opportunities.
02	Implement mitigation to eliminate or reduce water and/or energy demand.	Use the following hierarchy promote water and energy efficiency: Remove the requirement (different construction methods, substitution of materials for that require less water and/or energy). Control the use (modify construction methods, monitoring, target setting, procedures, switch off, training).

7.5.2 Water (and Energy Use) Management Plan

In order address the potential risk of any potential water quality impacts to the onsite Reservoir, and connected surface waterbodies (Lower River Shannon SAC, the River Shannon & River Fergus Estuaries SPA, Fergus Estuary And Inner Shannon, North Shore pNHA, and Westfield Wetlands), the Contractor(s) will develop, implement and maintain a Water Management Plan, which will include but not be restricted to the mitigation measures below (Table 7.10).

The Water Management Plan will include but not be restricted to the specific mitigation measures as detailed in the following sections of the CEMP: 2.6.7. Flood Risk; 7.1.2 Waste management; 7.4.2. Pollution Prevention Management Plan; 7.5.2. Water Resources (and Energy Use) Management Plan; 7.11.2 Contaminated Land Control Management Plan; and 7.12.2 Soil Erosion and Sedimentation Management Plan, as well as any relevant planning conditions, and any relevant future additional requirements via. changes in legislation or best practice guidance.

The Contractor(s) will provide a copy of the Water Management Plan to LCCC for review and comment in advance of commencement of any demolition or construction works onsite.

Table 7.10 –Water Resources and Energy Use Mitigation Measures

Activity	Mitigation Measures
General	Reduce water consumption through recovery strategies. Conserve water by maximising opportunities for infiltration runoff. Conserve water by matching water quality with its intended use and using water saving devices. Contractors will carry out regular inspections/audits of water resource and energy use. In the event of excessive water use/leaking pipes etc, immediate action will be taken to repair equipment or reassess water needs. Water arising from vehicle and equipment wash-down will be treated to remove silt and reused where possible. For example, wetting down roads and stockpiles. Turn out the lights at night and only light areas as required for safety and comfort (employment of lighting sensors). Ensure that the light source is the minimum intensity for the required purpose. Ensure that fittings are chosen that direct light accurately to where it is needed. Vehicles will not be allowed to idle for long periods. Machinery and generators shall be regularly maintained and operated in an efficient manner. The use of solar powered instruments/machines will be considered. Temporary site offices will be well insulated to retain heat or cool, utilise energy efficient bulbs and energy efficient cooling systems. Choose locally sourced building materials and products thereby reducing the environmental impacts from transportation.

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Activity	Mitigation Measures
	Choose rapidly renewable materials over finite raw and long cycle renewable materials. Use timber and wood including that used in construction, from a certified sustainable source, or be postconsumer re-used timber, or similar.
Protection of Water - Water Quality (Source: EIAR, 2025)	During demolition, excavation and construction works, the following mitigation measures will need to be in place to prevent runoff of soil, sediment, pollutants and hazardous materials, as well as contamination of groundwater, to identified key water receptors. The contractor will be responsible for ensuring these measures are fully implemented. Mitigation measures stated in Sections 2.6, 7.1, 7.4, 7.6, 7.11, and 7.12 of this CEMP, and Chapter 10- Land Soils and Geology of the EIAR are also applicable to the protection of surface water and groundwater during the demolition & construction phase. The CEMP (AtkinsRealis, 2025) submitted as part of this planning application will be fully complied with by the Contractor(s) for the full duration of the demolition & construction phase and will be added to as required by the Contractor(s) (to take account of relevant planning conditions, any specific stakeholder requirements etc). In advance of commencement of works, a detailed construction management plan will be set out by the Contractor(s) within their Construction and Environmental Management Plan (CEMP). This will include management of extracted material and monitoring of rainfall conditions when planning construction activities to minimise runoff. A Stockpile Management Plan will be developed by the Contractor(s), and provided to the Client and Employers Representative, in advance of commencement of construction. Stockpiled materials will not be located immediately adjacent to the onsite Reservoir, onsite drains, or any temporarily exposed groundwater (in the event that groundwater is encountered). Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination. Movement of material will be minimised to reduce the degradation of soil structure and generation of dust. The onsite reservoir is a key sensitive receptor, given that it is a open body of water (within excavated bedrock), with a proven discharge pipe which outfalls directly to the Limerick Dock waterbody, Lower River Shannon SAC, and River Shannon & River Fergus Estuaries SPA. There is also a potential direct connection from the onsite reservoir to the Westfields Wetlands (via. reported historic abstraction from Wetlands Spring). Furthermore, based on the results of the tracer testing, there is potential for a second connection pipe between the onsite reservoir and the Limerick Dock waterbody, Lower River Shannon SAC, and River Shannon & River Fergus Estuaries SPA. In order address the potential risk of any potential water quality impacts to the onsite Reservoir, and connected surface waterbodies (Lower River Shannon SAC, the River Shannon & River Fergus Estuaries SPA, Fergus Estuary And Inner Shannon, North Shore pNHA, and Westfield Wetlands), the following mitigation measures will be implemented during the demolition and/ or construction works: ▪ Temporary silt fencing will be erected around the onsite Reservoir prior to the commencement of any onsite works. ▪ A buffer zone of 20m will be implemented around the onsite Reservoir, where no onsite storage or use of fuels / chemicals or stockpiled materials (including soils, C&D waste) will be permitted. This will be strictly monitored and enforced by the Contractor and Employers Representative.

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Activity	Mitigation Measures
	▪ To facilitate the removal of the concrete piers from the reservoir, surface drainage will be temporarily redirected from the reservoir to allow it to be drained. During the draining of the reservoir, the existing water will be temporarily pumped and will discharge via. the existing discharge outfall (as per the existing baseline scenario). All surface water outlets from Salesians, Stonetown Terrace and the Quarry will be connected directly to the discharge pipe from the reservoir to the River Shannon. ▪ When the reservoir is empty, a comprehensive survey will be conducted of any exposed pipework / infrastructure which may indicate the presence of the reported historic connection to the Westfield Wetlands Spring, or any additional discharge points to the River Shannon. If viable historic pipeline connections to the Westfield Wetlands / River Shannon are uncovered, these will be further evaluated to understand the extent of the historic pipework, and if deemed suitable following assessment, such pipework will be decommissioned and sealed. ▪ During the temporary infilling of the onsite Reservoir to facilitate the construction works, clean imported material will be used which have been double washed at source. This will be confirmed by the supplier and regular visual checks will be carried out during the works to verify this. ▪ Temporary flood protection measures will be implemented within the extent of the flood zone at the Shipyard site – these measures are detailed within the CEMP (AtkinsRealis, 2025) submitted as part of this planning application. The Contractor(s) will adhere to all temporary flood management measures as per the CEMP, for the full duration of the demolition and construction works. ▪ Storage areas (for diesel, oil, paint, thinners and other chemicals stored on site) will be located at all times away from the identified flood zone at the Shipyard site. There will be no in-water works permitted at the River Shannon (Limerick Dock waterbody, Lower River Shannon SAC, and River Shannon & River Fergus Estuaries SPA). During detailed design, a shut-off valve at the nearest manhole to the existing discharge outfall (from the reservoir to the River Shannon) will be incorporated into the drainage regime for the proposed development. This manual shut-off valve will be easily accessible if required, and will allow the existing discharge outfall pipe to be shut off, preventing direct discharge from the reservoir to the River Shannon in the (highly unlikely) event of an onsite emergency / fire, and risk of contaminated fuel / firewater entering the reservoir. These proposed drainage works will be completed as soon as feasible within the construction programme. Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations and mobilisation of contaminants. Excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours and sampling. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor. With the exception of the existing discharge pipe to the River Shannon SAC (via. the onsite Reservoir), there will be no discharge of water permitted directly to the River Shannon SAC, under any circumstances, during the demolition and/ or construction works. As part of the asbestos management strategy, mitigation specific measures as proposed by Phoenix Environmental Safety Ltd in their 2025 Asbestos Survey Report will be implemented. Asbestos containing materials should be removed prior to the commencement of any works. A licensed asbestos removal contractor should be contracted for removal and disposal of asbestos waste and all asbestos removal works shall be undertaken in full compliance with the Safety,

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Activity	Mitigation Measures
	Health and Welfare at Work (Exposure to Asbestos) Regulations 2006–2010 (S.I. No. 386 of 2006). The appointed contractor will adhere to all regulatory requirements and follow the recommendations outlined in the survey report, including the implementation of robust control measures to prevent exposure to asbestos material. Demolition material that is deemed hazardous will be treated at an authorised facility either in Ireland or abroad. All waste and material management and disposal / reused will be carried out in strict accordance with the C&DRWMP (Arup, 2025), submitted as part of this application. Contaminated soil at the following locations requires excavation, and will not be reused onsite. Based on the results of environmental testing, this material is unsuitable for the proposed site end use: ▪ Stonetown Terrace Building – all onsite C&D material; and made ground / subsoils to a depth of 1.5m BGL (existing ground level) or to the maximum excavation / piling depth of foundations (if greater). ▪ O'Callaghan Strand Building – all made ground / subsoils to a depth of 1.0m BGL (existing ground level) or to the maximum depth of excavation for foundations (if greater). ▪ Flax Mill site (PBSA / Quarry Building) - all made ground / subsoils to a depth of 3.0m BGL (existing ground level) or to the maximum depth of excavation for foundations (if greater). ▪ Main Shipyard site – all made ground / subsoils excavated to facilitate the installation of proposed utilities (including drainage), tanks and any proposed underground structures in this area. This material will be classified, managed, transported and disposed of offsite in accordance with the requirements of the Waste Management Act 1996, as amended, the Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste and any relevant subsequent waste management legislation. The above identified contaminated soil will be excavated and removed for offsite disposal during the enabling works phase, and in advance of the excavation of foundations. This is to mitigate the potential risk of groundwater impacts via. existing onsite contamination. Temporary onsite groundwater and gas monitoring wells shall be either suitably protected for the duration of the works and / or appropriately decommissioned in accordance with best practice guidance (SEPA guidance document "Good Practice for Decommissioning Redundant Boreholes and Wells" For the prevention of contamination of receptors by mobilised soil and sediment, the following measures will be taken: ▫ The creation of steep slopes will be avoided to prevent runoff from precipitation. ▫ Heavy discharges of water onto the soil will be avoided. ▫ Prevention of over-watering of loose areas for dust suppression. ▫ Site traffic will be restricted to designated routes. ▫ Regular leak monitoring and maintenance of dewatering pipes will be undertaken ▫ The recommended maximum vehicle weightings will be maintained to avoid destabilization and subsequent erosion of soil surface

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Activity	Mitigation Measures
	▫ Disturbed land or stockpiles will be progressively rehabilitated by establishing temporary or permanent vegetation supported by irrigation. ▫ Excess work areas will be covered with geotextile type liners. ▫ Collection systems will be provided under machinery or equipment during wash down to prevent erosion from runoff. ▫ Flow attenuation - mechanisms to control run off of precipitation such as temporary structures to slow running water to facilitate pollutant removal and infiltration and reduce runoff will be installed. ▫ Sediment traps will be placed on all drainage lines such as geotextile lining. ▫ Collection channels capable of collecting all runoff water during storms if it contains fine clay particles will be constructed. ▫ A contained control facility will be used for concrete washout. ▫ Runoff water from reservoir will be treated and discharged at a controlled flow rate through storm water discharge network (subject to agreement with LCCC). ▫ Collection channels and reservoir will be inspected and cleaned on a regular basis to prevent sediment build up. ▫ The site will be stabilised as soon as possible after construction. For the prevention of contamination of receptors by fuel or chemicals used on site, the following measures will be taken: ▫ Regular inspections/audits of hazardous materials usage, handling and storage areas and regular/thorough maintenance of vehicles and hydraulic systems and inspections of sanitary facilities and disposal will be carried out by contractors. ▫ All contractors handling hazardous materials will keep appropriate spill clean-up material adjacent to storage and maintenance areas. ▫ The amount of diesel, oil, paint, thinners and other chemicals stored on site that pose potential spillage environmental hazards will be minimised. materials that minimise environmental impact such as lead-free paints, asbestos free materials etc. will be used. ▫ Collection systems will be provided/bunded if necessary, under machinery or equipment that may leak hydrocarbons/hazardous substances. ▫ The contractor shall be responsible for training all staff in the procedures for handling spills and shall provide all staff with appropriate personal protective equipment. ▫ The contractor shall provide all staff with appropriate personal protective equipment. ▫ Impacting adjacent sites will be avoided by ensuring all contractors activities, equipment and waste storage is confined to the allocated site boundary. ▫ Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound which will be away from the onsite Reservoir, surface water gulleys or drains with a minimum 20 m buffer zone. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. ▫ Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area. ▫ Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a

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Activity	Mitigation Measures
	volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal. ▫ Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage. All drums to be quality approved and manufactured to a recognised standard. If drums are to be moved around the Site, they will be secured and on spill pallets; and drums will be loaded and unloaded by competent and trained personnel using appropriate equipment. In the event of a spill, the following procedure will be followed: ▫ Identify and stop the source of the spill and alert people working in the vicinity; ▫ Notify the Environmental Manager immediately giving information on the location, type and extent of the spill so that they can take appropriate action; ▫ If applicable, eliminate any sources of ignition in the immediate vicinity of the incident; ▫ Contain the spill using spill control materials, track mats or other materials as required. Do not spread or flush away the spill; ▫ If possible, cover or bund off any vulnerable areas where appropriate such as the onsite Reservoir, drains, watercourses and/or sensitive habitats; ▫ If possible, clean up as much as possible using the spill control materials; ▫ Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with appropriate permits so that further contamination is limited; ▫ The Environmental Manager shall inspect the site as soon as practicable and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring; and ▫ The Environmental Manager will notify the appropriate stakeholders such as Limerick City & County Council, National Parks and Wildlife Service and/or the EPA. Flooding From a flooding perspective, the proposed construction compound at the Shipyard site, lies within the 0.5% AEP area for tidal flooding. Based on the extent of predicted tidal flooding, the other construction compound at the Flaxmill site is located outside of the predicted flood zone. **All fuels, chemicals, oils, paints and any other hazardous materials will be stored within the construction compound at the Flaxmill site, which is located outside of the predicted flood zone.** To mitigate flood risk (or unacceptable residual flood risk) during the construction period, the contractor will employ the following mitigation measures as part of the site preparation for the construction phase (ARUP, 2025): • **Demolition & Construction Stage Flood Protection Measures**: ○ Elevating the site compound / site storage areas at the Shipyard site via fill placement to an appropriate level (i.e. 5.7m AOD based on the outcome of the FRA (ARUP, 2025). ○ Constructing and/or implementing temporary flood defences at the Shipyard site (i.e. civil works and/or proprietary flood defence products, or a combination of both) to an appropriate level (i.e. 5.7m AOD based on the outcome of the FRA (ARUP, 2025).

Activity	Mitigation Measures
	○ In the event of a tidal flood warning, materials stored in the Shipyard site compound shall be removed immediately to avoid the risk of flooding to neighbouring properties. • **Preparation of a Flood Emergency Response Plan for Construction Phase (FERP-CP)** – A FERP-CP will be developed by the Contractor(s) for the project, which will contain a detailed response plan to a tidal flood event on the Shannon occurring while construction was active on the site, which will include the following mitigation measures (noting this not necessarily to be an exhaustive list of measures) (ARUP, 2025): ○ Development of a FERP-CP in the first instance; ○ Definition of designated roles within the construction team / firm, and associated responsibilities with regard to the implementation of the FERP-CP; ○ Having an appropriate nominated person (e.g. site manager) who will be responsible for monitoring weather warnings, flood warnings, and storm-tide warnings (i.e. the 'Construction Phase Flood Manager') – this will only ever come into play on a periodic basi. ○ Communication protocols to the site team to alert them to the possibility of a flood and the need to move any machinery, plant, equipment, etc, to an appropriate location within the site/site compound if safe to do so, and to evacuate the site; ○ General protocols around where and how machinery, plant, other equipment and materials are stored / stockpiled / located within the site compound(s), noting that all fuels, chemicals, oils, paints and any other hazardous materials will be stored within the construction compound at the Flaxmill site, which is located outside of the predicted flood zone. ○ Signage and other information on site drawing awareness to FERP-CP protocols (e.g. materials / plant / equipment storage, evacuation routes, etc). ○ The level of the compound and the materials storage areas are to be determined by the contractor and to be confirmed in the Flood Emergency Response Plan for Construction Phase (FERP-CP), taking into account the above mitigation measures, as well as the findings of the FRA (ARUP, 2025). ○ The Contractor(s) will provide a copy of the FERP-CP (which will take into account any relevant planning conditions, and any relevant future additional requirements via. changes in legislation or best practice guidance) to LCCC for review and comment in advance of commencement of any demolition or construction works onsite.

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Activity	Mitigation Measures
	A comprehensive surface water and groundwater monitoring programme will be implemented before, during and after the proposed demolition and construction works. This is particularly important during the replacement works of the outfall pipe. Regular sampling[4] at key groundwater monitoring wells onsite, as well as at the onsite reservoir, and at key locations on the River Shannon upstream and downstream of the site. Water monitoring will be scoped, carried out and assessed by an appropriately qualified Environmental Manger or Ecological Clerk of Works. Results will be held onsite and available as required. Excavations, especially piling for foundations will need to be carefully monitored for groundwater ingress. Any drainage discovered during excavation will require inspection as to integrity of the pipework and connection from source to receptors with water quality analysis as required. Annual water quality analysis is recommended during the operational phase to confirm that the water quality of the reservoir and surface drainage network is maintained and that the SuDS measures and petrol interceptors are effective. It is recommended that additional water quality monitoring is performed in the event of a flooding event on site or in the case of fire or any other accidental spillage.

7.6 Ecology – Natural Habitats, Flora and Fauna

This section identifies potential adverse impacts which may arise from construction and provides guidance on management and control.

7.6.1 Risk Identification

Contractors shall undertake a qualitative ecology risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.11.

Table 7.11 – Example of Ecology Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all sensitive ecological receptors within or adjacent to the construction site.	Mark on the site plan the location of all water courses, surface water features, ecologically sensitive areas and habitats. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for high risk activities such as chemical/fuel storage areas, refuelling points, haul routes and wash out areas.
02	Identify sensitive receptors off site or downstream of the construction project that could potentially be affected by the works. For example	Undertake baseline assessment of water quality prior to construction. Establish monitoring regime during and post construction.

[4] Minimum monthly frequency

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	Risk Assessment	Example Procedure
	water courses, ecologically sensitive areas and habitats.	
03	Identify the construction activities and sources of pollution that may affect the water/ecological receptors identified.	These could include excavations, dewatering, water course crossings, as well as general sources of pollution such as surface water runoff, fuel storage and concrete use.
04	Evaluate the risk of the construction activities polluting the identified receptors.	Assess the likelihood of an activity causing pollution, damage or harm.
05	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods/activities). 2. Control the source (modify construction methods, provide adequate bunding for fuel and other storage areas, install measures such as silt fences or ditches to control runoff). 3. Protect the receptor (provide hard standing for compounds/storage areas, filter, control, contain discharges, ensure appropriate environmental permits are in place). 4. Put emergency procedures in place.

7.6.2 Ecology Management Plan

Contractors will develop, implement and maintain an Ecology Management Plan.

Table 7.12 – Ecology Mitigation Measures

Activity	Mitigation Measures
Biodiversity EIAR Chapter Mitigation Measures	The proposed development includes features that minimize the potential for negative effects on the identified aquatic KERs. • The reservoir is included as a central feature in the design of the development and will be retained and enhanced accordingly. Given the poor state of existing water quality within the reservoir and proliferation of invasive, non-native species that currently surround the reservoir, the measures set out in the landscaping plan will ensure that the ecological status of the feature is improved. • The proposed development is designed to connect directly with the Limerick public wastewater treatment infrastructure, which has adequate capacity to accommodate and treat any arisings from the proposed development. This is fully assessed in Chapter 8 of the EIAR. Potential for effects on water quality associated with the production of foul sewage and surface water runoff from the site has been fully mitigated through appropriate design as fully described in Chapter 11 Water and Hydrogeology, the assessment concludes that with the implementation of mitigation, 'no significant effects on downstream surface water quality will occur' during the operational phase. The landscaping plan provides for the provision of greenspace throughout the MS and increases vegetative cover and connectivity throughout the site as part of the overall design. 2841m^2 of perennial planting, 87m^2 of wetland planting, 1611m2 of swale and 4527m^2 of grassland are proposed across the site, and will mitigate for the removal of the existing low-diversity scrub, grassland and recolonising bare ground. The epimural vegetation along the

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quarry walls will be allowed to revegetate following any removal of existing invasive species and ivy (If any) that may be required. All proposed tree species to be replanted are pollinator friendly varieties. The landscape plan also contains measures to enhance the reservoir both in terms of vegetation and water quality and has a strong focus on native and pollinator friendly species. No invasive species are proposed as part of the plan and a management plan has been included to treat the invasive species identified on site.

The design of the development and the associated landscaping plan provide for an overall increase in vegetation and greenspace throughout the site. This will enhance the amount of cover and habitat connectivity throughout the site.

Bat Roosting Habitat

Crevice Dwelling Bat Species

The landscape design includes for the retention of the roost identified within the quarry walls. The reservoir arches will also be retained and not illuminated. While no evidence of roosting was found in the latter, the existing tunnels provide suitable resting habitat for bats and birds. All compensatory habitats proposed are shown in Figure 7.5-1, which includes measures included in Phase I of the *Masterplan, for context.*

Lesser Horseshoe Bats

LHB were recorded utilising the site for roosting and as such it was an important part of the design to ensure roosting availability remained within Cleeves Riverside Quarter for this species. Three bat houses were included in the design to provide choice availability in various weather, season, and life-cycle conditions (Plate 7.51). The locations of the bat houses were selected to provide safe and undisturbed roosting habitat along identified and recreated commuting corridors and will be positioned away from potential tampering and light disturbance. The bat house design was inspired by Vincent Wildlife Trust's designs, however a pitched roof was included instead of a sloped roof. The bat houses will be installed as soon as possible after site clearance takes place, and will replace the smaller Cathedine roosts (Plate 7.62) put in place prior to demolitions.

- One bat house is proposed to be located against the western quarry wall, under the proposed boardwalk above the reservoir from the Salesians into the Quarry. This location, in proximity to water and partially shaded by the boardwalk, will provide cooler climatic conditions. The entrance into the house, suitable for LHB (30x20cm), will be located on the floor of the suspended house to limit potential bird access.
- One bat house is proposed along the same quarry wall, at the corner with the northern boundary. This house will be also suspended on the quarry to limit potential tampering. The house will not obstruct the existing soprano pipistrelle roost.
- One bat house is proposed along the northern boundary of the Salesians, where a roost was previously identified. This house will be on stilts to prevent tampering.

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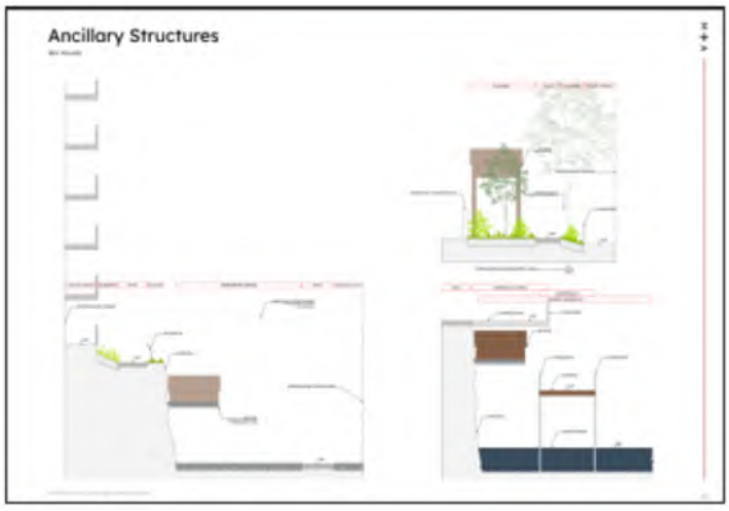

Plate 7.6-1 Extract from LCLE001 Landscape Plan showing proposed bat houses

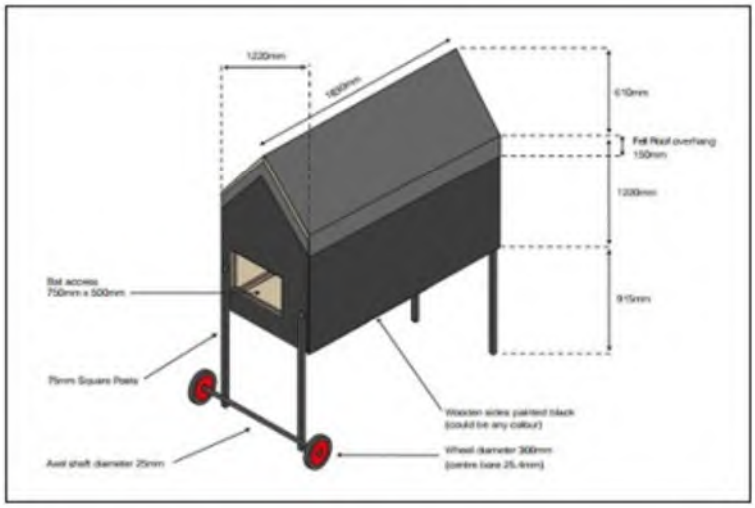

Plate 7.6-2 Cathedine Roost Example

Bat Foraging and Commuting Habitat

The design of the proposed development was informed by the findings of bat surveys undertaken at the site, which found the quarry area to be the focus of commuting and foraging bat activity, with the reservoir providing suitable prey availability. This is where the majority of bat activity recorded was concentrated. LHBs were found to be moving across the site along its northern boundary, using the quarry walls and neighbouring private gardens to navigate.

In collaboration with the project ecologists, the landscape and lighting plans underwent a series of iterations to ensure these habitats remained available and were improved and enhanced as much as possible.

The proposed landscape plan includes for the provision of native planting and aquatic habitats throughout the Application and Masterplan Sites, which will help provide foraging opportunity for local wildlife:

- As the focus of the proposed development's landscape, the reservoir will see biodiverse planting mix replacing the existing the existing low diversity scrub and recolonising bare ground which will maintain connectivity along the identified commuting corridors.

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- Phytoremediation islands will also be introduced to help purify surface water and will be planted with native flowering mixes to attract invertebrates and boost biodiversity. The planting mixes around the reservoir will promote prey availability for bats.
- A tree canopy will be re-established along the proposed steps into the quarry, which will replace the existing semi-mature gardens of the Victorian terrace. It was not possible to retain the existing trees as their roots extend below derelict buildings to be demolished.
- The quarry walls will be revegetated with climbing mixes where removal of existing vegetation during construction was necessary, to maintain prey availability and commuting features in this area.
- In front of the Flaxmill, trees will be introduced within movable wooden planters to increase greenery in this zone while allowing for future phases of the masterplan to be implemented.
- Communal gardens and amenity spaces will be created in the Salesians and Stonetown terrace.
- Tree canopy will be added to existing treelines adjacent to the Shipyard to strengthen potential commuting and foraging route, and increase prey availability in this area.

The proposed lighting plan was specifically limited to the provision of lighting that was justified and navigated Limerick City and County Council Public Lighting and Product Specification 2022 Guidance, amongst others:

- The LCCC guidance on outdoor lighting colour temperature request the use of 4000K luminaires in public areas. Following studies carried out on ecological impact on the site, and the identification of foraging bats in the area, the IDT have agreed to the reduced temperature of 2700K luminaires to accommodate the local wildlife requirements. This colour temperature allows for better visual comfort for wildlife.
- The use low-level bollards has also been incorporated into many areas to suit the design team vision for the site. There is a mixture of symmetrical and asymmetrical bollard being used in the proposed scheme. This is to limit artificial illumination along the vertical space utilised by bats.
- Bollards have been used in the trafficked area to the rear of the Quarry building to suit the IDT requirements.
- Handrail lights are used in areas with steps. This lighting type will maximise the lighting on the steps for safety and minimise up light spill and impact on the ecology. Lighting in handrails will be fit with dimming control to achieve appropriate lux levels.
- Surface mounted downlight luminaires are proposed in some areas, primarily the canopy areas on the main site, and in the shipyard. These luminaires were selected to reduce upwards light spill on the site while providing sufficient light fittings for pedestrians within the scheme constraints
- All luminaires will have an LED light source.
- No lighting is directed at the reservoir area or along linear features created or retained. Low intensity handrail lights will be utilised at the reservoir for public safety.
- Lighting control regimes were implemented across the site:
  - Walkways and amenity areas will be programmed with dusk to midnight switching, and roadways with dusk to dawn switching, as per LCCC specification.
  - The Quarry Roadway being the primary route for the foraging wildlife will incorporate presence detection, the lighting will be off unless there is movement detected that will activate the lights in this area via movement sensors. The purpose of this is to always ensure minimum light in the area to allow maintenance of the foraging route.

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Potential significant effects on water quality are predicted as a result of the construction and demolition activities associated with the proposed development. A suite of mitigation and best practice measures are in place to block potential pathways for any significant impacts on water quality. To avoid repetition, these measures are not listed in full here but are included in Chapter 11.0 of this EIAR and associated appendices.

To protect aquatic fauna from direct impacts during construction, particularly during works around and within the Reservoir habitat, the following mitigation measures will apply:

- Prior to proposed works within the reservoir, fish will be caught using electrofishing and all fish collected will be released into the River Shannon.

Vegetation clearance along the quarry walls will be limited to necessary removal of clematis, ivy and buddleia species which overwhelm other existing vegetation and provide potential issues to the wall structure. Whilst much of the existing vegetation on the Application site will be lost, the landscape plan for the development includes specific measures to enhance the areas where the existing vegetation is located with diverse native species mixes. This includes the quarry wall and the area surrounding the reservoir, where the majority of existing vegetation on the site is found.

Loss of Bat Roosting Habitat and Mortality

A derogation licence (DER-BAT-2025-169) is in place for Phase I works relating to the remediation works on the Flaxmill building, where LHB roosts were identified. The following mitigations apply to this phase and are relevant to the continued monitoring of the bat activity within the site prior to and during the construction of the Application Site (Phase II):

- A pre-commencement survey will be carried out to assess the buildings where roosting was identified prior to any works. The function of this survey will be to assess any changes in baseline environment since the time of last undertaking surveys in 2024, and to prevent direct harm on bats.
- Prior to commencement, a toolbox talk will be carried out by the project ecologist to inform working crews of the potential effects of the works on resident bats, and known roosting locations will be clearly pointed out. Roosting locations will be avoided where possible.
- While it is recommended to avoid works during the bat activity season (April – September), it is understood that this cannot be avoided due to the structural integrity of the building being at risk. The work programme currently is anticipated to commence in Q2 2025 and run for a period of 12 months.
- Based on the work programme, regular site visits will be undertaken by a licenced bat ecologist at different stages of the works to assess progress and use of known roosts by bats, as well as checking access to known locations is maintained. Inspections will make use of scaffolding equipment where possible to expand bat searches to previously unreachable areas.
- Bat access to the first floor will be maintained throughout the works by ensuring access points are kept free from obstruction. The roost locations on the first floor will not be used to store materials and will be kept free from human traffic.
- Interior lighting will be restricted to the areas where works are being undertaken and any exterior lighting will be turned off when not in use.

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In addition to these, it has been proposed to also limit lighting during works in adjacent buildings so as to provide alternative dark environments in buildings adjacent to the Flaxmill during Phase I.

A derogation licence application has been submitted to NPWS and will need to be in place for the project. The derogation licence is issued by NPWS on a yearly basis, and therefore it is expected that multiple licences will be necessary. Each licence will be informed by monitoring undertaken at the site and will be specific to the works to be undertaken during the calendar year. NPWS will be informed of any progress made during construction with regular updates.

The following mitigations in relation to the construction works for Phase II will apply:

- Prior to commencement, confirmatory inspections and bat activity surveys will be carried out to ensure no bats are present within the buildings. These will be catered to each specific building. If these cannot rule out the presence of bats, precautions will be taken during the demolitions (manual removal of materials such as slates, delayed use of machinery to allow escape) and these will be undertaken under the supervision of an ecologist.
- Demolition works will not be carried out during the bat activity season (April-September) within buildings where active day roosts are found. Where pre-commencement confirmatory surveys identify any alternative roosts, demolition works will not be carried out in respect of these alternative roosts during bat activity season.
- A toolbox talk will be carried out prior to works commencing by the project ecologist to inform working crews of the potential effects of the works on resident bats, and known roosting locations will be clearly pointed out.
- Prior to demolitions being carried out, alternative roosting resources will be set up to retain roosting availability on site. These will be in the form of three cathedine bat houses, suitable for LHB. Their proposed locations are shown in Figure 7.51. Whilst two of the Cathedine night roosts will be located in areas relatively buffered from continuous construction activities, in the Victorian terrace garden and along an existing terrace looking over the reservoir, the third roost will be in the north-western corner of the Quarry Site. A 5m buffer will be created around it to avoid stockpiling and machinery in its immediate vicinity. This is primarily to avoid damage to the roost.
- Other available roosting spaces will be retained along the quarry wall, under the reservoir tunnels and in buildings not proposed for demolition. The permanent bat houses included in the design will also be set up prior to demolition or as soon as possible following site clearance.
- The use of the site by LHB will be monitored during construction using passive static detectors left on site and tuned to the specific frequency calls of the species, to reduce battery and storage usage. A minimum of three detectors at the proposed bat house locations, or nearby, are proposed.

The provision of alternative roosting habitat following construction has been incorporated into the design of the project and will include the use of bat boxes. Permanent roosting habitat available within the site is listed in the following sections.

Salesians Site bat pole roost

A bat pole will be erected along the northern boundary of the Salesians, in the proposed public gardens, to be of use to pipistrelle species currently utilising the convent's yard. This will be in addition to alternative roosting habitat for LHB placed in this area prior to demolitions.

Flaxmill staircase roost

As part of Phase 1 works on the Flaxmill, following remediation of the building, an unused attic space above the buildings' exterior staircase will be retained and isolated from the building. Access via bat slates will be provided into the space.

Flaxmill bat slates

The provision of bat slates on the Flaxmill has also been included in the design to allow space for crevice dwellers to roost on the roof. These will not provide access to the interior.

Bat houses

Three bat houses have been included in the design. The location of the bat houses within the site was considered in connection with the retention of the dark corridor along the quarry walls and to provide access to the Reservoir, while providing options to bats depending on preferred roosting conditions. These are described in Chapter 7 of the EIAR.

Tunnels

Two bat boxes suitable for bridges will be erected under one of the tunnel arches to increase roosting suitability in this area. Access into the tunnels will be restricted to prevent disturbance and tampering.

Bat Boxes

A minimum of three woodcrete bat boxes will be installed within the site, with final locations to be determined by an ecologist following construction. Provisional locations include on or in proximity to the bat houses along the quarry walls.

Bat Disturbance

A derogation licence from the NPWS has been applied for the project. The derogation licence is issued by NPWS on a yearly basis, and therefore it is expected that multiple licences will be necessary. Each licence will be informed by monitoring undertaken at the site and will be specific to the works to be undertaken during the calendar year. NPWS will be informed of any progress made during construction with regular updates.

During the construction phase, plant machinery will be turned off when not in use and all plant and equipment for use will comply with the Construction Plant and Equipment Permissible Noise Levels Regulations (S.I. No. 632 of 2001). Where construction is required in close proximity to installed temporary or permanent LHB roosts, these will be monitored by the appointed ecological clerk of works to assess whether they are occupied. If occupied, works will be avoided if possible until the roost is vacant.

Vegetation clearance of non-native species and ivy in proximity of the soprano pipistrelle roost identified within the quarry walls will be avoided, where unjustified. If vegetation clearance is required in this area, it will be carried out outside the bat activity season (April-October) and all clearance works supervised by an appropriately qualified ecologist to ensure that:

- All vegetation removal is justified
- The removal does not damage the existing roost crevice

If lighting is required (likely only in early evening and morning during winter months), directional lighting will be used to prevent overspill on to sensitive areas, namely the reservoir and quarry areas. Exterior lighting during construction, shall be designed to minimize light spillage, thus reducing the effect on areas outside the Proposed Project, and consequently

on bats i.e. Lighting will be directed away from sensitive areas around the periphery of the site boundary to minimize disturbance to bats. Directional accessories will be used to direct light away from these features, e.g. through the use of light shields (Stone, 2013). The luminaries will be of the type that prevent upward spillage of light and minimize horizontal spillage away from the intended lands.

In addition, the applicant commits to the use of lights during construction (such that they are necessary) in line with the following guidance that is provided in the Dark Sky Ireland Lighting Recommendations:

- Every light needs to be justifiable,
- Limit the use of light to when it is needed,
- Direct the light to where it is needed,
- Reduce the light intensity to the minimum needed,
- Use light spectra adapted to the environment,
- When using white light, use sources with a “warm” colour temperature (less than 3000K, ideally 2700K).

Bird Habitat

The incorporated landscape measures described in Chapter 7 of the EIAR will reinstate suitable resting and breeding spaces for the common garden birds recorded at the site. Swift boxes will also be provided. Cement or woodcrete materials will be utilised to ensure durability of these nesting habitats. Locations for the swift boxes have been included into the northern elevations of Block 2B – Central Wing and Block 2A – West Wing, within the Quarry Site (Plate 7.4-1). As no eaves are proposed on these buildings, these will be installed to the exterior along the walls. A minimum of two triple entry boxes per building are proposed (Plate 7.53).

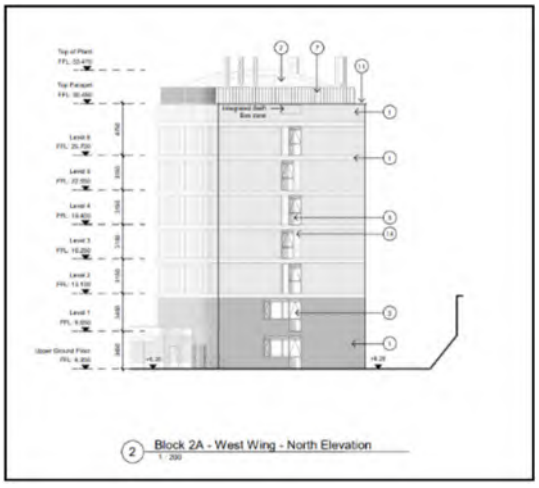

Plate - Example of swift box location from ARCH Drawing CRQMP-BMEA-2X-ZZ-DR-AA-2862

Plate - Example of durable swift box.

Bird Mortality

Site clearance to facilitate the construction phase of the proposed development will be undertaken outside of the nesting bird season (1st March – 31st August) to ensure compliance with the Wildlife Act. If vegetation clearance is required during the nesting bird season, this will be preceded by a confirmatory nesting bird survey to ensure no nesting birds are present and all clearance works supervised by an appropriately qualified ecologist.

Numerous feral pigeon nests are located throughout the buildings on the Application site. Access to nesting areas will be prevented prior to demolition to ensure that no birds with young that have not fledged are present at the time of demolition.

Otter Disturbance

In relation to disturbance, Otter are predominantly crepuscular in nature, and it is anticipated that construction activity will mostly be confined to daytime hours, thus minimising potential disturbance related impacts to the species.

Best practice noise mitigations are presented in Chapter 13 Noise and Vibration, of the EIAR. The following measures will also be implemented to limit disturbance to otter:

- All plant and equipment for use will comply with S.I. No. 632/2001 - European Communities (Noise Emission by Equipment For Use Outdoors) Regulations, 2001
- Operating machinery will be restricted to the proposed works site area.
- The use of artificial lighting will be avoided during construction works. Any unavoidable artificial lighting used to facilitate works will be blocked from spilling onto the River Shannon, using directional accessories or physical barriers.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
- Compressors will be of the “sound reduced” models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machines which are used intermittently will be shut down or throttled back to a minimum during those periods when they are not in use.
- Any plant such as generators or pumps which are required to work outside of normal working hours will be surrounded by an acoustic enclosure.

Biosecurity

An invasive species management plan has been prepared to remove the Japanese knotweed recorded within in proximity of the reservoir prior to construction.

All of the identified Japanese knotweed within the proposed development site will continue to be treated and any remaining contaminated soil will be removed from site to a licenced waste facility prior to construction works commencing. In the same way, any contaminated soil in proximity of the Shipyard found to be contaminated with Himalayan knotweed will be removed prior to any earthworks in this area.

The proposed methodologies for treatment and eradication of the First Schedule invasive plant species are presented in Appendix 7.3, as well as all site hygiene and biosecurity measures.

Biodiversity EIAR Monitoring Measures	**An Ecological Clerk of Works (ECoW)** will be appointed by the Contractor to ensure that the ecological plan is effectively implemented. The representative will be a suitably qualified ecologist or environmental scientist. All operatives working on the site will be made fully aware of the environmental responsibilities, conditions and requirements along with a full description of the methods to be employed. This information will be imparted at a dedicated site induction prior to commencing work on the site. The induction of any new staff will include an

environmental induction. A checklist will be filled in on a weekly basis to show how the measures above have been complied with. Any environmental incidents or non-compliance issues will immediately be reported to the project team and that the project team will take corrective action if necessary. The construction management team will be regularly monitoring the works and will be fully briefed and aware of the environmental constraints and protection measures to be employed. The contractor's environmental representative will work closely with the Employers Environmental Representative as described below.

The ECoW will be responsible for:

- Monitoring the construction works and identifying any additional or refined mitigation measures (i.e. 'adaptive management measures required), in relation to any ecology;
- Reporting the findings of monitoring, including any adaptive management measures recommended and the effectiveness of same;
- Delivering site induction and training on ecological aspects to all construction personnel prior to commencement of construction activities;
- The implementation of ecological mitigation measures
- Updating, renewing and returning the derogation licence in place throughout construction

Employers Environmental Representative

In addition to the above, the employer (Limerick Twenty Thirty), will also provide an employer's environmental representative. This officer will be a suitably qualified ecologist or environmental scientist and will work closely with the contractor's representative to ensure that all environmental/ecological requirements are adhered to and fully monitored. The employer's representative will visit the site on a weekly basis (at a minimum) during the construction phase. An audit of the works will be undertaken during these weekly visits, and it will be ensured that the prescribed methods are employed. Any potential impacts additional to those predicted will be highlighted and if necessary, additional measures put in place to prevent them. Any deviance from the agreed methodology will be highlighted and if necessary rectified.

7.7 Light Pollution

7.7.1 Risk Identification

Obtrusive light from a construction site is a form of pollution. Construction lights can cause glare and light trespass. These are forms of obtrusive light which may cause nuisance to others.

Table 7.13 – Example of Light Pollution Risk Assessment

	Risk Assessment	Example procedure
01	Identify the location of all sensitive receptors within or adjacent to the construction site.	Mark a site plan with the location of all potential receptors including housing, schools, hospitals, roads and key wildlife populations. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for lighting.

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	Risk Assessment	Example procedure
02	Identify the construction activities and sources of light pollution that may affect the receptors identified.	These could include depots, storage areas, night working activities etc.
03	Evaluate the risk of the construction activities creating light pollution for the identified receptors.	Assess the likelihood of an activity causing pollution, damage or harm.
04	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods/activities). 2. Control the source (modify construction methods; provide adequate screening, directional light). 3. Protect the receptor (screens). 4. Put emergency procedures in place.

7.7.2 Light Pollution Control Plan

Contractors will develop, implement and maintain a Light Pollution Control Plan. The Plan will include but not be restricted to the mitigation measures below (Table 7.14).

Table 7.14 –Light Pollution Mitigation Measures

Activity	Mitigation Measures
General	Maintain levels of lighting acceptable for health and safety and avoid over lighting areas. Light fitting temperature used will be set to a maximum of 2700K to accommodate the local wildlife requirements. This colour temperature allows for better visual comfort for the wildlife. As per the permanent strategy, lighting columns have be kept at or below 4m and have a specified directional beam to reduce back spill to reduce unnecessary illumination on bat foraging areas. 3.5m columns will be used along the quarry wall as this is the main bat foraging area within the site. Low-level bollard light fittings will be preferred to temporary lighting columns, especially in the Quarry and along the northern boundary, to reduce high-level light within bat foraging areas. The column lighting will be cowled and angled downwards to minimise spillage to surrounding properties and other sensitive receptors. Lighting will be provided with a minimum luminosity sufficient for safety and security purposes. Where practicable, precautions will be taken to avoid shadows cast by the site hoarding on surrounding roads, footpaths and amenity areas. Motion sensor lighting and low energy consumption fittings will be installed to reduce usage and energy consumption. Lighting will be positioned to not cause destruction or confusion to pass motorists, river users or navigation lights for air or water traffic. The Contractor will need to maintain control and ensure all lights are turned off when not required. The security strategy will be developed to reduce potential requirement for evening lighting.

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7.8 Landscape and Visual

7.8.1 Landscape & Visual Effects Control Plan

Contractors will develop, implement and maintain a Landscape & Visual Effects Control Plan. The Plan will include but not be restricted to the mitigation measures below (Table 7.15).

Table 7.15 – Landscape & Visual Effects Mitigation Measures

Activity	Mitigation Measures
Landscape & Visual EIAR Chapter Mitigation Measures & Monitoring Requirements	**Incorporated Design Mitigation** In terms of how the proposed development will integrate with and impact upon the existing landscape context and visual environment, the importance of design quality in inserting new buildings into the urban fabric should not be underestimated. Good design in such circumstances is a rigorous process involving: a deep understanding of the site, its context and existing sensitivities; a broad knowledge of suitable design approaches, testing appropriate design options and the ability to convert these through careful detailing, materials selection and effective control throughout the construction process. These aspects of design are central to successful and appropriate integration of new development within its context. Any development has the potential to impact negatively, particularly if poorly designed. Conversely it has the potential to impact positively, indeed, to inspire, if well-designed. The high quality of the proposed design is an important factor in the reduction of potential impact in respect of both landscape and visual effects. The design rationale and details employed within the design seek to mitigate negative effects on the landscape character and upon the visual amenity of the area by: ▪ Employing a subtle variation of tone, colour, texture and reflectiveness across the facades, particularly where the buildings may be seen from greater distance and the use of appropriate and harmonising colour, tones and materials to integrate with other buildings nearby and within the existing scheme, in order to reduce the apparent massing of the buildings; ▪ The setting back of the taller elements of the proposed buildings away from public roads and footpaths to assist in reducing the apparent massing adjacent to surrounding smaller scale residential buildings; ▪ Including public open spaces within the design which link with and relate appropriately to existing adjacent/neighbouring open spaces; ▪ The provision, maintenance and management of an associated and sensitively considered soft landscape design for the development, which assists in the visual integration and screening of the buildings within the existing landscape - the introduction of appropriate new planting to such effect; ▪ Rationalisation of all services elements and any other potential visual clutter, its incorporation internally within building envelopes (as far as practically possible) and the inclusion of integrated screening at roof level to conceal plant etc, where this is not possible. It should be noted in this regard that the specific siting of communications antennae on top of PBSA Block 2A localises and limits their visual impact and the finishes proposed for them are effective in reducing their visibility on the skyline; . **Construction Phase Mitigation** The building site including a site compound with site offices, site security fencing, scaffolding and temporary works will be visible during the construction phase, from a range of viewpoints around

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the site. Such elements are generally viewed as temporary and unavoidable features of construction in any setting. However, the perimeter site hoarding will screen from view much of the construction activity and materials at ground level. Other mitigation measures proposed during this delivery stage of the development revolve primarily around the implementation of appropriate site management procedures during the construction works – such as the control of lighting, storage of materials, placement of site offices and compounds, control of vehicular access, and effective dust and dirt control measures. Such mitigation is set out in the Construction and Environmental Management Plan (CEMP) prepared by AtkinsRealis as part of the documentation submitted for planning for the scheme. This outlines a range of construction phase mitigation measures, many of which are relevant to the reduction of the temporary impacts on the landscape and visual environment during the construction phase. It forms the basis for the required measures to be included in the appointed contractor's CEMP. As such, it will reference construction phase mitigation measures which have relevance to the assessment of Landscape and Visual Impact. It will be prepared by the appointed contractor and subsequently submitted to and agreed with the Local Authority prior to the commencement of any construction works. This is a working document which will be continually reviewed and amended through the construction phase to ensure effective mitigation throughout. It will deal with all issues related to the construction, delivery and management of the scheme during the construction stage and will ultimately include details on the following:

- Daily and weekly working hours;
- Agreed haul routes for incoming materials;
- Use of licensed hauliers;
- Disposal sites;
- Travel arrangements for construction personnel;
- Appropriate on-site parking arrangements for construction personnel to prevent overspill parking on the local road network;
- Temporary construction entrances to be provided;
- The nature of site lighting including aspects of timing, orientation and shielding;
- Wheel wash facilities if/as required;
- Road cleaning and sweeping measures to be put in place, if/as required;
- Temporary traffic management measures and construction signage to be put in place and maintenance of same;
- Liaison arrangements with the local community.

The definitive mitigation measures included during the construction phase are as follows:

- Site hoarding shall be erected to screen views of construction activities;
- Vegetation protection measures, particularly around the quarry walls, will be installed ensure vegetation to be retained is fully protected during the construction process;
- The CEMP which accompanies the application for approval shall continue to be developed by the contractor to include the control of construction activity, traffic, materials storage and lighting with due consideration for neighbouring residences and surrounding area.

In addition, the organisation of the construction and delivery of the proposed development into distinct zones which will have distinct construction programmes and different delivery dates, also provides a level of mitigation, in that people living around the site and living progressively on the site (as parts of the development are completed and occupied) will be aware of progress towards completion – this is supported by the liaison arrangements between contractor and the local community. In principle, whilst not part of the assessment of the proposed development, this also applies to the development of the later Masterplan elements.

The construction of the proposed development is programmed to take three years and, in that time, a relatively large population would be expected to occupy the completed, largely residential units. Their experience in living on the site will continue to emerge and develop as the later scheduled parts of the proposed development proceed towards completion.

The Outline CEMP references construction phase mitigation measures which have relevance to Landscape and Visual Impacts created during the Construction phase of the Proposed Development. An outline Construction Environmental Management Plan (CEMP) has been developed by AtkinsRealis and is included with this planning application. The CEMP will be updated by the Construction Manager, Environmental Manager, Resource Manager and/or Ecological Clerk of Works, as required if site conditions change, and for any planning conditions that may be imposed. The CEMP will be implemented and adhered to by the construction Contractor(s) and this is a working document which requires continuous review and amendment throughout the construction phase by both parties, to ensure effective mitigation.

7.9 Archaeology and Cultural Heritage

Heritage is an irreplaceable resource, so it is recognised that cultural resources will be safeguarded for future generations. Construction activities have the potential to impact on archaeology and heritage through the destruction or disturbance of sites or artefacts.

7.9.1 Risk Identification

Contractors shall undertake a qualitative archaeological and heritage risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.16.

Table 7.16 – Example of Archaeology and Cultural Heritage Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all sensitive receptors within or adjacent to the construction site.	Mark a site plan with the location of all potential receptors including villages, forts, palaces, houses, and towers. The site plan will be updated and approved by the appointed project archaeologist. This will help the planning of the overall layout of the construction site.
02	Identify the construction activities that may affect the receptors identified.	These could include depots, storage areas, excavation, waste storage, haul roads etc.
03	Evaluate the risk of the construction activities damaging the identified receptors.	Assess the likelihood of an activity causing pollution, damage or harm.
04	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: Remove the risk (different construction methods/activities). Control the source (modify construction methods or operations - alternative haul roads). Protect the receptor (screens).

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Risk Assessment	Example Procedure
	Put emergency procedures in place.

7.9.2 Archaeology and Cultural Heritage Management Plan

Contractors will develop, implement and maintain an Archaeology and Heritage Management Plan. The Plan will include but not be restricted to the mitigation measures below (Table 7.17).

Table 7.17 – Archaeology and Cultural Heritage Mitigation Measures

Activity	Mitigation Measures
Cultural Heritage – Archaeology EIAR Chapter Mitigation Measures & Monitoring Requirements	A pre-construction programme of targeted archaeological test trenching under licence by the National Monuments Service, will be carried within the proposed Masterplan site inclusive of the proposed development site. Test excavation at predevelopment phase will identify the nature, scope and survivability of subsurface archaeological, industrial and maritime heritage. This will assist in quantifying the extent of the subsurface heritage and ensure that a well-planned and structured or phased approach to monitoring and, where applicable, archaeological excavation occurs to minimise or eliminate any adverse impacts upon construction schedules. Archaeological monitoring of all groundworks shall be incorporated into the construction phase, subject to the findings of the predevelopment archaeological test excavation. Depending upon the results of the archaeological test excavation and archaeological monitoring, as well as archaeological excavation (where applicable), their findings can be incorporated into the operating of the Cleeves Riverside Quarter. In the event of discovering subsurface survival of the industrial and maritime heritage in the form of physical or structural remains, consideration shall be given to the exposure of these structures to public viewing to allow for full visual access and interpretation of the relevant heritage. Options such e explored including full or partial pedestrian access; enclosed but visually accessible methods; restored ground surface with distinguishing or tactile surfaces to highlight the nature and extent of subsurface structures. Any resulting artefactual heritage shall be conserved where applicable and presented in an on-site location dedicated to its overall industrial and maritime heritage, together with full interpretation of the site. Presentation of both the conservation and archaeological works can form a significant part of any on-site feature, which could provide an appropriate beneficial context of Limerick Twenty Thirty. The Flaxmill Plaza has adequate space to accommodate such requirements should the need arise. Further, there are many existing heritage buildings which could be adapted as part of Phase II to accommodate such works. All required onsite archaeological excavation mitigation measures will be enacted prior to and during the construction phase and, therefore, no cultural heritage mitigation measures requiring monitoring are predicted during the operational phase of the proposed development.
Cultural Heritage – Architectural Heritage EIAR Chapter Mitigation Measures &	**Incorporated Design Mitigation** Heritage led process - The designs for the redevelopment have been informed by an understanding of heritage interest. The assessment of the site, research of the site and buildings histories have guided a sophisticated appreciation of importance. This has guided an approach to the division of the site into character areas and informed

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Activity	Mitigation Measures
Monitoring Requirements	proposals for change ranging from demolition through to minor changes to existing walls, many of which are ruins. This has informed the resolution of a conservation strategy set out in an overarching site plan in drawing 'CRQMP-FCBS-ZZ-XX-DR-AA-1901' within appendix E of the ADR and a series of mitigation strategies contained within chapter 7.0 of the ADR. Demolition and Removal Principles • Selective demolition typically focused on buildings of little or negative significance to enable the successful reuse of the wider site. • Demolition is described as minimised to only those buildings necessary to permit future reuse and development. Section 7.9 of the ADR includes detailed proposals for the retention of the facades of the former Linen Store. • Removal of hazardous material from the site making access and use safer and permitting the progression of repair works. Preservation by Record Current Strategy - Where buildings of cultural significance are identified for demolition, the intention is to preserve the building by record. Building recording and the salvaging of fabric of interest is proposed. Material is to be set aside and reuse in the landscape and in the repair of the retained historic structures. Interventions: • Designs for new interventions describe an approach that is sympathetic to the special character of the buildings and the site as a whole. • Where elements are wholly new, they are intentionally designed to be read as such. Complimentary materials ensure no loss of quality. • Structural interventions to consolidate the boundary walls along the North Circular Road have been designed to avoid and minimise potential impact to the historic walls. Landscape and Boundary: • The line of the site boundary has been preserved. While the boundary wall is noted for reduction in height and partial removal, the threshold between the street and mill site will remain clearly legible. • Salvaged materials will be a feature of the landscape. Details will need to be developed once the progression of demolition activity permits the preparation of a detailed schedule of material, building on the work completed by ACP and contained in appendix 9.3. Architecture and materials – The articulation of the building facades, notably that of the proposed building to O'Callaghan Strand, respond to the mill context, see ADR 7.8. Materials have also been selected to match the colour and tone of the context, see ADR 7.7. The materials for the buildings in the Quarry are described in section 8. Stonetown Terrace is described in section 6.7. Common to these proposals is the contextual nature of the materials. Each set of buildings seeking to respond to the character of its area while also reflecting the close relationship to the Mill Complex.

Activity	Mitigation Measures
	Architecture - form, scale, massing – The buildings have been described in detail earlier in this assessment. Section 8.1 of the ADR offers commentary on the stepped height and massing of the buildings within the Quarry. Stonetown Terrace is described in section 6.1 through to 6.7. Common to these proposals is the reference made to massing and heights within the context. Each set of buildings is seeking to respond to the character of its area while also reflecting the close relationship to the Mill Complex. **Additional Mitigation** Technical Design Phase Mitigation – Technical designs shall be resolved in sufficient detail to provide the contractor with the information needed to protect built heritage. Where existing and historic buildings are concerned this typically requires designs to be resolved in detail with potential to be adapted and varied once works are on site. This is best achieved by providing sufficient time and knowledge to accommodate site phase discoveries. These should inform adjustments to the designs to ensure conservation principles can be applied to preserve the assets special interest. Engagement with a Competent Authority – As required, consultation with the Conservation Officer including submission of reports, detailing compliance status and any incidents or corrective actions shall be taken. Prior to demolition A conservation surveyor / architect shall be employed to offer guidance on the process for preservation of interest where the removal of structures and features from site is proposed. A demolition methodology shall be prepared by the contractor in consultation with the accredited conservation architect / surveyor. This must reflect the philosophy set out in the design documents and as described in sections 2.5 of the ADR. In brief the principles distinguish demolition from dismantling. They require that where 'demolition' is proposed to buildings that possess special interest, 'dismantling' is to be the method in order that demolition phase recording can be undertaken and to ensure the maximum retention of fabric for reuse. The methodology shall be agreed and in place prior to the commencement of demolition. During demolition and during construction Record of Architectural Heritage – Refer to the methodology contained in section 6 of the Building Recording Reports under Appendix 9.3. A comprehensive record of findings relative to the existing architectural heritage shall be maintained. This will be through the augmentation of the record created to support the design development. This process will further the pattern of recording undertaken since 2019 and which has been periodically updated with new information obtained through survey and investigation. The record shall include the following: • Statement of Significance – *periodic updates when new information comes forward* • Building Records – *update with enhanced record obtained via observations of dismantling / demolition.*

Activity	Mitigation Measures
	• Salvage and Reuse – *coupled with Building Recording, development of the salvage record with design review to allow for materials to be retained and utilised within the repair works.* • Social History & Interpretation – *a consultant must be employed to lead on the development of the site's social history. Findings must inform site-wide interpretation.* <u>Stabilisation and Repair</u> The following describes measures that shall be implemented where existing structures are removed resulting in change to retained structures. Designs for the consolidation and repair of structures within the Flaxmill Complex that possess special interest shall be designed by a conservation accredited architect / surveyor. These shall be executed in accordance with conservation principles by appropriately qualified, experienced and skilled crafts people. This is specifically relevant to buildings affected by the removal of abutting and unsympathetic later phase additions notably the Main Mill rear extensions, lean-to on the cold store / weaving mill and the warehouse abutting the Cheese Plant. Detailed proposals shall be prepared prior to the commencement of demolition. Where there are constraints to access the proposals must be as advanced as far as is reasonably practicable and then developed as soon as safe access is available. Stabilisation measures and repairs shall be implemented as soon as is practicable during construction to ensure retained structures are stabilised. **Construction Phase Mitigation** Current Stabilisation Strategy – Prior to demolition identified within the Phase II development proposals, work to stabilise the Main Mill shall secure vulnerable fabric. This exemplifies an approach to mitigate risk to the protected structures. Progressing the repair and stabilisation of vulnerable structures will guard against unintended loss and / or the exacerbation of instability that can arise from adjacent construction activity. Further to this, the phased approach to progress stabilisation and repairs shall continue in parallel with future development. Protected structures that have yet to be stabilised prior to the progression of new development should be assessed and secured to minimise the risk of construction phase activity giving rise to unintended loss. Construction Phase Plan - Prior to commencement of demolition or construction activity, the contractor shall prepare a construction phase plan with regard for current assessments of the condition of the historic buildings identified for retention and that have potential to be negatively impacted by construction activity. The plan shall include measures to prevent unintended loss such as that which would arise from a vehicle colliding with a building. It shall include the preparation of briefing packs for all parties involved in works on site to ensure the workforce are aware of the sites special interest. This will better able site operatives to be custodians in the care of the historic structures. Temporary Protection - Where historic fabric is to be addressed by the works, temporary measures shall be designed to first avoid impact and second to minimise loss and impact. A team of experienced conservation specialist shall be in place to support the contractor so that risk of adverse impacts on the heritage can be minimised. Appropriate Knowledge and Oversight - The contractor shall have an appropriately qualified heritage manager to help ensure protection and care of the site's heritage is

Activity	Mitigation Measures
	managed. Salvage of materials shall be led by a conservation specialist to ensure maximum retention for reuse and / or appropriate crating where fabric has to be stored. This approach will help minimise or eliminate adverse impacts on construction schedules and heritage. Construction Phase Interpretation Plan - Where the historic buildings are to be shrouded in scaffold, there is an opportunity to exploit this as a canvas for interpretation to share the story of the site and project. Similarly, site hoardings must provide opportunities of engagement with the public. This will have a positive effect. The contractor and interpretation consultant shall work closely together to develop a construction phase interpretation plan. This can be used in co-ordination with LTTs communications strategy. **Operation Phase Mitigation** The following is a summary of the operational phase mitigation measures that will be embedded in the detailed designs. Many of these will only become clear once demolition has progressed as this will afford discovery of features for inclusion in the interpretation. Fabric and Features – Where industrial or maritime heritage fabric is discovered this will be incorporated into the designs and placed on public view to allow for full visual access and interpretation. Public Access and Interpretation: • Conserve heritage features discovered during earlier phases • Full or partial pedestrian access to heritage features • Interpretation displays Ongoing Heritage Management: • Ensure that the presentation of heritage forms a significant part of any publicly accessible spaces specifically interpretive facility. • Facilities to provide educational and cultural value, supporting the broader context of the development and its relationship to local heritage. Monitoring and Review: • Continue to monitor the condition of the buildings and ensure their ongoing protection and to address any emerging risks or deterioration. These measures help to enhance the redevelopment and protection of heritage assets, ensuring that the operational phase of the project contributes positively to the understanding and appreciation of the site's historical value. According to the referenced assessment, if these measures are implemented, there are no anticipated residual impacts during the operational phase.

7.10 Traffic Management

7.10.1 Risk identification

Contractors shall undertake a traffic management risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.18.

Table 7-18 - Example of Traffic Management Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all traffic sensitive areas within or adjacent to the construction site.	Mark a site plan with the location of all potential traffic sensitive areas including villages, forts, palaces, houses, schools, shopping districts, commercial/leisure areas roads and other rights of way. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for vehicle/pedestrian entrances, storage areas etc.
02	Identify the construction activities may affect the traffic sensitive areas identified.	These could include depots, storage areas, excavation, waste storage, haul roads etc.
03	Evaluate the risk of the construction activities impacting on traffic sensitive areas.	Assess the likelihood of an activity causing harm or obstruction.
04	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: Remove the risk (different construction methods/activities). Control the source (modify construction methods or operations - alternative haul roads). Protect the receptor (screens, signs, barriers). Put emergency procedures in place.

7.10.2 Traffic Management Control Plan

Contractors will develop, implement and maintain a Traffic Management Control Plan.

Table 7-19 - Traffic Management Mitigation Measures

Activity	Mitigation Measures
Traffic EIAR Chapter Mitigation Measures & Monitoring Requirements	An Outline Construction Traffic Management Plan has been developed to mitigate traffic impacts during the construction phase. This report is provided in the Appendix of the CEMP. This report will be developed by the contractor to form the Construction Traffic Management Plan. The contractor's detailed Construction Traffic Management Plan will address the following key issues: • A dedicated person will be appointed for the management of the deliveries during the construction stage. It will also be this person's duty to make sure the construction routes are adhered to without fail.

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- The Applicant will conduct a pre- and post-construction condition survey on the public road, with the developer liable to repair any damage to the public road attributed to the construction of the proposed development.
- Deliveries will be scheduled to avoid morning and evening peak hours. This will avoid HGV traffic arriving during the morning peak hours and creating conflict with local residents' commute or school run. Construction personnel will be encouraged to car-pool, or to travel to site in minibuses.
- During the construction phase, clear construction warning signs will be placed on the approach to the site access point, in accordance with Chapter 8 of the Traffic Signs Manual. The site entrance points will also be appropriately signed. Access to the construction site will be controlled by onsite personnel and all visitors will be asked to sign in and out of the site by security/site personnel. Site visitors will receive a suitable Health and Safety site induction and Personal Protective Equipment ("PPE") will be worn.
- To control, prevent and minimise dirt on the access route and emissions of dust and other airborne contaminants during the construction works, the following mitigation measures will also be implemented.
    - Wheel washing facilities should consist of a water bowser with pressure washer. The bowser will contain water only and no other additives. Run-off from this activity will be directed to the drainage situated on the lower boundary of the construction compound. All drivers will be required to check that their vehicle is free of dirt, stones and dust prior to departing from the site.
    - Drivers will adopt driving practices that minimise dust generation including a 30km/h internal access road speed limit; and
    - Any dust generating activities will be avoided or minimised, wherever practical, during windy conditions.
- Once construction of the Proposed Development is completed, all machinery and equipment will be removed and hard standing within the Solar Farm site excavated. The area will be regraded with the stockpiled topsoil to a natural profile. Road surfaces, road markings, etc. will be fully reinstated as is and in such a manner that there is no change to the operation of the local road network.

The contractor will develop a detailed Logistics Plan to identify the delivery schedule requirements for every delivery. It is proposed that the contractor will operate a "Just in Time" delivery philosophy to minimise materials stored on site and reduce congestion in and around the works compound.

Monitoring

The proposed development will have the following monitoring requirements:

- The Applicant will conduct a pre- and post-construction condition survey on the public road, with the developer liable to repair any damage to the public road attributed to the construction of the proposed development.
- The Applicant will set up a Project website in order to keep local residents and businesses updated with construction road impacts.

7.11 Contaminated Land

7.11.1 Risk Identification

Contractors shall undertake a contaminated land risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.20.

Table 7-20 - Example of Contaminated Land Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of contamination risks by undertaking site visits and desk based studies of relevant documents - EIA etc.	Mark a site plan with the location of all potential contamination risks including waste deposits, petrol stations, oil stores etc.
02	Identify the construction activities may create ground contamination.	These could include depots, storage areas, waste storage, etc.
03	Evaluate the risk of the construction activities leading to ground contamination.	Assess the likelihood of an activity causing pollution, damage or harm.
04	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods/activities). 2. Control the source (modify construction methods or operations) 3. Protect the ground (screens). 4. Put emergency procedures in place.

7.11.2 Contaminated Land Control Plan

Contractors will develop, implement and maintain a Contaminated Land Control Plan. The Plan will include but not be restricted to the mitigation measures below (Table 7.21).

Table 7.21 – Example of Contaminated Land Mitigation Measures

Activity	Mitigation Measures
General	As part of the asbestos management strategy, mitigation specific measures have been proposed by Phoenix Environmental Safety Ltd in their 2025 Asbestos Survey Report. These measures include, but are not limited to the following: • Asbestos containing materials should be removed prior to the commencement of any works; • A licensed asbestos removal contractor should be contracted for removal and disposal of asbestos waste; and, • All asbestos removal works shall be undertaken in full compliance with the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006–2010 (S.I. No. 386 of 2006).

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Activity	Mitigation Measures
	Stripping and management of hardstanding, made ground, subsoil and C&D waste materials arising from the demolition of existing buildings and structures will be carried out in a controlled way, coordinated with the proposed staging for the development, and will be removed from Site as soon as possible. Temporary concrete crushing activity will be carried out by the Contractor(s) in accordance with the requirements of Limerick City and County Council / EPA, ensuring that all required statutory permits / licences (Waste Facility Permit, Certificate of Registration, or EPA Licence) are in place prior to commencement of such operations, and compliance of same during the relevant period of works. All waste material will be removed for offsite disposal or reused to a suitably licenced / permitted waste facility, or via. Article 27 (where applicable), in accordance with the Construction & Demolition Resource and Waste Management Plan (CDRWMP) (ARUP 2025), submitted as part of this planning application, The Contractor(s), in consultation with the Client and the Engineer, will be responsible for removing and replacing with suitable material as required. All waste arising from the proposed development, during the Demolition and Construction phase (including enabling works) will be managed in line with the principles and objectives set out in the Construction & Demolition Resource and Waste Management Plan (CDRWMP) (ARUP 2025), submitted as part of this planning application, ensuring compliance with best practice in prevention, segregation, recovery and disposal and align with regional waste infrastructure principles and policy. It will be the contractors responsibility to ensure that a project specific Detailed Resource and Waste Management Plan (developed in accordance with relevant 2021 EPA Guidance, and the CDRWMP (ARUP, 2025)) is fully implemented onsite for the duration of the project. The duration that subsoil layers are exposed to the effects of weather will be minimised. Disturbed subsoil layers will be stabilised as soon as practicable (e.g., backfill of service trenches, construction of road capping layers, construction of building foundations and completion of landscaping). Based on CIRIA 665 guidance, gas protection measures shall be required for the proposed Stonetown Terrace building, based on this part of the Site being CS2 (low risk). The typical scope of protective measures for residential buildings (not low rise traditional housing), such as apartment blocks (for CS2) is as follows (CIRIA 665, 2007): • **Option a) -** Reinforced concrete cast in situ floor slab (suspended, non-suspended or raft) with at least 1200g damp proof membrane (DPM) and underfloor venting; or; • **Option b)** - Beam and block or pre-cast concrete and 2000g DPM / reinforced gas membrane and underfloor venting; and, • All joints and penetrations sealed. Gas protection measures (based on the above scope) for the Stonetown Terrace building, will be incorporated into the Detailed Design Stage of the proposed development; and will be installed by experienced and trained specialists and will be subject to inspection and certification, during the Construction Stage. The Contractor, in consultation with the Client and the design team, will be responsible for ensuring that these measures are fully implemented and verified.

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Activity	Mitigation Measures

Material at the following locations requires excavation, and will not be reused onsite. Based on the results of environmental testing, this material is unsuitable for the proposed site end use:

- **Stonetown Terrace Building** – all onsite C&D material; and made ground / subsoils to a depth of 1.5m BGL (existing ground level) or to the maximum excavation / piling depth of foundations (if greater).
- **O'Callaghan Strand Building** – all made ground / subsoils to a depth of 1.0m BGL (existing ground level) or to the maximum depth of excavation for foundations (if greater).
- **Flax Mill site (PBSA / Quarry Building)** - all made ground / subsoils to a depth of 3.0m BGL (existing ground level) or to the maximum depth of excavation for foundations (if greater).
- **Main Shipyard site** – all made ground / subsoils excavated to facilitate the installation of proposed utilities (including drainage), tanks and any proposed underground structures in this area.

This material will be classified, managed, transported and disposed of offsite in accordance with the requirements of the Waste Management Act 1996, as amended, the Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste and any relevant subsequent waste management legislation.

At all other locations onsite, excavation of material will be minimised as much as possible to reduce the impact on land, soils and geology. Where soil material is unsuitable for use or where excess soil is generated with no certainty for use, soils (including Made Ground) will be appropriately sampled and tested prior to offsite removal. Soils will be classified in accordance with the EPA Guidance (2019). It will be the contractors responsibility to ensure that all waste soils are classified correctly and managed, transported and disposed of offsite in accordance with the requirements of the Waste Management Act 1996, as amended, the Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste and any relevant subsequent waste management legislation.

Further mitigation measures for the prevention of soil / bedrock contamination during construction are proposed below. The contractor will be responsible for ensuring these measures are fully implemented. Mitigation measures outlined in Chapter 11- Water are also applicable to the protection of soils and geology during the construction phase:

- Health and safety risk assessments, method statements (RAMS) and the use of appropriate Personal Protective Equipment (PPE) will be adhered to by all site personnel and site visitors;
- Earthworks / piling plant and vehicles delivering construction materials to site will be confined to predetermined haul routes around the site for each phase of the Proposed Development;
- The need for vehicle wheel wash facilities will be assessed by the Contractor depending on the phasing of works and onsite activity and will be installed as needed, near any site entrances and road sweeping implemented as necessary to maintain the road network in the immediate vicinity of the site;
- Dust suppression measures (e.g., dampening down) will be implemented as necessary during dry periods;

Activity	Mitigation Measures
	• All excavated materials will be stored away from the excavations / immediate works area, in an appropriate manner at a safe and stable location. The maximum height of temporary stockpiles will be 3m; • A comprehensive monitoring and supervisory regime including monitoring of all excavations and stability assessments as required will be put in place to ensure that the proposed construction works do not constitute a risk to the stability of the site; • In the event that any additional evidence of ground contamination is encountered beneath the site, during the construction works, works within that specific area will cease. Advice will be sought from an experienced contaminated land specialist to assess any associated potential environmental and/ or human health risks associated with this material and to ensure that any such material is managed and disposed of in accordance with the requirements of the Waste Management Act 1996, as amended, the Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste and any relevant subsequent waste management legislation. • The employment of good construction management practices will serve to minimise the risk of pollution from construction activities at the Proposed Development in line with the Construction Industry Research and Information Association (CIRIA) publication entitled, Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors, CIRIA - C532 (2001) which are also detailed in Chapter 11– Water; • Temporary onsite groundwater and gas monitoring wells should be either suitably protected for the duration of the works and / or appropriately decommissioned in accordance with best practice guidance (SEPA guidance document “Good Practice for Decommissioning Redundant Boreholes and Wells“). • All fill material imported to the site for the Proposed Development will be clean, uncontaminated, suitable engineering grade fill material; • Specifically, regarding pollution control measures, the following will be adhered to; - Fuels, lubricants and hydraulic fluids for equipment used on the construction site, as well as any solvents, oils, and paints will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to best codes of practice; • Waste oils and hydraulic fluids to be managed in accordance with best practice requirements and pollution measures as detailed in the CEMP; • Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised on-site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the site. This will minimise the risk of soils and bedrock becoming contaminated through site activity; and, • The 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. The above mitigation measures will be incorporated (as required) during Detailed Design Stage and will form part of a site-specific CEMP which will be implemented during the Demolition and Construction Stage (including initial Site preparatory / enabling works).

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Activity	Mitigation Measures
	All temporary construction compounds and site entrances are to be removed upon completion of the demolition and construction phase. Such areas are to be reinstated in accordance with the landscape site layout plan and engineer's drawings. All construction waste and / or scrapped building materials are to be removed from site on completion of the demolition and construction phase. Oil, fuel etc. storage areas are to be decommissioned on completion of the construction phase. Any remaining liquids are to be removed from site and disposed of at an appropriately licenced waste facility.

7.12 Soil Erosion and Sedimentation

Soil eroded during land disturbance can wash away and contaminate storm water drains and nearby water bodies. The plan establishes a series of mitigation and management measures to control and minimise these issues if required. Water erosion potential depends on the intensity of the rainfall and/or construction discharges, the soil type and topography. This section identifies the potential causes of erosion and sedimentation which may arise from construction and provides guidance on the management, control and disposal of waste.

7.12.1 Risk Identification

Contractors shall undertake a qualitative soil erosion and sedimentation risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.22.

Table 7.22 – Example of Soil Erosion and Sedimentation Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all activities that could result in erosion and sedimentation, for example dewatering, and sensitive receptors within or adjacent to the construction site.	Mark a site plan with the location of all water courses, surface water features, boreholes, field drains, ecologically sensitive areas including surface and foul drainage systems and other potential receptors. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for high-risk activities such as dewatering, haul routes and wash out areas.
02	Identify sensitive receptors off site or downstream of the construction project that could potentially be affected by the works. For example, water courses and ecologically sensitive areas/nature reserves.	Mark a site plan with sensitive receptors outside the site boundary. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for high-risk activities such as dewatering, haul routes and wash out areas.
03	Identify the construction activities and sources of sedimentation/erosion that may affect the water receptors identified.	These could include excavations, dewatering, water course crossings, as well as general sources of pollution such as surface water runoff and concrete use.
04	Evaluate the risk of the construction activities polluting the identified water receptors.	Assess the likelihood of an activity causing pollution. Assess the significance of the harm sedimentation/erosion would cause to a particular water receptor.

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	Risk Assessment	Example Procedure
05	Evaluate the risk of the construction activities contributing to and/or being affected by the groundwater table.	Assess the likelihood of an activity contributing to raised groundwater levels or being affected by these. Assess the significance of the harm additional water would cause to groundwater or other projects/receptors and the significance of the high water table on construction.
06	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods/activities). 2. Control the source (modify construction methods, provide adequate bunding for storage areas, install measures such as silt fences or ditches to control runoff). 3. Protect the receptor (provide hard standing for compounds/storage areas, filter, control, contain discharges, ensure appropriate environmental permits are in place). 4. Put emergency procedures in place.

7.12.2 Soil Erosion and Sedimentation Management Plan

Contractors will develop, implement and maintain an Erosion and Sedimentation Management Plan. The Plan will include but not be restricted to the mitigation measures below (Table 7.23).

Table 7.23 –Soil Erosion and Sedimentation Mitigation Measures

Activity	Mitigation Measures
Soil Erosion	Methods to control erosion need to take into account the factors causing erosion – rainfall discharge intensity, soil type and topography. Possible erosion control measures will include, but are not limited to the following: ▪ Avoid the creation of steep slopes. Consider implementing terraces instead of long steep slopes to avoid runoff from precipitation. ▪ Do not release heavy discharges of water onto the soil. ▪ Prevent over-watering of loose areas for dust suppression. ▪ Keep site traffic to designated routes. ▪ Consider covering temporary roads and routes within site with either asphalt or stone. Appropriate rehabilitation will need to be applied. ▪ Undertake regular leak monitoring and maintenance of dewatering pipes. ▪ Maintain recommended maximum vehicle weightings to avoid destabilization and subsequent erosion of soil surface. ▪ Progressive rehabilitation of disturbed land or stockpiles by establishing temporary or permanent vegetation supported by irrigation. ▪ Cover excess work areas with geotextile type liners. ▪ Provide collection systems under machinery or equipment during wash down to prevent erosion from runoff. Flow attenuation - Employ mechanisms to control run off of precipitation such as temporary structures to slow running water to facilitate pollutant removal and infiltration and reduce runoff.
Sediment Control	Possible sedimentation control measures will include but are not limited to the following: ▪ Silt reduction measures on site will include a combination of silt fencing.

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Activity	Mitigation Measures
	▪ Place sediment traps on all drainage lines such as geotextile lining. ▪ Construct collection channels capable of collecting all runoff water during storms if it contains fine clay particles. ▪ Use contained concrete washout control facility. ▪ Treat and discharge runoff water from reservoir at controlled flow rate through storm water discharge network. ▪ Inspect and clean the collection channels and reservoir on regular basis to prevent sediment build up. Stabilise the site as soon as possible after construction

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8. Emergency Response Plan

The contractor shall establish, implement and maintain procedures to identify and manage potential environmental emergency situations and potential accidents. The contractor shall respond to actual emergency situations and prevent and mitigate adverse environmental impacts.

The contractor will periodically test, review and update emergency preparedness and response procedures.

8.1 Key Requirements

During construction accidents, incidents and emergencies that have an environmental impact may occur. In the event of an emergency, the first response is to locate the source of that which is giving rise to the environmental impact where appropriate and stop continuation of the situation, followed by the containment, control and mitigation of the situation.

At the construction site The Emergency Response Procedure will be displayed within the Site Office / compound.

A copy of the Material Safety Data Sheets for all the chemicals used on the project site will also be kept at the site office.

The main objectives of the Emergency Response Plan are to:

- Ensure that all means are available to contain the consequences of an accidental spill, fire or release of oil/fuel;
- Ensure that employees are suitably trained to respond to fire and spill;
- Ensure that proper reporting takes place; and
- Ensure that proper investigation is undertaken.

All contractor personnel and sub-contractors will be instructed and rehearsed, as appropriate, in the requirements of the emergency response procedure. Following control of an incident or emergency, an investigation will be conducted, and corrective actions identified and addressed. The Contractor's Environmental Manager will verify the close out of environmental related actions and notify the Employer and/or the Employer's Representative of any emergency.

8.2 Emergency Incidents

Emergency incidents are those occurring that rise to significant negative environmental effects including but not limited to the following:

- Any malfunction of any mitigation measure and/or environmental protection system;
- Any emission that does not comply with requirements of the contract and relevant licenses/permits;
- Any circumstance with potential environmental pollution; or
- Any emergency that may give rise to environmental effects (e.g. significant spillages or fire outbreak).

8.3 Spill Contingency Plan

The main causes of contamination can occur through:

- Spillage of hazardous material including fuel oils, waste materials or chemicals;

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- Spillage of wastewater sewage and other liquid effluents; and
- Spillage of contaminated wash down water with oils, chemicals etc from vehicles, equipment and machinery.

Prior to commencing activities on site, Contractors will develop, implement and maintain a Spill Contingency Management Plan. The Plan will include but not be restricted to the mitigation measures below (Table 8.1).

Table 8.1 –Spill Mitigation Measures

Activity	Mitigation Measures
Mitigation Actions /Emergency Response	Contractors will carry out regular inspections/audits of hazardous materials usage, handling and storage areas and regular/thorough maintenance of vehicles and hydraulic systems and inspections of sanitary facilities and disposal. All contractors handling hazardous materials will keep appropriate spill clean-up material adjacent to storage and maintenance areas. Minimise the amount of diesel, oil, paint, thinners and other chemicals stored on site that pose potential spillage environmental hazards and use materials that minimise environmental impact such as lead-free paints, asbestos free materials etc. Storage areas will be located away from drains/trenches/wastewater collection devices in an impervious bund area (volume of the storage bund >110% of the largest storage tank contained within the bund). Collection systems will be provided/bunded if necessary, under machinery or equipment that may leak hydrocarbons/hazardous substances. The contractor shall be responsible for training all staff in the procedures for handling spills and shall provide all staff with appropriate personal protective equipment. The contractor shall provide all staff with appropriate personal protective equipment. Avoid impacting adjacent sites by ensuring all contractors activities, equipment and waste storage is confined to the allocated site boundary. In the event of a spill: ▪ Identify and stop the source of the spill and alert people working in the vicinity; ▪ Notify the Environmental Manager immediately giving information on the location, type and extent of the spill so that they can take appropriate action; ▪ If applicable, eliminate any sources of ignition in the immediate vicinity of the incident; ▪ Contain the spill using spill control materials, track mats or other materials as required. Do not spread or flush away the spill; ▪ If possible, cover or bund off any vulnerable areas where appropriate such as drains, watercourses and/or sensitive habitats; ▪ If possible, clean up as much as possible using the spill control materials; ▪ Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with appropriate permits so that further contamination is limited; ▪ The Environmental Manager shall inspect the site as soon as practicable and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring; and ▪ The Environmental Manager will notify the appropriate stakeholders such as Limerick City & County Council, National Parks and Wildlife Service and/or the EPA.

8.4 Emergency Incident Response Plan

The Contractor will be required to detail emergency incident procedures in the detailed CEMP and develop an Emergency Incident Response Plan. The Plan will contain emergency phone numbers and method of notifying local

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authorities, statutory authorities and stakeholder. The Plan will include contact numbers for key personnel. The Contractor will ensure that all staff and personnel on site are familiar with the emergency requirements.

In the case of work required in an emergency, or which if not completed would be harmful or unsafe to workers, the public to local environment, Limerick Twenty Thirty DAC will be informed as soon as reasonably practicable of the reasons and likely duration. Examples may include: where the ground needs stabilising if unexpected ground conditions are encountered or equipment failure.

In the event of an emergency incident occurring, the Contractor will be required to investigate and provide a report to include the following, as a minimum:

- A description of the incident, including location, type of incident and the likely receptor;
- Contributory causes;
- Negative effects;
- Measures implemented to mitigate adverse effects; and
- Any recommendations to reduce the risk of similar incidents occurring.

Further, if any sensitive receptor is impacted, the appropriate environmental specialists will be informed and consulted with accordingly.

Any response measures will be incorporated into an updated Emergency Incident Response Plan.

8.5 Emergency Access

The Contractor will be required to maintain emergency access routes throughout construction and identify site access points for the working area. Refer also to Section 2, specifically Figures 2-3 to 2.11 which present an overview of access / egress and working areas during each stage of the construction phase.

8.6 Extreme Weather Events (including flooding)

Refer also to Section 2, specifically Figures 2-3 to 2.11 which present an overview of access / egress, flood protection measures and working areas during each stage of the construction phase.

To mitigate flood risk (or unacceptable residual flood risk) during the construction period, the contractor will employ the following mitigation measures as part of the site preparation for the construction phase (ARUP, 2025):

- **Demolition & Construction Stage Flood Protection Measures**:
  - Elevating the site compound / site storage areas at the Shipyard site via fill placement to an appropriate level (i.e. 5.7m AOD based on the outcome of the FRA (ARUP, 2025).
  - Constructing and/or implementing temporary flood defences at the Shipyard site (i.e. civil works and/or proprietary flood defence products, or a combination of both) to an appropriate level (i.e. 5.7m AOD based on the outcome of the FRA (ARUP, 2025).
  - In the event of a tidal flood warning, materials stored in the Shipyard site compound will be removed immediately to avoid the risk of flooding to neighbouring properties.

- **Preparation of a Flood Emergency Response Plan for Construction Phase (FERP-CP)** – A FERP-CP will be developed by the Contractor(s) for the project, which will contain a detailed response plan to a tidal flood event on the Shannon occurring while construction was active on the site, which will include the following mitigation measures (noting this not necessarily to be an exhaustive list of measures) (ARUP, 2025):

- Development of a FERP-CP in the first instance;
- Definition of designated roles within the construction team / firm, and associated responsibilities with regard to the implementation of the FERP-CP;
- Having an appropriate nominated person (e.g. site manager) who will be responsible for monitoring weather warnings, flood warnings, and storm-tide warnings (i.e. the 'Construction Phase Flood Manager') – this will be a part-time role that will only ever come into play on a periodic basis (or maybe not at all over the course of the construction phase);
- Communication protocols to the site team to alert them to the possibility of a flood and the need to move any machinery, plant, equipment, etc, to an appropriate location within the site/site compound if safe to do so, and to evacuate the site;
- General protocols around where and how machinery, plant, other equipment and materials are stored / stockpiled / located within the site compound(s), noting that all fuels, chemicals, oils, paints and any other hazardous materials will be stored within the construction compound at the Flaxmill site, which is located outside of the predicted flood zone.
- Signage and other information on site drawing awareness to FERP-CP protocols (e.g. materials / plant / equipment storage, evacuation routes, etc).
- The level of the compound and the materials storage areas are to be determined by the contractor and to be confirmed in the Flood Emergency Response Plan for Construction Phase (FERP-CP), taking into account the above mitigation measures, as well as the findings of the FRA (ARUP, 2025).

The Contractor(s) will provide a copy of the FERP-CP (which will take into account any relevant planning conditions, and any relevant future additional requirements via. changes in legislation or best practice guidance) to LCCC for review and comment in advance of commencement of any demolition or construction works onsite.

AtkinsRéalis - Baseline / Référence

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Wildlife Act, 1976 (Protection of Wild Animals) Regulations, 1990, S.I. No. 112 of 1990 and Wildlife Amendment Act, 2000 (S.I. No. 38 of 2000)

APPENDICES

Appendix A. Asbestos Report

A.1 ASBESTOS SURVEY REPORT (Phoenix Environmental Safety Ltd., 2024)

Phoenix Environmental Safety Ltd.

ASBESTOS SURVEY REPORT

(Refurbishment / Demolition Survey)

Client: Limerick Twenty Thirty Strategic Development DAC,
Gardens International, Henry Street, Limerick

Location: The Cleeves Site,
North Circular Road, Limerick

Date: 12th November 2024

Report No. PE24-1226

Graigueswood, Freshford, Co. Kilkenny

Tel: 056 8832414
Fax: 056 8832950

admin@phoenixenv.ie
www.phoenixenv.ie

Client Name: Limerick Twenty Thirty Strategic Development DAC, Gardens International, Henry Street, Limerick

Property: The Cleeves Site, North Circular Road, Limerick

Asbestos Survey Type: Refurbishment/Demolition Asbestos Survey

Survey Company: Phoenix Environmental Safety Ltd.

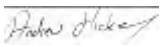
Surveyors: Eoghan Hickey, Andrew Hickey & John Tonkies

Testing Laboratory: G & L Consultancy Limited

Date of Survey: 6th November 2024

Date of Survey Report: 12th November 2024

Report issue: Final

Signed:  Date: 12th November 2024

This report cannot be used for contractual or engineering purposes unless this sheet is signed where indicated by Surveyor. The report must also be designated `final` on the signatory sheet.

Please note that Phoenix Environmental Safety Ltd. cannot be held responsible for the way in which the Client interprets or acts upon the results. The report must be read in its entirety including any appendices. Phoenix Environmental Safety Ltd. accepts no responsibility for sub-division of this report. All measurements in this report are approximate and therefore should not be used by the asbestos removal contractor for pricing purposes. The asbestos removal contractors should ascertain for themselves, by site measurements and inspection, the exact nature and extent of the work to be done.

The survey information should be used to help in the tendering process for removal of ACMs from the building before work starts. The survey report should be supplied by the client to designers and contractors who may be bidding for the work, so that the asbestos risks can be addressed. In this type of survey, where the asbestos is identified so that it can be removed (rather than to manage it), the survey does not normally assess the condition of the asbestos, other than to indicate areas of damage or where additional asbestos debris may be present. However, where the asbestos removal may not take place for some time, the ACMs' condition will need to be assessed and the materials managed.

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SUMMARY

Following a request made by Limerick Twenty Thirty Strategic Development DAC, we have produced this Refurbishment/Demolition Asbestos Survey report for the Cleeves Site, North Circular Road, Limerick with the aim of finding asbestos containing materials (ACMs) within the scope of the asbestos survey.

The scope of the asbestos survey was confined to all accessible areas of The Cleeves Site which is due for refurbishment and demolition works in the near future. The buildings within the scope of the asbestos survey are outlined in Appendix F.

During the asbestos survey at the former Cleeves Site in Limerick, the following asbestos containing materials were detected in the following locations:

BUILDING 1

- Corrugated asbestos cement sheeting was identified on the roof of the buildings (90 m^2 total approx. floor area) and associated cement debris was identified internally and externally

BUILDING 2

- Asbestos insulation board was identified on the ceiling. The upper floors in Building 2 were inaccessible to assess the quantity of the material

BUILDING 3

- Corrugated asbestos cement sheeting was identified on the roof and sides of the building (720 m^2 approx. floor area) and associated cement debris was identified internally and externally

BUILDING 4

- Asbestos cement slates were identified on the roof area (600 m^2 approx. floor area)
- Asbestos rope was identified on the wiring of the electrics in the lift motor room
- Asbestos cement and insulation board debris was identified in the attic area
- Asbestos thermal insulation was identified within the boiler unit on the 3rd floor
- Asbestos thermal insulation was identified on the high-level pipework on the ground floor leading to the boiler room at the rear of the building (23 linear meters approx.)

BUILDING 5

- Corrugated asbestos cement sheeting was identified on the roof of the building (270 m^2 approx. floor area)

BUILDING 6

- No asbestos detected

BUILDING 7

- Corrugated asbestos cement sheeting was identified on a section of the roof (160 m^2 approx. floor area)

BUILDING 8

- No asbestos detected

…continued

SUMMARY CONTINUED

BUILDING 9

- Corrugated asbestos cement sheeting was identified on the main roof (305 m^2 approx. floor area)
- Asbestos cement slates were identified on the side roof and on the rear porch area (70 m^2 approx. floor area)
- Asbestos containing paper was identified under marmoleum floor covering in the main office area (150 m^2 approx.)
- Asbestos containing floor tiles were identified in the office and lobby areas between building 9 & 8 (150 m^2 approx.)

BUILDING 10

- Asbestos felt was identified on the main roof of the building (700 m^2 approx. floor area)
- Asbestos cement board, floor tiles and bitumen adhesive (10 m^2 approx.) was identified in the storeroom during a previous survey. The area was locked during this survey and should be presumed to still remain in this location.
- Millboard panels were identified over two high-level heaters and on one timber truss in the centre of the building
- Asbestos containing floor tiles and adhesive was identified on the floors in the storeroom (20 m^2 approx.)

BUILDING 11 – BOILER HOUSE

- Asbestos rope seals were identified on the redundant boiler flue
- Asbestos thermal insulation residue was identified on the walls, older pipework, older boiler unit and former calorifier

BUILDING 12

- Corrugated asbestos cement sheeting was identified on the roof of the building (650 m^2 approx. floor area)
- Asbestos insulation board tiles were identified on the ceilings in several locations (440 m^2 approx.)
- Asbestos containing floor tiles and adhesive were identified on the floors in the ground floor storeroom (10 m^2 approx.)

BUILDING 13

- Asbestos containing floor tiles were identified on the floors in the ground floor office (20 m^2 approx.)

BUILDING 14

- Corrugated asbestos cement sheeting was identified on the roof of the building (900 m^2 approx. floor area)
- Corrugated asbestos cement sheeting was identified on the lean-to roof at the rear of Building 14 (175 m^2 approx. floor area)
- Asbestos insulation board was presumed on the high-level divide between building 13&14. (5 linear meters approx.) access was not available to this board because of its height and the volume of material stored in the area

BUILDING 15

- Corrugated asbestos cement sheeting was identified on the roof of the building (565 m^2 approx. floor area)

…continued

SUMMARY CONTINUED

BUILDING 16

- Corrugated asbestos cement sheeting was identified on the roof of the building (165 m^2 approx. floor area)
- Asbestos containing floor tiles and bitumen adhesive were identified in the rear entrance area (40 m^2 approx.)

BUILDING 17

- Asbestos cement slates were identified on the rear pitch of the roof (50 m^2 approx. floor area)

BUILDING 18

- No asbestos detected

BUILDING 19 – CHIMNEY

- No asbestos detected

Throughout Site

- CAF gaskets were identified between the older pipework flanges
- Rope seals were identified on the doors of the older electrical equipment
- Asbestos cement debris and rainwater goods can be found internally and externally throughout the site

See Appendix C & F for more details

INTRODUCTION

Background

Asbestos has been used extensively in the building industry for over one hundred years and has proved to be an excellent product for a variety of uses, having many qualities such as insulation, fire and chemical resistance to name a few. Its suitability across a wide range of uses and its relatively cheap cost made it very popular, with over 3,000 different asbestos products having been recorded.

The use of asbestos containing materials (ACM's) was most prevalent between the 1950's and 1970's when it provided an economic, easy to use and versatile material. Unfortunately, given the constitution and make up of asbestos it can give rise to microscopic airborne fibres being released into the working environment. The fibres have carcinogenic properties caused by inhalation of the fibres which can get lodged in the lining of the lungs causing disease and death.

Scope & Purpose

Limerick Twenty Thirty Strategic Development DAC has commissioned Phoenix Environmental Safety Ltd. to undertake an asbestos survey at the Cleeves Site, North Circular Road, Limerick. The aim of the survey was to locate and identify the presence of asbestos containing materials (ACM's) or suspected ACM's. This report provides a record and assessment of the extent and characteristics of ACM's and is based on information made available on the 6th November 2024.

This particular survey comprised of a Refurbishment / Demolition Survey, carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006, the Health and Safety Executive's (UK) guidance document HSG 264 (Asbestos: The Survey Guide) and HSG 227 (A Comprehensive Guide to managing Asbestos in Premises).

This means that:

- As far as reasonably practicable, locate and describe all ACM's in all reasonably accessible areas within the scope of the survey
- A sampling programme is undertaken to identify possible ACM's and estimates of the volumes and the surface areas of ACM made
- A record of the condition of the ACM's or where additional asbestos debris may be expected to be present is produced

Refurbishment / Demolition Surveys (formerly type 3 surveys)

This type of survey is necessary prior to any refurbishment (including "minor") or demolition work being carried out. These "refurbishment / demolition" surveys will be much more intrusive and destructive compared with management surveys as their intention is to locate all the ACMs so that they can be removed before the refurbishment or demolition takes place. Refurbishment/demolition surveys are required as necessary when the needs or use of the building changes and the fabric of the building will be disturbed or complex fixed plant and equipment are to be dismantled.

The purpose of the report is to:

- Enable the client to take appropriate precautions so that people who work at the Cleeves Site during the forthcoming refurbishment/demolition works are not exposed to asbestos-related health risks
- Provide information to assist the client in developing and implementing an action plan before any refurbishment works or demolition is carried out

Presentation of Findings

Data Sheets

A series of data sheets have been prepared to provide assessments and recommendations for each of the locations where samples were taken. These data sheets are presented in Appendix C.

Figures

The schematic diagrams presented in Appendix F at the rear of this document shows the locations of all of the asbestos containing materials detected during the asbestos survey.

Caveats

All reasonable steps have been taken to ensure that the contents and findings of this report are true and accurate. Though as stated below, further undetected ACM's may still be present within the premises. The client should therefore be aware of his responsibilities for identifying, locating, removing and/or managing all ACM's within the premises, and for notifying the appropriate authorities where necessary.

Refurbishment / Demolition Surveys

This type of survey employs the use of destructive sampling techniques of an unfamiliar site. Although every effort is made to locate all asbestos containing materials, it is impossible to rule out the possibility that undiscovered asbestos materials may be present. If the building is to undergo major refurbishment or demolition, it is recommended that the persons carrying out the work are made aware of this and take sufficient precautions, as may be appropriate, to ensure the health and safety of their own employees and any other parties who may be affected by the works.

APPENDIX A

ASBESTOS MATERIALS IN BUILDINGS

Sprayed coatings applied in Ireland were typically a mixture of hydrated asbestos cement containing up to 85% asbestos, mainly amosite but crocidolite and mixtures have been used. Primarily used for anti-condensation and acoustic control and fire protection to structural steelwork. It is a friable material but if in a good condition and unlikely to be disturbed presents no immediate danger; however it is likely to release fibres, if disturbed especially during repair and maintenance work. As it ages the binding medium of sprayed asbestos may degrade with the consequent release of more fibres.

Thermal insulation to boilers, vessels, pipe work, valves, pumps etc also known as hand applied lagging. Lagging may have a protective covering of cloth, tape, paper, metal or a surface coating of cement. All types of asbestos may be found in lagging and the content can vary between 15 and 85% asbestos with the protective papers being up to 100% chrysotile. The likelihood of fibre release depends upon its composition, friability and state of repair, but it is particularly susceptible to damage and disturbance through maintenance work or the action of water leaks.

Asbestos insulating boards usually contain between 15 to 40% amosite, although boards may be found to contain other types of asbestos and in other quantities. Insulating boards were developed in the 1950s to provide an economical, lightweight, fire resisting insulating material. As insulation board is semi-compressed it is more likely to release fibres as a result of damage or abrasion. Work on asbestos insulation board can give rise to high levels of asbestos fibre.

Asbestos cement products as in roofing slates, wall cladding, permanent shuttering, flue, rain water and vent pipes generally contain 10 to 15% of asbestos fibre bounded in Portland cement, some flexible boards contain a small proportion of cellulose. All three types of asbestos have been used in the manufacture of asbestos cement. The asbestos fibres in asbestos cement are usually firmly bound in the cement matrix and will be released only if the material is mechanically damaged or as it deteriorates with age.

Ropes and yarns are usually high in asbestos content, approaching 100% and all three types of asbestos have been used in their manufacture. They were used as in the pipe lagging process and in pipe jointing and also for packing materials as in heat/fire resistant boiler, oven and flue sealing or anywhere thermal of fire protection was required. The risk of fibre release depends upon the structure of the material; bonded gasket material is unlikely to release asbestos but an unbonded woven material may give rise to high fibre release especially if when damaged or frayed.

Cloth thermal insulation and lagging, including fire resistant blankets, mattresses and protective curtains, gloves, aprons, overalls etc. All types of asbestos have been used in the manufacture but since the mid 60's the majority has been chrysotile, the content of which can be up to 100 %.

Millboard, paper and CAF gaskets usually have an asbestos content approaching 100% with all three types of asbestos being used in their manufacture. They were used for insulation of electrical equipment and for thermal insulation. Asbestos paper has been used as a laminate for fireproofing to various fibre panels. These materials are on some occasions not well bonded and will release asbestos fibres if subject to abrasion and wear.

Bitumen felts and coatings may contain asbestos either bound in the bitumen matrix or as an asbestos paper liner. These materials are not likely to present a hazard during normal installation or use, but should be removed and disposed of in compliance with any regulation applicable.

Thermoplastic floor tiles can contain up to 25% asbestos usually chrysotile, PVC vinyl floor tiles and unbacked PVC flooring normally 7-10% chrysotile and asbestos paper backed PVC flooring the paper backing may contain up to 100% chrysotile. Fibre release is not normally an issue but may occur when the material is cut or subjected to abrasion.

Textured coatings. Decorative coatings on walls and ceilings usually contain 3-5% chrysotile. Fibre release may occur when subjected to abrasion.

Mastics, sealants, putties and floor tile adhesives may contain small amounts of asbestos. The only possible risk is from sanding of hardened material when appropriate precautions should be taken.

Reinforced plastic and resin composites, used for toilet cisterns, seats, banisters, stair nosings, window seals, lab bench tops, brake shoes and clutches in machines. The plastics usually contain 1-10% chrysotile and were used in for example car batteries to improve the acid resistance. Resins may contain between 20 and 50% amosite, but because of its composition fibre release is likely to be low.

ASBESTOS FIBRE TYPE COMMON NAMES	
Chrysotile	**White Asbestos**
Amosite	**Brown Asbestos**
Crocidolite	**Blue Asbestos**
Fibrous Actinolite	**N/A**
Fibrous Anthophyllite	**N/A**
Fibrous Tremolite	**N/A**

APPENDIX B

RESULTS OF LABORATORY ANALYSIS

G&L Consultancy
Training & Asbestos Management

BULK MATERIAL SAMPLE REPORT

Reference No:	J687505	Client Order No:	N/A
Date Received:	7 Nov 2024		
Client Name and Address:	Phoenix Environmental Safety Ltd (IE), Graigueswood, Freshford, Co. Kilkenny, Ireland .		
Site Address:	Cleeves Site, North Circular Road, Limerick		
Sampling Officer:	Phoenix Environmental Safety Ltd (IE)		
Date of Analysis:	7 Nov 2024		
Analyst:	Andy Webster Colin Webb David McNaugher Jamie Fearon Justin Proctor		
Approving Officer:	Andy Webster	Signed:	
Issue Date:	8 Nov 2024		

ANALYSIS RESULTS

Sampling carried out by our own officers follows the procedures documented in our internal method M3: The Sampling of Bulk Materials, for Analysis to Determine the Presence of Asbestos. These samples have been analysed in accordance with internal method M2: The Identification of Asbestos, within Bulk Materials, by the Use of Optical Microscopy. Both these internal methods are based on the standard method as outlined in the HSE Document HSG248 'Asbestos: The Analysts' Guide. Any deviations from these standard methods will be recorded in this report. No responsibility is taken for sampling that is not carried out by own officers. Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation. Any comments regarding percentage content is outside the scope of our UKAS accreditation. The material classification is the opinion of the analyst, based on the samples' appearance, as received, and may not accurately reflect the source material on site. Where 'Trace Asbestos' has been reported, only 1 or 2 fibres or fibre bundles have been identified and analysed as asbestos following a thorough examination of the sample. All samples are analysed at one of our UKAS accredited laboratories in Somerset or Northern Ireland. This report must not be reproduced, except in full, without the written permission of the laboratory. These samples will be retained within this laboratory for a period of six months prior to disposal at a licensed asbestos disposal site, unless the client makes alternative arrangements. Reports will be retained for a minimum of five years following the date of issue. For advice concerning these materials, risk assessments, removal procedures or information regarding the current legislation for work with asbestos containing materials, please contact G&L Consultancy Ltd.

Site Ref	Lab Ref	Description	Analysis Result	Classification
S1	BS222500	Building 1 - Pumphouse - Flange - Gasket	No Asbestos Detected	Not Applicable
S2	BS222501	Building 1 - Lean-to Roof - Cement sheeting	Chrysotile	Asbestos Cement
S3	BS222502	Building 2 - Flange - Gasket	No Asbestos Detected	Not Applicable
S4	BS222503	Building 2 - Electrical board - Backing board on floor	No Asbestos Detected	Not Applicable

G&L Consultancy Ltd
54A Huntly Road, Banbridge, Co. Down, Northern Ireland, BT32 3UA
Tel: 028 4062 3566 **Email:** ni@gnl.org.uk **Web:** www.gnl.org.uk
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G&L Consultancy Ltd is a company registered in England and Wales with a Company Number: 3687929

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2083

BULK MATERIAL SAMPLE REPORT (CONTINUATION)

Site Ref	Lab Ref	Description	Analysis Result	Classification
S5	BS222504	Building 2 - Ground floor - Ceiling - Insulation board	Chrysotile + Amosite	Asbestos Insulating Board
S6	BS222505	Builidng 2 - Switch room - Fuse box panel	No Asbestos Detected	Not Applicable
S7	BS222506	Building 2 - Electrical switch room - Spark arrestor	No Asbestos Detected	Not Applicable
S8	BS222507	Building 3 - Cement debris on ground	Chrysotile	Asbestos Cement
S9	BS222508	Building 3 - Rear of building - Cement gutter	Chrysotile	Asbestos Cement
S10	BS222509	Building 3 - Rear of building - Cement downpipe	Chrysotile + Amosite	Asbestos Cement
S11	BS222510	Building 4 - Tank room - Tank - Rope	No Asbestos Detected	Not Applicable
S12	BS222511	Building 4 - Tank room - Electrical box - Rope on wiring	Chrysotile	Asbestos Textiles/Paper
S13	BS222512	Builidng 4 - Roof - Felt	No Asbestos Detected	Not Applicable
S14	BS222513	Builidng 4 - Roof - Cement slate	Chrysotile	Asbestos Cement
S15	BS222514	Building 4 - Lift motor room - Side of LMR - Insulation board debris	Chrysotile + Amosite	Asbestos Insulating Board
S16	BS222515	Building 4 - Side of lift motor room - Cement debris	Chrysotile + Crocidolite	Asbestos Cement
S17	BS222516	Building 4 - 3rd Floor - Flange - Gasket	Chrysotile	Asbestos Textiles/Paper
S18	BS222517	Building 4 - 3rd Floor - Flange on pipe work - Rope	No Asbestos Detected	Not Applicable
S19	BS222518	Builidng 4 - 3rd Floor - Boiler unit - Insulation	Chrysotile	Asbestos Insulation/Coating
S20	BS222519	Building 4 - 2nd Floor - Electrical box - Door - Rope	Chrysotile	Asbestos Textiles/Paper

BULK MATERIAL SAMPLE REPORT (CONTINUATION)

Site Ref	Lab Ref	Description	Analysis Result	Classification
S21	BS222520	Building 4 - 1st Floor area - Felt	Chrysotile	Unknown
S22	BS222521	Building 4 - Ground floor - High level pipe - Insulation	Amosite	Asbestos Insulation/Coating
S23	BS222522	Building 4 - Rear area externally - Cement debris	Chrysotile	Asbestos Cement
S24	BS222523	Building 5/4 - High level pipe work at door - Insulation (white)	No Asbestos Detected	Not Applicable
S25	BS222524	Buildig 5 - Rear roof - Cement sheeting	Chrysotile + Amosite	Asbestos Cement
S26	BS222525	Building 5 - 1st floor electrical equipment - Door - Rope	Chrysotile	Asbestos Textiles/Paper
S27	BS222526	Building 6/8 - Pipe work - Insulation (pink)	No Asbestos Detected	Not Applicable
S28	BS222527	Builidng 7 - Roof - Cement sheeting	Chrysotile + Amosite	Asbestos Cement
S29	BS222528	Building 9 - Cement area - Roof - Cement sheeting	Chrysotile	Asbestos Cement
S30	BS222529	Builidng 9 - Front section - Roof - Cement slate	Chrysotile + Crocidolite	Asbestos Cement
S31	BS222530	Building 9 - External - Cement downpipe	Chrysotile + Crocidolite	Asbestos Cement
S32	BS222531	Building 9 - Attic - Vessel - Coating / insualtion	No Asbestos Detected	Not Applicable
S33	BS222532	Building 9 - Front area - Compound & adhesive	No Asbestos Detected	Not Applicable
S34	BS222533	Building 9 - Cemented area - Under marmoleum - Paper	Chrysotile	Asbestos Textiles/Paper
S35	BS222534	Building 9 - Lobby to Builidng 8 - Floor tile	Chrysotile	Reinforced Composite
S36	BS222535	Builidng 10 - Roof - Felt	Chrysotile	Well Bound Material

BULK MATERIAL SAMPLE REPORT (CONTINUATION)

Site Ref	Lab Ref	Description	Analysis Result	Classification
S37	BS222536	Building 10 - End store - Floor tile & adhesive	Chrysotile	Reinforced Composite + Well Bound Material
S38	BS222537	Building 10 - Warehouse - Over heater - Millboard	Chrysotile	Asbestos Insulating Board
S39	BS222538	Building 10 - Security area - Floor compound & adhesvie	No Asbestos Detected	Not Applicable
S40	BS222539	Building 11 - Flue pipe - Rope	Chrysotile	Asbestos Textiles/Paper
S41	BS222540	Building 11 - Electrical wiring covering - Textile	Amosite	Unknown
S42	BS222541	Building 11 - Boiler room - Wall - Insulation debris	Amosite	Asbestos Insulation/Coating
S43	BS222542	Building 11 - Boiler house - Flange - Gasket	Chrysotile	Asbestos Textiles/Paper
S44	BS222543	Building 11 - Boiler house - Tank - Insulation debris	Amosite	Asbestos Insulation/Coating
S45	BS222544	Builidng 11 - Boiler house - Tank - Bitumen pad	Amosite	Unknown
S46	BS222545	Building 12 - Roof - Cement sheeting	Chrysotile + Crocidolite	Asbestos Cement
S47	BS222546	Builidng 12 - Ceiling tile - Insulation board	Chrysotile + Amosite	Asbestos Insulating Board
S48	BS222547	Building 12 - 1st floor - Stairs - Insulation board	Chrysotile + Amosite	Asbestos Insulating Board
S49	BS222548	Building 12 - Ground floor warehose - Over column - Insulation board	Amosite + Chrysotile + Crocidolite	Asbestos Insulating Board
S50	BS222549	Builidng 12 - Store room - Floor tile & adhesive	Chrysotile	Reinforced Composite + Well Bound Material
S51	BS222550	Building 13 - Front store - Floor tile & adhesive	Chrysotile	Reinforced Composite
S52	BS222551	Builidng 14 - Roof - Cement sheeting	Chrysotile	Asbestos Cement

BULK MATERIAL SAMPLE REPORT (CONTINUATION)

Site Ref	Lab Ref	Description	Analysis Result	Classification
S53	BS222552	Builidng 14 - Rear lean-to roof - Cement sheeting	Chrysotile + Crocidolite	Asbestos Cement
S54	BS222553	Building 15 - Roof - Cement sheeting	Chrysotile	Asbestos Cement
S55	BS222554	Builidng 15 - External downpipe - Cement downpipe	Chrysotile	Asbestos Cement
S56	BS222555	Builidng 16 - Roof - Cement sheeting	Chrysotile + Crocidolite	Asbestos Cement
S57	BS222556	Building 16 - Rear entrance - Floor tile & adhesive	Chrysotile	Reinforced Composite + Well Bound Material
S58	BS222557	Building 17 - Rear lean-to - Debris - Felt	No Asbestos Detected	Not Applicable
S59	BS222558	Builidng 17 - Roof - Cement slate	Chrysotile + Crocidolite	Asbestos Cement
S60	BS222559	Building 17 - Rear of builidng - Debris - Cement	Chrysotile	Asbestos Cement
S61	BS222560	Builidng 18 - Roof - Felt	No Asbestos Detected	Not Applicable

BS222520 - Chrysotile fibres found adhered to sample surface. Not enough material around fibres for classification. Felt matrix is negative.
BS222540 - Loose bundles of Amosite fibres found adhered to surface of the textile material, no asbestos was found within the matrix of the sample.
BS222544 - Loose Amosite found adhered on surface of bitumen, no asbestos was detected within the matrix of the sample.
BS222547 - Board appears quite soft and friable.

APPENDIX C

ASBESTOS DATA SHEETS

The Cleeves Site, North Circular Road, Limerick

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Eoghan Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 1
Location	Roof areas
Extent/ Amount	90 m² total approx.

Survey Date	6.11.2024	Sample No.	BS 222501
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Cement sheeting	Normal occupant activity	N/A
Extent of damage	Damaged	Likelihood of disturbance	N/A
Surface treatment	Cement	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
Material assessment score: N/A		TOTAL SCORE: N/A	Priority assessment score: N/A

CONCLUSIONS AND RECOMMENDATIONS

The corrugated asbestos cement sheeting identified on the roof areas in Building 1 contains Chrysotile (white) asbestos fibres and associated cement debris was identified internally and externally. Asbestos cement products usually contain between 10-15% asbestos fibres, bound in Portland cement.

The cement sheeting should be removed by an asbestos removal contactor and disposed of as asbestos waste before the demolition works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 2
Location	Ceiling
Extent/ Amount	Not quantified

Survey Date	6.11.2024	Sample No.	BS 222504
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Insulation board	Normal occupant activity	N/A
Extent of damage	High	Likelihood of disturbance	N/A
Surface treatment	Unsealed	Human exposure potential	N/A
Asbestos type	Chrysotile & Amosite	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The insulation board identified on the ceiling in Building 2 contains Chrysotile (white) and Amosite (brown) asbestos fibres. Asbestos insulations boards usually contain between 15-45% asbestos fibres.

The asbestos insulation board (AIB) should be removed under controlled conditions by a specialist asbestos removal contractor and disposed of as asbestos waste before the demolition works commence. The upper floors in Building 2 were inaccessible to assess the quantity of the material

Carrying out removal works with asbestos insulation board will require 14 days notification to the HSA

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 3
Location	Roof & sides of building
Extent/ Amount	720 m² approx.

Survey Date	6.11.2024	Sample No.	BS 222507
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

	MATERIAL ASSESSMENT		PRIORITY ASSESSMENT
Product type	Cement sheeting	Normal occupant activity	N/A
Extent of damage	High	Likelihood of disturbance	N/A
Surface treatment	Cement	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
	Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A

CONCLUSIONS AND RECOMMENDATIONS

The corrugated asbestos cement sheeting identified on the roof and sides of building 3 contains Chrysotile (white) asbestos fibres. Asbestos cement debris was identified internally and externally. Asbestos cement products usually contain between 10-15% asbestos fibres, bound in Portland cement.

The cement sheeting and associated debris should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 4
Location	Roof
Extent/ Amount	600 m² approx.

Survey Date	6.11.2024	Sample No.	BS 222513
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Cement slates	Normal occupant activity	N/A
Extent of damage	Low	Likelihood of disturbance	N/A
Surface treatment	Cement	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The cement slates identified on the roof of Building 4 contains Chrysotile (white) asbestos fibres. Asbestos cement products usually contain between 10-15% asbestos fibres, bound in Portland cement.

The cement slates should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 4
Location	Lift motor room
Extent/ Amount	Electrics

Survey Date	6.11.2024	Sample No.	BS 222511
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Rope	Normal occupant activity	N/A
Extent of damage	Low	Likelihood of disturbance	N/A
Surface treatment	Textile	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The rope identified on the wiring of the electrics in the lift motor room contains Chrysotile (white) asbestos fibres. Rope seals can contain up to 100% asbestos fibres

The rope should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 4
Location	Attic
Extent/ Amount	Beside lift motor room

Survey Date	6.11.2024	Sample No.	BS 222515
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Cement & Insulation board debris	Normal occupant activity	N/A
Extent of damage	Medium	Likelihood of disturbance	N/A
Surface treatment	Unsealed	Human exposure potential	N/A
Asbestos type	Chrysotile & Amosite & Crocidolite	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The cement and insulation board debris identified in the attic area beside the lift motor room in Building 4 contains Chrysotile (white), Amosite (brown) and Crocidolite (blue) asbestos fibres. Asbestos insulations boards usually contain between 15-45% asbestos fibres. Asbestos cement products usually contain between 10-15% asbestos fibres

The cement and insulation board debris should be removed under controlled conditions by a specialist asbestos removal contractor and disposed of as asbestos waste before the demolition works commence.

Carrying out removal works with asbestos insulation board will require 14 days notification to the HSA

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 4
Location	3rd floor
Extent/ Amount	Boiler unit

Survey Date	6.11.2024	Sample No.	BS 222518
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Thermal insulation	Normal occupant activity	N/A
Extent of damage	Low	Likelihood of disturbance	N/A
Surface treatment	Sealed	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The thermal insulation identified around the sections of the boiler unit on the 3rd floor contains Chrysotile (white) asbestos fibres. Thermal insulation can contain between 15-85% asbestos fibres

The thermal insulation should be removed under controlled conditions by a specialist asbestos removal contractor and disposed of as asbestos waste before the demolition works commence.

Carrying out removal works with asbestos containing thermal insulation will require 14 days notification to the HSA

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 4
Location	Ground floor
Extent/ Amount	23 linear meters approx.

Survey Date	6.11.2024	Sample No.	BS 222521
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Thermal insulation	Normal occupant activity	N/A
Extent of damage	Medium	Likelihood of disturbance	N/A
Surface treatment	Within metal casing	Human exposure potential	N/A
Asbestos type	Amosite	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The thermal insulation identified on the high-level pipework on the ground floor contains Amosite (brown) asbestos fibres. Thermal insulation can contain between 15-85% asbestos fibres.

The thermal insulation should be removed under controlled conditions by a specialist asbestos removal contractor and disposed of as asbestos waste before the demolition works commence.

Carrying out removal works with asbestos containing thermal insulation will require 14 days notification to the HSA

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 5
Location	Roof
Extent/ Amount	270 m² approx. floor area

Survey Date	6.11.2024	Sample No.	BS 222524
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Cement sheeting	Normal occupant activity	N/A
Extent of damage	Weathered	Likelihood of disturbance	N/A
Surface treatment	None	Human exposure potential	N/A
Asbestos type	Chrysotile & Amosite	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The corrugated asbestos cement sheeting identified on the roof of the building contains Chrysotile (white) and Amosite (brown) asbestos fibres. Asbestos cement products usually contain between 10-15% asbestos fibres, bound in Portland cement.

The cement sheeting should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 7
Location	Roof
Extent/ Amount	160 m² approx. floor area

Survey Date	6.11.2024	Sample No.	BS 222527
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Cement sheeting	Normal occupant activity	N/A
Extent of damage	Weathered	Likelihood of disturbance	N/A
Surface treatment	None	Human exposure potential	N/A
Asbestos type	Chrysotile & Amosite	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The corrugated asbestos cement sheeting identified on a section of the roof contains Chrysotile (white) and Amosite (brown) asbestos fibres. Asbestos cement products usually contain between 10-15% asbestos fibres, bound in Portland cement.

The cement sheeting should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 9
Location	Roof
Extent/ Amount	305 m² approx. floor area

Survey Date	6.11.2024	Sample No.	BS 222528
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Cement sheeting	Normal occupant activity	N/A
Extent of damage	Medium	Likelihood of disturbance	N/A
Surface treatment	None	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The corrugated asbestos cement sheeting identified on the main roof contains Chrysotile (white) asbestos fibres. Asbestos cement products usually contain between 10-15% asbestos fibres, bound in Portland cement.

The cement sheeting should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 9
Location	Side roof & rear porch area
Extent/ Amount	70 m² approx. floor area

Survey Date	6.11.2024	Sample No.	BS 222529
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Cement slates	Normal occupant activity	N/A
Extent of damage	Medium	Likelihood of disturbance	N/A
Surface treatment	None	Human exposure potential	N/A
Asbestos type	Chrysotile & Crocidolite	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The cement slates identified on the side roof and on the rear porch area contain Chrysotile (white) and Crocidolite (blue) asbestos fibres. Asbestos cement products usually contain between 10-15% asbestos fibres, bound in Portland cement.

The cement slates should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

FURTHER DETAIL OF THE ASBESTOS CEMENT SLATES

View of the slates on the rear porch roof

View of the side building which contains the asbestos cement slates

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 9
Location	Main office area
Extent/ Amount	75 m² approx.

Survey Date	6.11.2024	Sample No.	BS 222533
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Paper	Normal occupant activity	N/A
Extent of damage	Medium	Likelihood of disturbance	N/A
Surface treatment	Covered with Marmoleum	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The paper identified under marmoleum floor covering in the main office area contains Chrysotile (white) asbestos fibres. Asbestos paper can contain up to 100% asbestos fibres.

The paper should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence. The full extent of the paper will not be known until the Marmoleum floor covering is removed

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 9
Location	Office and lobby area
Extent/ Amount	50 m² approx.

Survey Date	6.11.2024	Sample No.	BS 222534
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Floor tiles	Normal occupant activity	N/A
Extent of damage	Medium	Likelihood of disturbance	N/A
Surface treatment	Composite material	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The floor tiles identified in the office and lobby areas between building 9 & 8 contains Chrysotile (white) asbestos fibres. Thermoplastic floor tiles can contain up to 25% asbestos fibres.

The floor tiles should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 10
Location	Roof
Extent/ Amount	700 m² approx. floor area

Survey Date	6.11.2024	Sample No.	BS 222535
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Felt	Normal occupant activity	N/A
Extent of damage	Low	Likelihood of disturbance	N/A
Surface treatment	Well bound material	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The felt identified on the main roof of the building contains Chrysotile (white) asbestos fibres. Felt products generally contain a small quantity of asbestos fibres mixed into the product matrix.

The felt should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 10
Location	High level
Extent/ Amount	Over 2 high heaters & on 1 timber truss

Survey Date	6.11.2024	Sample No.	BS 222537
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Millboard	Normal occupant activity	N/A
Extent of damage	High	Likelihood of disturbance	N/A
Surface treatment	None	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The millboard panels identified over two high-level heaters and on one timber truss in the center of the building contain Chrysotile (white) asbestos fibres. Millboard can contain up to 100% asbestos fibres

The millboard panels should be removed under controlled conditions by a specialist asbestos removal contactor and disposed of as asbestos waste before the works commence. This work wll require a 14 day notification to the HSA prior to the work commencing

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

FURTHER DETAIL OF THE MILLBOARD PANELS

Closeup view of the remaining millboard on one of the panels over the heater

View of the other panel which was originally over a heater

FURTHER DETAIL OF THE MILLBOARD PANELS

Closeup view of the remaining millboard on the lower level of the truss

View of the remaining millboard on the higher level of the truss

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 10
Location	Storeroom
Extent/ Amount	20 m² approx.

Survey Date	6.11.2024	Sample No.	BS 222536
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Floor tiles and bitumen adhesive	Normal occupant activity	N/A
Extent of damage	Medium	Likelihood of disturbance	N/A
Surface treatment	Composite & well bound material	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The floor tiles and bitumen adhesive identified on the floors in the storeroom contains Chrysotile (white) asbestos fibres. Thermoplastic floor tiles can contain up to 25% asbestos fibres. Bitumen adhesive contains a small quantity of asbestos fibres.

The floor tiles and bitumen adhesive should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 11
Location	Boiler room
Extent/ Amount	Around flue pipe

Survey Date	6.11.2024	Sample No.	BS 222539
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Rope seals	Normal occupant activity	N/A
Extent of damage	High	Likelihood of disturbance	N/A
Surface treatment	Unsealed	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The rope seals identified on the redundant flue pipe contains Chrysotile (white) asbestos fibres. Rope seals can contain up to 100% asbestos fibres

The rope seals should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 11
Location	Boiler room
Extent/ Amount	Throughout

Survey Date	6.11.2024	Sample No.	BS 222541
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

	MATERIAL ASSESSMENT		PRIORITY ASSESSMENT
Product type	Thermal insulation residue	Normal occupant activity	N/A
Extent of damage	High	Likelihood of disturbance	N/A
Surface treatment	Unsealed	Human exposure potential	N/A
Asbestos type	Amosite	Maintenance activity	N/A
	Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A

CONCLUSIONS AND RECOMMENDATIONS

The thermal insulation residue identified on the walls, older pipework, older boiler unit and former calorifier in the boiler room in Building 11 contains Amosite (brown) asbestos fibres. Thermal insulation can contain between 15-85% asbestos fibres.

The thermal insulation should be removed under controlled conditions by a specialist asbestos removal contractor and disposed of as asbestos waste before the demolition works commence.

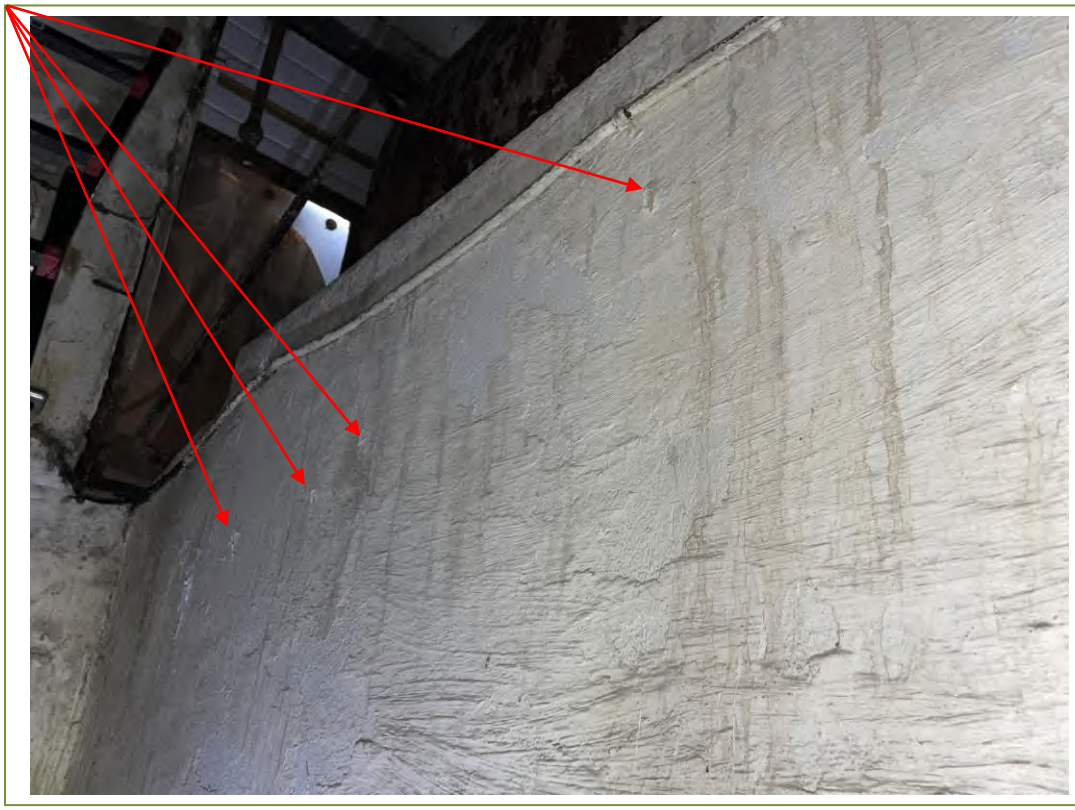
Carrying out removal works with asbestos containing thermal insulation will require 14 days notification to the HSA

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

DETAIL OF THE ASBESTOS CONTAINING THERMAL INSULATION RESIDUE

Asbestos containing thermal insulation residue on the boiler unit in the boiler room



Asbestos containing thermal insulation residue on the walls and pipework in the boiler room

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 12
Location	Roof
Extent/ Amount	650 m² approx.

Survey Date	6.11.2024	Sample No.	BS 222545
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Cement sheeting	Normal occupant activity	N/A
Extent of damage	Medium	Likelihood of disturbance	N/A
Surface treatment	Cement	Human exposure potential	N/A
Asbestos type	Chrysotile & Crocidolite	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The corrugated asbestos cement sheeting identified on the roof of the building 12 contains Chrysotile (white) and Crocidolite (blue) asbestos fibres. Asbestos cement products usually contain between 10-15% asbestos fibres, bound in Portland cement.

The cement sheeting should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 12
Location	Ceiling
Extent/ Amount	440 m² approx.

Survey Date	6.11.2024	Sample No.	BS 222546
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

	MATERIAL ASSESSMENT		PRIORITY ASSESSMENT
Product type	Insulation board	Normal occupant activity	N/A
Extent of damage	Medium	Likelihood of disturbance	N/A
Surface treatment	Composite & well bound material	Human exposure potential	N/A
Asbestos type	Chrysotile & Amosite	Maintenance activity	N/A
	Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A

CONCLUSIONS AND RECOMMENDATIONS

The insulation board was identified on the ceiling and wall cladding in Building 12 contains Chrysotile (white) and Amosite (brown) asbestos fibres. Asbestos insulations boards usually contain between 15-45% asbestos fibres.

The insulation board should be removed under controlled conditions by a specialist asbestos removal contractor and disposed of as asbestos waste before the demolition works commence.

Carrying out removal works with asbestos insulation board will require 14 days notification to the HSA

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

DETAIL OF THE ASBESTOS INSULATION BOARD

Asbestos insulation board on the walls of the stairs to the 1st floor in Building 12

Asbestos insulation board on the ceiling and around the beams in Building 12

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 12
Location	Storeroom
Extent/ Amount	10 m² approx.

Survey Date	6.11.2024	Sample No.	BS 222549
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Floor tiles and bitumen adhesive	Normal occupant activity	N/A
Extent of damage	Medium	Likelihood of disturbance	N/A
Surface treatment	Composite & well bound material	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The floor tiles and bitumen adhesive identified in the ground floor storeroom in Building 12 contains Chrysotile (white) asbestos fibres. Thermoplastic floor tiles can contain up to 25% asbestos fibres. Bitumen adhesive contains a small quantity of asbestos fibres.

The floor tiles and bitumen adhesive should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 13
Location	Roof
Extent/ Amount	20 m² approx.

Survey Date	6.11.2024	Sample No.	BS 222550
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Floor tiles	Normal occupant activity	N/A
Extent of damage	Medium	Likelihood of disturbance	N/A
Surface treatment	Composite material	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The floor tiles identified on the floors in the ground floor office contains Chrysotile (white) asbestos fibres. Thermoplastic floor tiles can contain up to 25% asbestos fibres.

The floor tiles should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 14
Location	Roof
Extent/ Amount	900 m² approx. floor area

Survey Date	6.11.2024	Sample No.	BS 222551
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Cement sheeting	Normal occupant activity	N/A
Extent of damage	Weathered	Likelihood of disturbance	N/A
Surface treatment	None	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The corrugated asbestos cement sheeting identified on the roof of the building contains Chrysotile (white) asbestos fibres. Asbestos cement products usually contain between 10-15% asbestos fibres, bound in Portland cement.

The cement sheeting should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 14
Location	Roof
Extent/ Amount	175 m² approx. floor area

Survey Date	6.11.2024	Sample No.	BS 222552
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Cement sheeting	Normal occupant activity	N/A
Extent of damage	Medium	Likelihood of disturbance	N/A
Surface treatment	None	Human exposure potential	N/A
Asbestos type	Chrysotile & Crocidolite	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The corrugated asbestos cement sheeting identified on the lean-to roof at the rear of building 14 contains Chrysotile (white) and Crocidolite (blue) asbestos fibres. Asbestos cement products usually contain between 10-15% asbestos fibres, bound in Portland cement.

The cement sheeting should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 14
Location	Ceiling
Extent/ Amount	5 linear meters approx.

Survey Date	6.11.2024	Sample No.	N/A
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

	MATERIAL ASSESSMENT		PRIORITY ASSESSMENT
Product type	Insulation board	Normal occupant activity	N/A
Extent of damage	Low	Likelihood of disturbance	N/A
Surface treatment	None	Human exposure potential	N/A
Asbestos type	Crocidolite (presumed)	Maintenance activity	N/A
	Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A

CONCLUSIONS AND RECOMMENDATIONS

The insulation board was identified on the high level divide between building 13 & 14 is presumed to contain Crocidolite (blue) asbestos fibres. Asbestos insulations boards usually contain between 15-45% asbestos fibres.

When access is available, the board should be sampled. If it is found to be asbestos insulation board, the insulation board should be removed under controlled conditions by a specialist asbestos removal contractor and disposed of as asbestos waste before the demolition works commence.

Carrying out removal works with asbestos insulation board will require 14 days notification to the HSA

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 15
Location	Roof
Extent/ Amount	565 m² approx. floor area

Survey Date	6.11.2024	Sample No.	BS 222553
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Cement sheeting	Normal occupant activity	N/A
Extent of damage	Weathered	Likelihood of disturbance	N/A
Surface treatment	None	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The corrugated asbestos cement sheeting identified on the roof of the building contains Chrysotile (white) asbestos fibres. Asbestos cement products usually contain between 10-15% asbestos fibres, bound in Portland cement.

The cement sheeting should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 16
Location	Roof
Extent/ Amount	165 m² approx.

Survey Date	6.11.2024	Sample No.	BS 222555
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Cement sheeting	Normal occupant activity	N/A
Extent of damage	Medium	Likelihood of disturbance	N/A
Surface treatment	None	Human exposure potential	N/A
Asbestos type	Chrysotile & Crocidolite	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The corrugated asbestos cement sheeting identified on the roof of the building contains Chrysotile (white) and Crocidolite (blue) asbestos fibres. Asbestos cement products usually contain between 10-15% asbestos fibres, bound in Portland cement.

The cement sheeting should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 16
Location	Rear entrance area
Extent/ Amount	40 m² approx.

Survey Date	6.11.2024	Sample No.	BS 222556
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Floor tiles and bitumen adhesive	Normal occupant activity	N/A
Extent of damage	High	Likelihood of disturbance	N/A
Surface treatment	Composite & well bound material	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The floor tiles and bitumen adhesive identified in the rear entrance area contain Chrysotile (white) asbestos fibres. Thermoplastic floor tiles can contain up to 25% asbestos fibres. Bitumen adhesive contains a small quantity of asbestos fibres.

The floor tiles and bitumen adhesive should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 17
Location	Rear pitch of the roof
Extent/ Amount	50 m² approx. floor area

Survey Date	6.11.2024	Sample No.	BS 222558
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Cement slates	Normal occupant activity	N/A
Extent of damage	Medium	Likelihood of disturbance	N/A
Surface treatment	None	Human exposure potential	N/A
Asbestos type	Chrysotile & Crocidolite	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The cement slates identified on the rear pitch of the roof contains Chrysotile (white) and Crocidolite (blue) asbestos fibres. Asbestos cement products usually contain between 10-15% asbestos fibres, bound in Portland cement.

The cement slates should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Building 17
Location	Rear extension
Extent/ Amount	Not quantified

Survey Date	6.11.2024	Sample No.	BS 222559
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Cement gutter & associated debris	Normal occupant activity	N/A
Extent of damage	High	Likelihood of disturbance	N/A
Surface treatment	None	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The cement gutters and associated debris were identified within the building contains Chrysotile (white) asbestos fibres. Asbestos cement products usually contain between 10-15% asbestos fibres, bound in Portland cement.

The cement gutters and associated debris should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Throughout site
Location	Roof areas
Extent/ Amount	Not quantified

Survey Date	6.11.2024	Sample No.	BS 222509
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Cement gutters and downpipes	Normal occupant activity	N/A
Extent of damage	High	Likelihood of disturbance	N/A
Surface treatment	Cement	Human exposure potential	N/A
Asbestos type	Chrysotile & Amosite	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The cement gutters and downpipes identified on buildings throughout the site contains Chrysotile (white) and Amosite (brown) asbestos fibres. Asbestos cement products usually contain between 10-15% asbestos fibres, bound in Portland cement.

The cement gutters and downpipes should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

FURTHER DETAIL OF THE ASBESTOS CEMENT RAINWATER GOODS

View of the asbestos cement gutters and downpipes on building 4

View of the asbestos cement gutters and downpipes on building 9

FURTHER DETAIL OF THE ASBESTOS CEMENT RAINWATER GOODS

View of the asbestos cement gutters and downpipes on building 14

View of the asbestos cement gutters and downpipes on building 15

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Throughout site
Location	Internal & external
Extent/ Amount	Not quantified

Survey Date	6.11.2024	Sample No.	BS 222552
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Cement debris	Normal occupant activity	N/A
Extent of damage	High – debris	Likelihood of disturbance	N/A
Surface treatment	None	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The cement debris identified throughout the site contains Chrysotile (white) and Crocidolite (blue) asbestos fibres. Asbestos cement products usually contain between 10-15% asbestos fibres, bound in Portland cement.

The cement debris should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

FURTHER DETAIL OF THE ASBESTOS CEMENT DEBRIS

Asbestos cement debris in the rear of Building 17

Asbestos cement debris along the rear of building 4

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Throughout site
Location	Old electrical boxes
Extent/ Amount	Doors of the electrical units

Survey Date	6.11.2024	Sample No.	BS 222519
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	Rope seals	Normal occupant activity	N/A
Extent of damage	Medium	Likelihood of disturbance	N/A
Surface treatment	None	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The rope seals identified on the doors of the electrical units throughout the site contain Chrysotile (white) asbestos fibres. Rope seals can contain up to 100% asbestos fibres

The rope seals should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Andrew Hickey
Date	12th November 2024
Site Details	The Cleeves Site, North Circular Road, Limerick
Client Name	Limerick Twenty Thirty Strategic Development DAC
Survey Type	R/D Asbestos Survey
Site Ref	PE 24-1226
Building Ref.	Throughout site
Location	Pipework flanges
Extent/ Amount	1 per flange

Survey Date	6.11.2024	Sample No.	BS 222519
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

MATERIAL ASSESSMENT		PRIORITY ASSESSMENT	
Product type	CAF Gasket	Normal occupant activity	N/A
Extent of damage	Medium	Likelihood of disturbance	N/A
Surface treatment	None	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A	

CONCLUSIONS AND RECOMMENDATIONS

The compressed asbestos fibre (CAF) gaskets identified between the old pipework flanges throughout the site contain Chrysotile (white) asbestos fibres. CAF gaskets have an asbestos content approaching 100% asbestos fibres, which is mixed with a small amount of binder

The CAF gaskets should be removed by an asbestos removal contactor and disposed of as asbestos waste before the works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

APPENDIX D

NON ASBESTOS CONTAINING MATERIALS

Pipework insulation in building 1

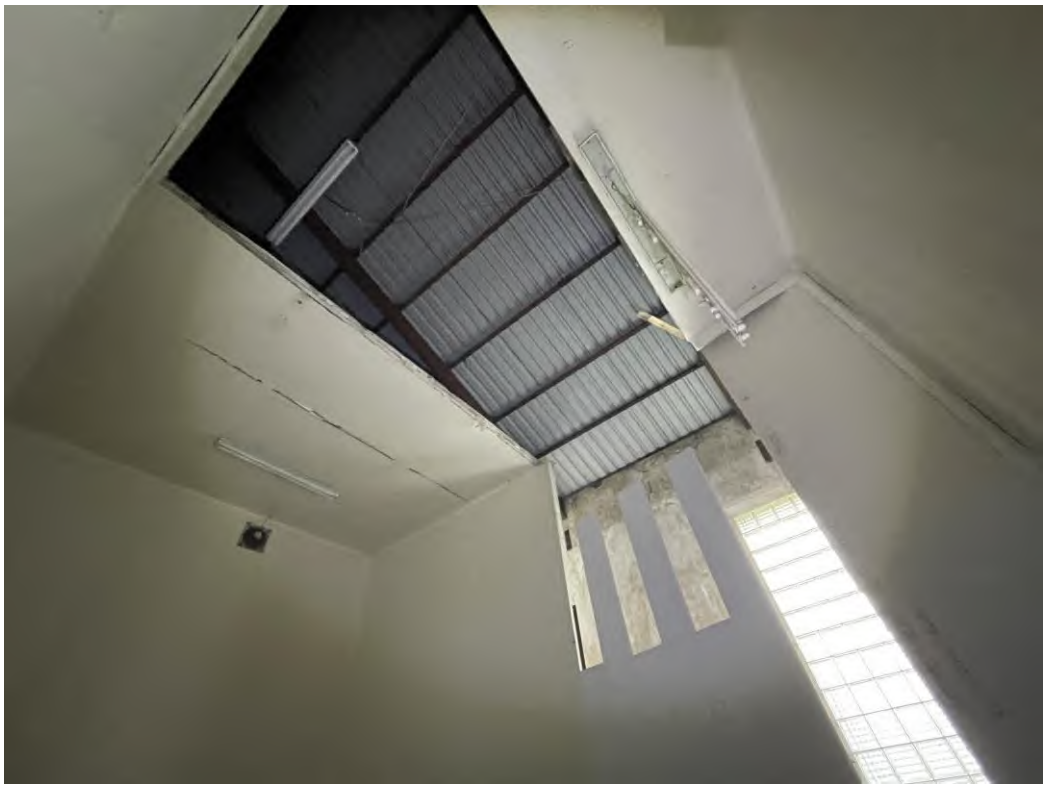
Spark arrestors and backing boards on redundant electrics in building 2

NON ASBESTOS CONTAINING MATERIALS

Rope on the tank in the attic in building 4

Rope on the pipework on the 3rd floor in building 4

NON ASBESTOS CONTAINING MATERIALS



Lean-to roof in building 4

Felt on the 1st floor in building 4

NON ASBESTOS CONTAINING MATERIALS

Coating sampled from the tank in the main attic of building 9

Polystyrene insulation in the wall panels of building 8

NON ASBESTOS CONTAINING MATERIALS

Plasterboard ceiling tiles in building 5

Pipework insulation sampled in building 5

NON ASBESTOS CONTAINING MATERIALS

Ceramic floor tiles in building 5

Black compound sampled in the security area of building 10

NON ASBESTOS CONTAINING MATERIALS

Floor tiles sampled from the hallway

Metal cladding on the rear outbuilding

APPENDIX E

NON ACCESSIBLE LOCATIONS

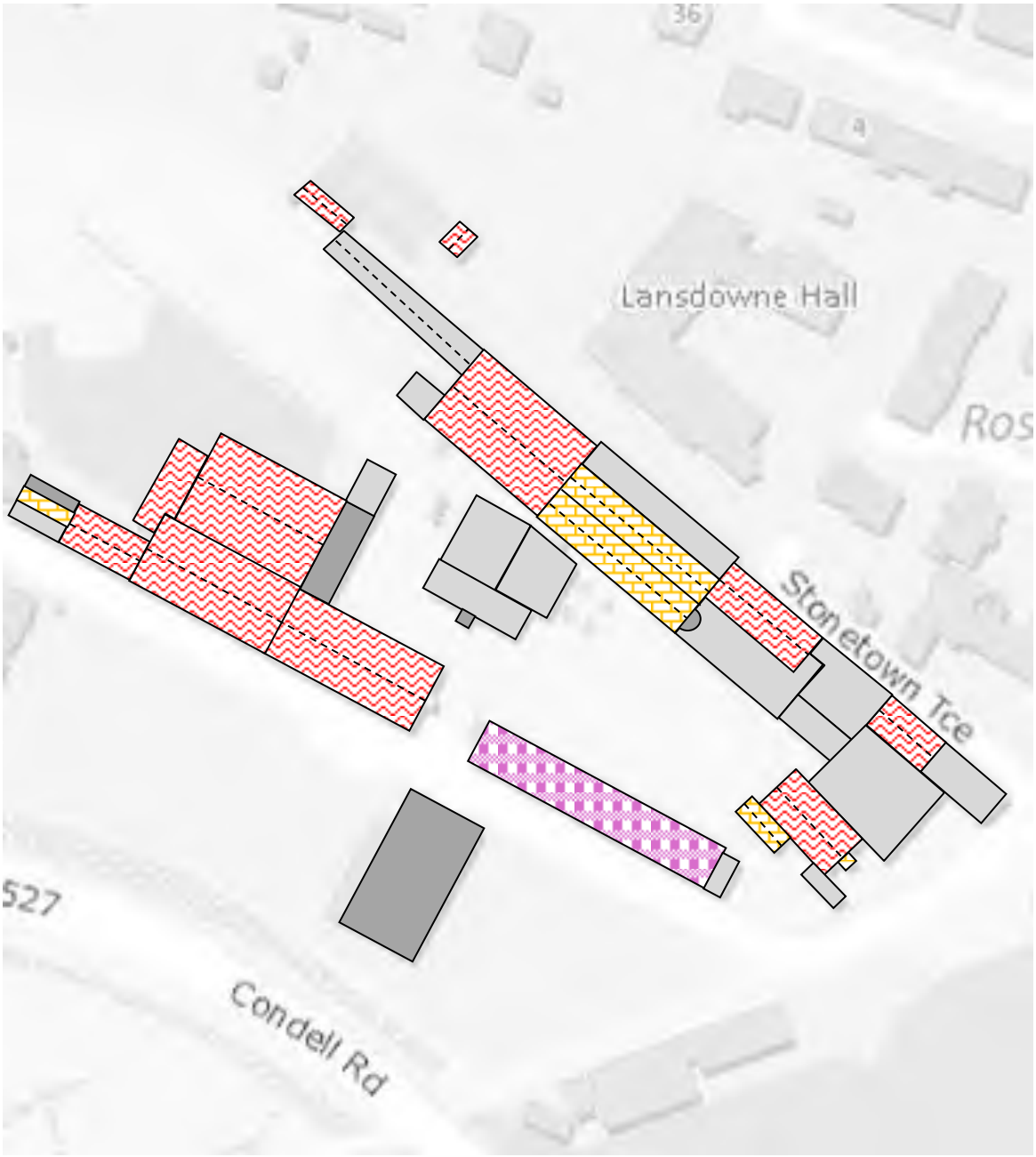
- The upper floors in Building 2 were inaccessible. All stairs leading to this area were damaged or in very poor condition
- The attic area in Building 4 were not fully accessible due to the condition of the ceilings. Most areas were inaccessible and only viewed from a safe distance from the lift motor room
- The attic on the south side of building 9 was not accessible
- The storeroom in building 10 was locked and access was not available
- Building 12 was live. Intrusive sampling was limited in the occupied areas.
- The attic area in Building 14 was not accessible due to its height. The northern section of Building 14 was full of antiques and access around the building was limited
- No inspection of live electrical or mechanical plant or similar requiring the attendance of a specialist engineer was carried out
- No inspection of any areas requiring specialist access equipment other than a telescopic ladder was carried out
- No underground services or confined spaces where inspected
- Samples have not been taken where the act of sampling would endanger the surveyors or affect the functional integrity of the item concerned
- All contractors working on site should always remain vigilant to the possibility that other asbestos containing materials may be concealed within the fabric of the building or equipment. If any suspect asbestos containing materials are uncovered during the course of the work, works must stop in that area and the suspect material should be sampled and analysed immediately for the presence of asbestos

APPENDIX F

FLOOR PLANS & LOCATION OF ASBESTOS CONTAINING MATERIALS

Schematic diagram only Not to scale 12th November 2024	The Cleeves Site, North Circular Road, Limerick

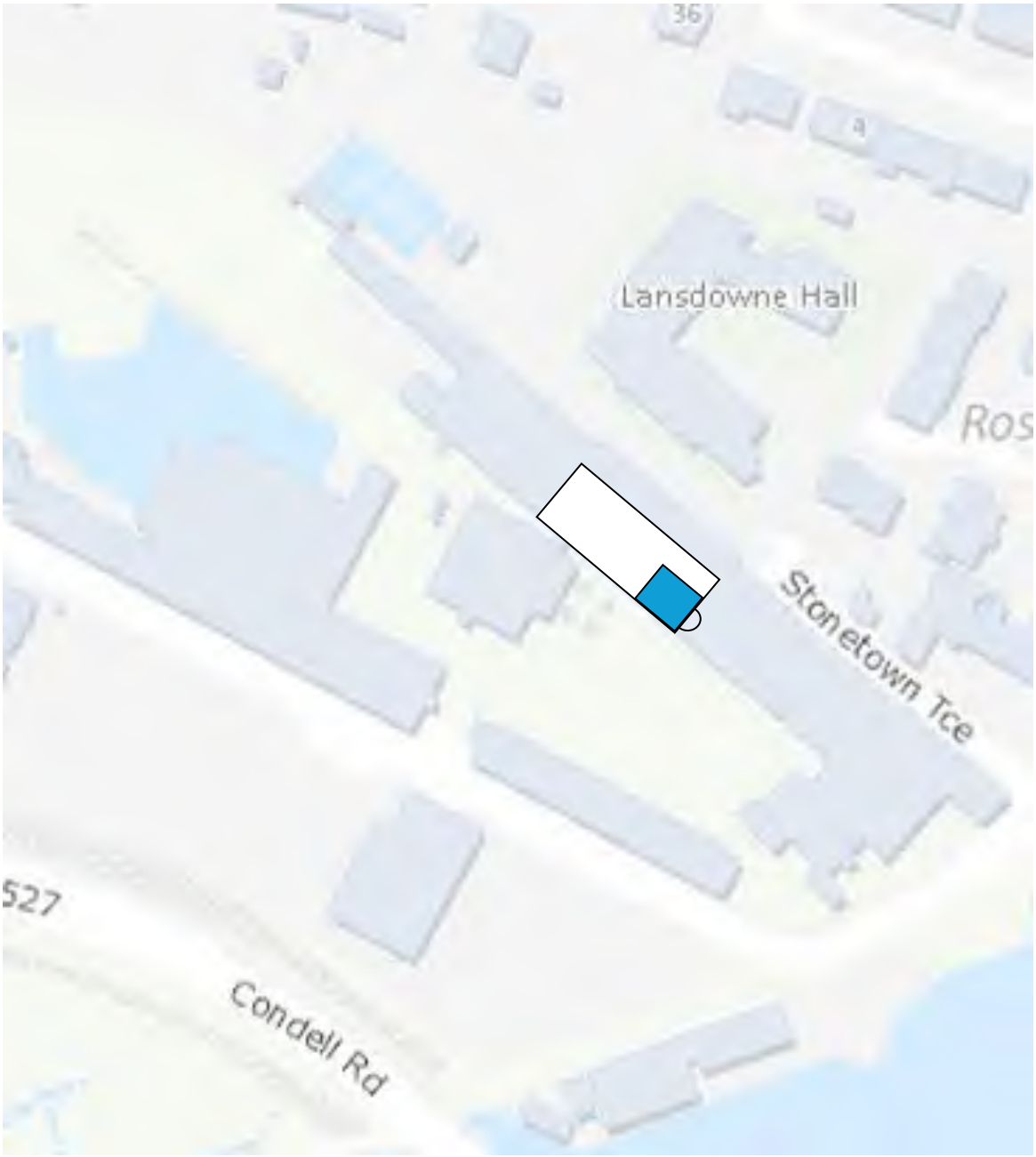
ROOF PLAN



	Areas where asbestos cement sheeting was identified
	Areas where asbestos cement slates were identified
	Areas where asbestos roof felt was identified
Note:	Cement debris, CAF gaskets and asbestos rope were identified throughout the site

Schematic diagram only Not to scale 12th November 2024	The Cleeves Site, North Circular Road, Limerick

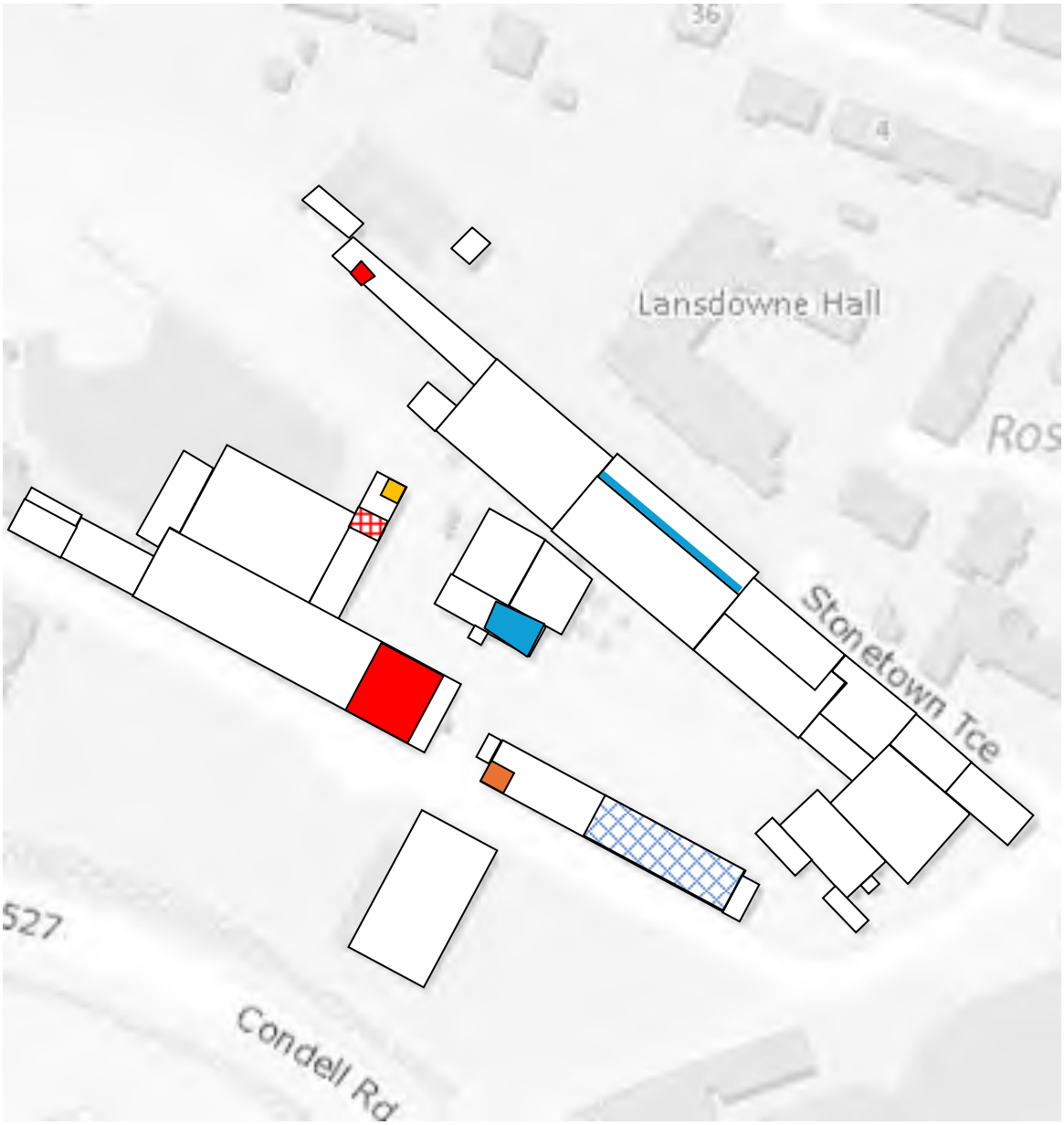
SITE LAYOUT (4TH FLOOR PLAN)



	Area where asbestos containing thermal insulation was identified on the boiler unit
Note:	Cement debris, CAF gaskets and asbestos rope were identified throughout the site
Note:	Asbestos containing debris was identified in the attic area beside the lift motor room
Note:	Asbestos rope was identified on the electrics in the lift motor room

Schematic diagram only Not to scale 12th November 2024	The Cleeves Site, North Circular Road, Limerick

SITE LAYOUT (GROUND FLOOR PLAN)



	Area where asbestos insulation board (AIB) was identified
	Areas where asbestos thermal insulation was identified
	Areas where asbestos millboard was identified
	Area where asbestos insulation board was presumed
	No access
Note:	Cement debris, CAF gaskets and asbestos rope were identified throughout the site

Schematic diagram only Not to scale 12th November 2024	The Cleeves Site, North Circular Road, Limerick

SITE LAYOUT (GROUND FLOOR PLAN)

	Areas where asbestos containing paper backed lino was identified
	Areas where asbestos containing floor tiles were identified
	Areas where asbestos containing floor tiles and bitumen adhesive were identified
Note:	Cement debris, CAF gaskets and asbestos rope were identified throughout the site

Appendix B. Construction Traffic Management Plan

B.1 Outline Construction Traffic Management Plan (AtkinsRealis, 2025)

AtkinsRéalis

Outline Construction Traffic Management Plan

Limerick City & County Council in partnership with Limerick Twenty Thirty DAC

September 2025
OCTMP

100117216DG0014

CLEEVES RIVERSIDE QUARTER

Notice

This document and its contents have been prepared and are intended solely as information for Limerick City & County Council in partnership with Limerick Twenty Thirty DAC and use in relation to Outline Construction Traffic Management Plan.

AtkinsRéalis Ireland Limited assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

This document has 32 pages including the cover.

Document History

Document title: Outline Construction Traffic Management Plan

Document reference: 100117216DG0014

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
0	Draft	ASM	PF	PF	PF	01/10/2025
1	Final	ASM	PF	PF	PF	03/10/2025

Client signoff

Client	Limerick City & County Council in partnership with Limerick Twenty Thirty DAC
Project	CLEEVES RIVERSIDE QUARTER
Job number	100117216
Client signature/date	

Contents

Tables

Figures

1. Introduction

This Outline Construction Traffic Management Plan has been prepared by AtkinsRéalis Ireland Ltd. in conjunction with the developer Limerick City & County Council, in partnership with Limerick Twenty Thirty DAC as part of the planning application for the Proposed Cleeves Riverside Quarter Development.

The proposed development comprises Phase II, of an overall Masterplan with four phases of development proposed. Phase II will commence subsequent to ongoing emergency stabilisation and repair of the Flaxmill protected structure (Phase I). Phase III is intended to comprise an educational campus, inclusive of the adaptive reuse of the Flaxmill Building as part of that development and will be subject to a future separate application. Phase IV comprising the Shipyard site will be the final phase of development.

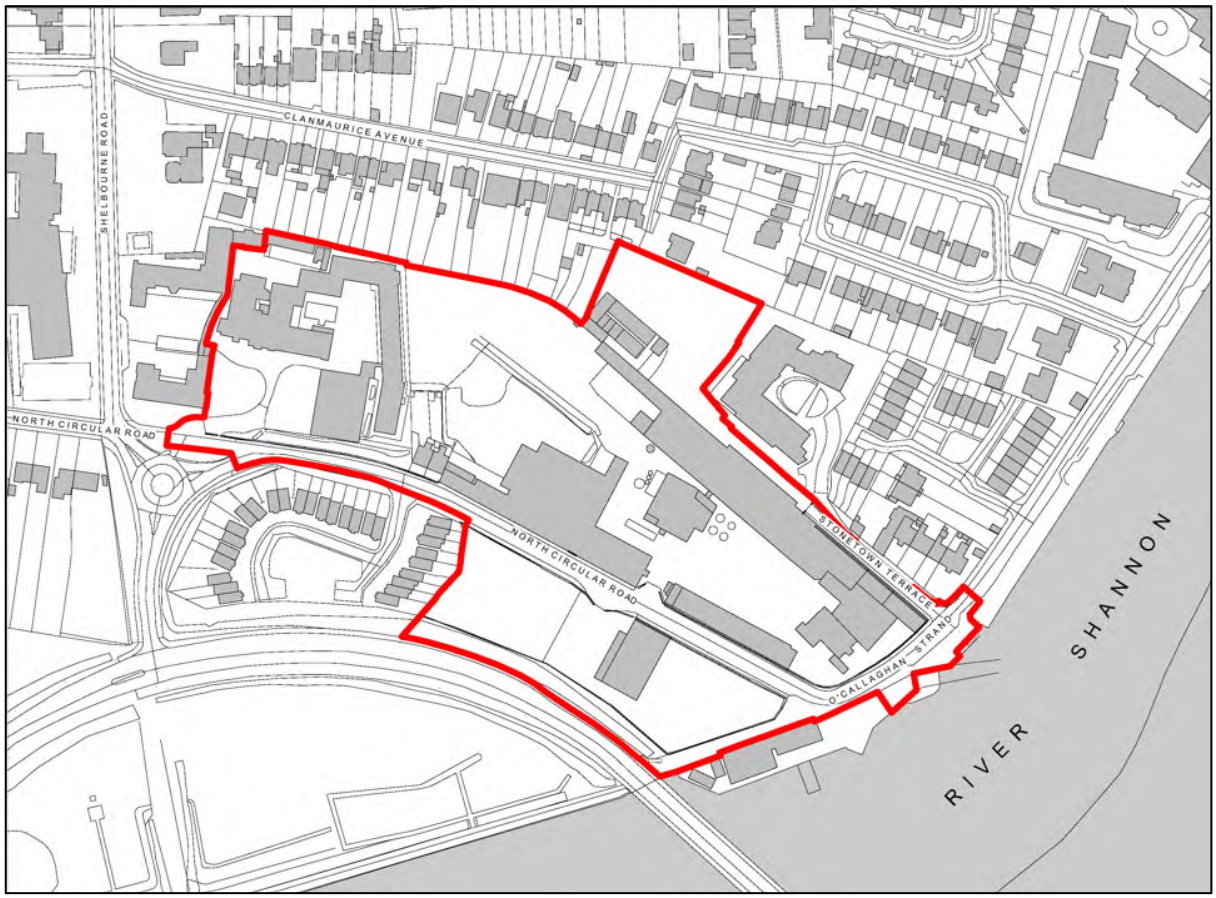
This document provides a brief overview of the project, including sequencing and construction traffic routing. Its purpose is to outline the preliminary measures to be implemented and to guide the Main Contractor in preparing and executing a Detailed Construction Traffic Management Plan (CTMP) during the construction and demolition phases. The CTMP will be agreed upon with the Local Authority prior to commencement of works. As such, this Outline CTMP (OCTMP) is considered a "live document," allowing for updates to reflect changes in programme or operations introduced by the appointed contractor at construction stage.

It should be noted that all relevant health and safety considerations and statutory requirements (including but not limited to the preparation of a Preliminary Safety and Health Plan) will be addressed separately as the project progresses. As such, health and safety aspects are not included in this preliminary document.

1.1 Site Location

The site is located on the northern bank of the River Shannon, directly opposite Limerick City Centre as shown in Figure 1-1. The site is bisected by the North Circular Road, with the majority of the site located on the northern side of this road. The site is bounded by O'Callaghan Strand to the East, and Condell Road/Shannon Bridge to the South. Condell road is at a higher elevation than the site, with steps and an accessible ramp currently used for pedestrian connection between the site and the road.

Figure 1-1 - Masterplan Application Boundary



2. The Proposed Development

2.1 Scheme Description

Limerick City & County Council, in partnership with Limerick Twenty Thirty DAC, intends to seek the approval of An Coimisiún Pleanála in accordance with Section 175 and 177AE of the Planning and Development Act 2000, as amended, for a mixed-use development that seeks the regeneration and adaptive reuse of a strategic brownfield site, as part of the Limerick City and County Council 'World Class Waterfront revitalisation and transformation project'.

The site, known locally as 'Cleeves Riverside Quarter' comprises the former industrial mill complex ('Cleeves') situated on the northern side of the River Shannon, Limerick City and occupies the area between; Stonetown Terrace Road to the northeast; O'Callaghan Strand to the southeast; Condell Road (R527) to the southwest; and, Salesian Primary School and the 'Fernhill' residential estate to the northwest and west respectively - all situated in the townland of Farranshone More in Limerick City. The site is dissected by North Circular Road where it extends between Shelborne Road Lower and O'Callaghan Strand.

2.2 Proposed Development Description

The proposed development includes two designated protected structures within the site area; the Flaxmill Building (PS Ref no.264 & NIAH No. 21512053) and the octagonal brick chimney (PS Ref no.265 & NIAH No. 21512059), both of which are to be retained.

The proposed development includes:

- Demolition of a number of structures to facilitate development including (i) Salesians Secondary School and Fernbank House; (ii) 2 no. houses on North Circular Road; (iii) Residual piers from the basin of the reservoir; (iv) Upper Reservoir on Stonetown Terrace comprising 2 no. concrete water tanks, pump house and liquid storage tank; (v) 1960's lean-to building structures adjoining the Cold Store (former Weaving Mill); (vi) remaining fabric of c20th rear lean-to of the Flaxmill Building; (vii) c.1960s office building adjoining the Packing Store and Cheese Plant on North Circular Road; (viii) Cluster of buildings including altered part of the Linen Store, the former Linen Store, Storage Building, and Office/Lab building at O'Callaghan Strand / Stonetown Terrace with partial retention of existing stone wall; (ix) warehouse on the Shipyard site; and (x) partial removal of stone boundary wall defining the Cleeves site adjoining O'Callaghan Strand / Stonetown Terrace and around the Shipyard site.
- Construction and phased delivery of:
  - Residential Development in 4 development 'zones' within the site ranging in height from 3 – 7 storeys (with screened service plant at roof level) comprising; (a) 234 no. residential units; (b) 270 no. student bedspaces with ancillary resident services at ground floor level; (c) 299sqm of commercial floorspace; and (d) a creche. The specific development details of each proposed development zone comprise the following:
    - Salesians Zone – 1 no. building with 2 no. blocks extending to 6 and 7 storeys comprising 146 no. apartments (76 no. 1 bed; and 70 no. 2 bed); a creche; semi basement car and bicycle parking; reception area, plant rooms, and refuse storage, with screened external plant and photovoltaic panels at roof level; 20 no. 3 storey 3 bed triplexe units with photovoltaic panels at roof level; and 30 no. car parking spaces for the dedicated use of the adjoining Salesians Primary School.

- Quarry Zone – 1 no. Purpose Built Student Accommodation (PBSA) building with 3 no. blocks extending to 6 and 7 storeys comprising 270 no. bedspaces with study rooms, shared areas, exercise room, reception area, plant rooms, refuse storage and bicycle parking all at ground floor level and screened external plant and photovoltaic panels at roof level. Provision is made for telecommunication antennae on the roof top of one block. Consent is also sought for use of the PBSA accommodation, outside of student term time, for short-term letting purposes.
- Stonetown Terrace Zone – 1 no. building extending to 4 - 5 storeys comprising 38 no. apartments (6 no. studios; 12 no. 1 beds; and 20 no. 2 beds) with plant rooms and refuse storage at ground level, ancillary infrastructure at basement level at northern end of the block, with screened external plant and photovoltaic panels at roof level; 9 no. 3 storey 3 bed townhouses with photovoltaic panels at roof level; and a dedicated secure bicycle storage facility.
- O'Callaghan Strand Zone – 1 no. building extending to 4 / 5 storeys comprising 21 no. apartments (9 no. 1 bed and 12 no. 2 bed) with an open roof structure accommodating communal open space, plant and photovoltaic panels; and 299qm of commercial ground floorspace intended to accommodate Class 1, Class 2 and / or Class 3 uses, with provision for car parking in the undercroft.

- Dedicated mobility hub with canopy and photovoltaic panels including double stacker bicycle parking; and EV Charging spaces, within the Shipyard Zone. A dedicated pedestrian/cycle link connects North Circular Road with Condell Road. The remaining area of the zone shall accommodate temporary car parking and a temporary external event space to be used on a periodic basis as the need arises, pending future redevelopment proposals as detailed in the Masterplan (Stage IV).
- Extensive provision of Public Realm including creation of the Reservoir/Quarry Park, the Flaxmill Square and the Riverside Corridor. Significant areas of civic and green spaces are provided, incorporating formal and informal play space; nature based SuDs, permeability and access; and a riverside canopy with photovoltaic panels functioning as an outdoor event space and incorporating heritage interpretative panels
- 3 no. dedicated bat houses;
- Telecommunication antennae on roof of Block 2A of the PBSA, including (a) 9 no. Support poles to support 2 no. antennae each; (b) 6 no. microwave dishes affixed to the plant screen; and (c) associated telecommunications equipment and cabinets (effectively screened). To facilitate technologically acceptable locations at the time of delivery, a micro-siting allowance of 3m is proposed on the roof top of Block 2A of the PBSA for the infrastructure.
- Provision of vehicular access/egress points including (a) utilisation of existing access points to the Salesians Zone, to the Flaxmill and Quarry Zones and to the Mobility Hub on the Shipyard Site Zone; (ii) reopening an existing (currently blocked) access point off O'Callaghan Strand; (iii) new access points to the proposed undercroft carparking at Salesians from the North Circular Road and at the end of Stonetown Terrace road which provides access to the Stonetown Terrace Zone; and (iv) emergency access only from Stonetown Terrace to the Flaxmill Zone;
- Provision of 30 no. dedicated car parking spaces to serve the Salesians Primary School; and
- All ancillary site development works including (a) water services, foul and surface water drainage and associated connections across the site and serving each development zone; (b) attenuation proposals; (c) raising the level of North Circular Road between Fernhill and O'Callaghan Strand; (d) refuse collection store (e) car and bicycle parking to serve the development; (f) public lighting; (g) all landscaping works.; and (h) temporary construction measures including (i) construction access to the Quarry site including provision of a temporary access across the reservoir; and (ii) temporary use of onsite mobile crusher.

3. General Site Set-Up and Pre-Commencement Measures

In advance of any works commencing onsite, a Detailed Construction Traffic Management Plan will be submitted to the Local Authority as part of obtaining a validated Commencement Notice and will elaborate on the principles set out in this document. The Detailed Construction Traffic Management Plan will include all relevant mitigation measures and monitoring requirements as stated within the EIAR along with any relevant conditions which may be attached to statutory consents (including but not limited to planning permission) for the proposed development.

In general, the following measures will be carried out by the Main Contractor in advance of commencing any Works and will be included in the pre-commencement Construction and Demolition Traffic Management Plan:

- A full condition survey of the public infrastructure that will be utilised or affected by construction traffic, prior to the commencement of any work on the site, will be carried out. This condition survey will include an inventory of the road network intended to be used by vehicles, weight restrictions to be imposed on vehicles, a full colour photographic record of the road network intended to be used, a full written account of the existing condition and structural integrity of the infrastructure detailing all existing defects and features;
- Prior to any site works commencing, the Main Contractor will investigate / identify the exact location of and tag all existing services and utilities around and through the site with the assistance of the relevant Local Authority Technical Divisions and Utility Providers.
- A site compound including offices and welfare facilities to accommodate all operatives will be set up by the Main Contractor including sufficient hardstanding to ensure that no parking of construction related vehicles will be permitted on the adjoining road network and if required to hold on site for a period of time, they can be accommodated within the site boundary. Figure 3-1 and Figure 3-2 show indicative locations which are subject to confirmation by the contractor upon appointment.
- Measures will be put in place to ensure no waste, dirt, debris, or other material shall be deposited on the public road or verge by machinery or vehicles travelling to or from the site during the construction phase. Excavated material will generally be stored on site for removal near to the completion of the project or at a stage where the removal can be aligned with favourable weather conditions, timing relative to local traffic, etc.
- Site access will be controlled, and the surrounding road network monitored to ensure that the roads and footpaths affected by the construction works are maintained in a safe and tidy condition. Road sweepers will be utilised as required.
- Site security lighting will be located and designed so as not to result in glare on the public road or to impact negatively on any nearby dwellings and will be cognisant of ecology requirements.
- Typical working hours for the site will be subject to the condition of the planning permission but are expected to be Monday to Friday from 07:00 to 19:00 and Saturdays from 07:00 to 14:00. Special construction operations may need to be carried out outside these hours to minimise disruption to the surrounding area, which will be subject to agreement with the Local Authority. Deviation from these times will only take places when written approval is granted by LCCC in exceptional circumstances.
- All comments and any specific considerations/requirements as noted in the final planning permission grant will be addressed in the detailed Construction Traffic Management Plan(s) for approval by the Local Authority ahead of implementation onsite; and, prior to commencement the contractor will review what routes are available for construction traffic.

Figure 3-1 - Example Site Compound Locations (Subject to confirmation upon contractor appointment)

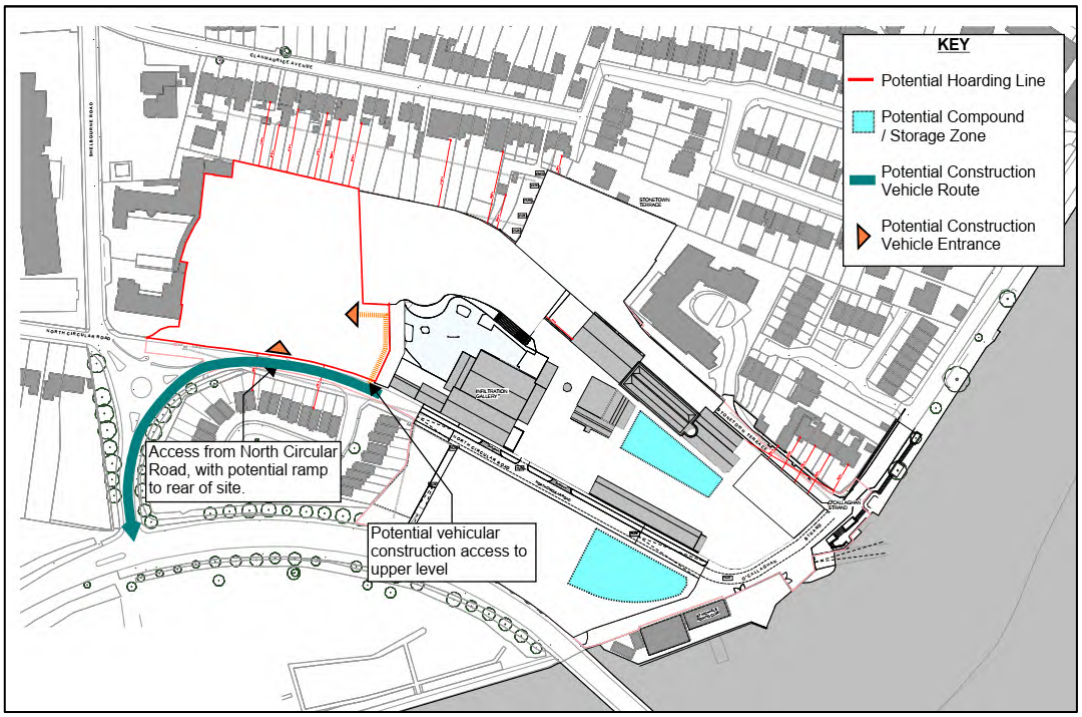
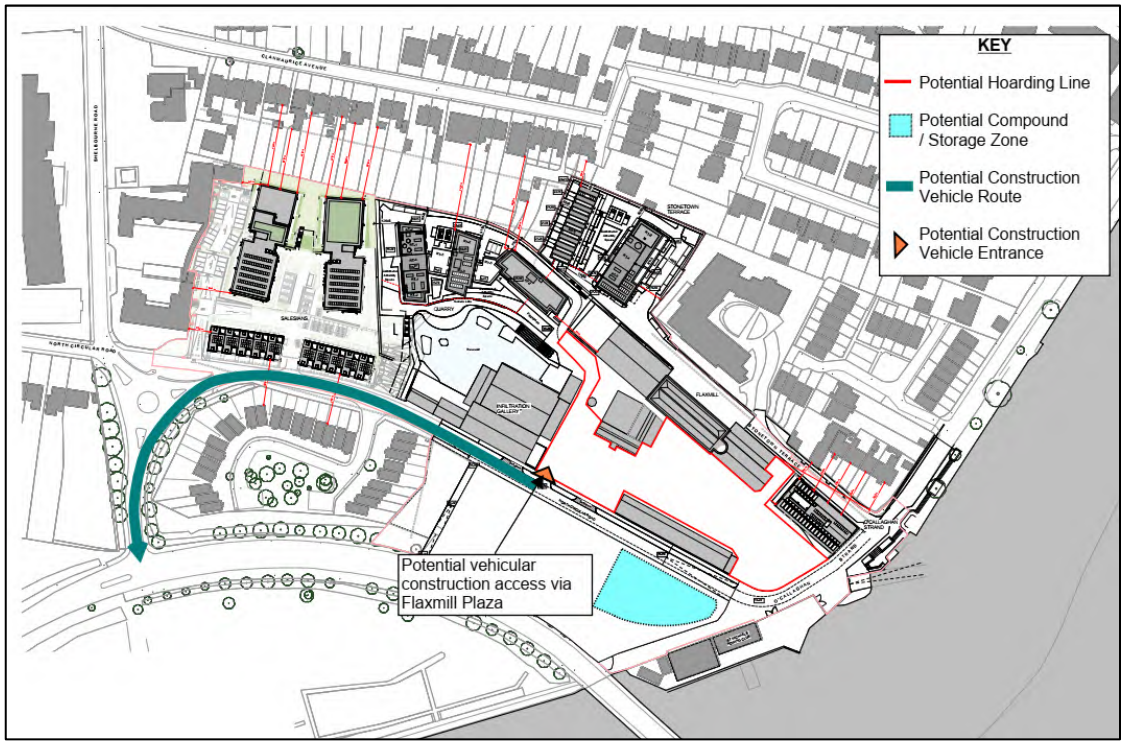


Figure 3-2 – Example Site Compound Locations (Subject to confirmation upon contractor appointment)



4. Project Programme, Sequencing and Methodology

4.1 Project Sequencing and Phasing

The development is structured into nine distinct but overlapping stages as outlined in Table 4-1. Depending on market conditions and delivery mechanisms, some stages may progress more quickly or slightly ahead of others. For instance, Stage 8 is a priority for early delivery, as it will significantly enhance the site's appearance and help establish Cleeves as an attractive place to live, work, and enjoy leisure activities. Therefore, Stage 8 may begin earlier than planned, depending on the progress of Stages 6 and 7.

Therefore, it is possible that several contractors will be working on the proposed development site at the same time, depending on the final procurement process. It is also noted that the final programme will potentially involve delivery of individual plots / zones independently within the development site boundary. Accordingly, a preliminary strategy for delivery of individual plots / zones independently has been developed and is discussed in further detail below.

If a grant of planning is received, the construction activities on site will commence in Q1 2027 with construction of bat houses. It is anticipated the Proposed Development will be completed in 2030. Refer to Table 4-1 for the breakdown of the construction stages.

Table 4-1 - Construction Phasing, and Timelines

Stage	Description	Estimated Start and End	Construction Duration (months)
Stage 1	Construction of Bat Houses - A 3-month period is allocated exclusively to this stage to allow bats on-site to adjust to their new accommodation. No other construction activity will overlap with this stage.	Q1 2027	3months
Stage 2	Site Demolition and Enabling Works - This stage involves demolishing identified buildings and structures to facilitate development and installing enabling drainage infrastructure across the Flaxmill area. Temporary surface treatments will be applied to support access to the upper-level sites (Salesians and Stonetown). Asbestos removal, pre-condition surveys and removal of contaminated soils across the development as required will be undertaken during this stage of works.	Q2 2027 – Q2 2028	12-15months
Stage 3	Flood Protection Works - Raising the North Circular Road and implementing other flood protection measures will occur concurrently with Stage 2 and is expected to take 15 months.	Q2 2027 – Q2 2028	15months
Stage 4	Salesians Zone Development - Construction of apartments and townhouses, along with local public realm and communal open spaces, will begin midway through Stage 2	Q1 2028 – Q4 2029	18-24months
Stage 5	Stonetown Terrace Zone Development - This stage will likely begin alongside Stage 4 and take 15–18 months. Given its timeline, Stonetown Terrace is expected to be the first zone ready for occupation	Q1 2028 – Q2 2029	15-18months
Stage 6	O'Callaghan Strand Zone Development - Construction of apartments in this zone will begin midway through the Stonetown Terrace works and is expected to take 15 months, likely completing before the Salesians Zone	Q3 2028 – Q3 2029	15months
Stage 7	Quarry Zone PBSA and Public Realm - This stage includes the construction of Purpose-Built Student Accommodation (PBSA) and associated amenities, as well as public realm improvements around the reservoir.	Q3 2028 – Q2 2030	24months
Stage 8	Flaxmill Plaza and Riverside Public Realm - Delivery of Flaxmill Plaza and riverside canopy works is anticipated to take 15 months. This stage will begin after the completion of Stonetown Terrace but before the Salesians Zone is finished. Completion is expected to align with the PBSA	Q2 2029 - Q2 2030	15months
Stage 9	Shipyard Mobility Hub - The final stage involves constructing the Mobility Hub on the Shipyard site, along with associated site works. This will commence once all other stages are complete and is expected to take 6 months	Q3 2030 - Q4 2030	6months

4.2 Construction Equipment

Details of machinery to be used on site will include (but not limited to) the following standard site equipment:

- Tracked excavators / JCBs.
- Wheel Loaders.
- Bulldozers.
- Compact Track Loaders.
- Articulated Trucks.
- Tower Cranes (Mobile and / or Fixed).
- Dump Trucks.
- Excavators.
- Mobile Concrete Crusher.
- Piling Rig(s).
- Mobile pumps / generators.
- Power tools.

This is a non-exhaustive list and the equipment used onsite will depend on the specific construction phasing and methodology to be implemented by the Contractor(s) once appointed.

5. Outline Construction Traffic Management

5.1 Overview

Prior to the commencement of construction activities, the appointed contractor will assess and confirm available traffic routes in consultation with the Roads Department of Limerick City & County Council and other relevant stakeholders. This process will ensure that all construction-related traffic movements — both on-site and off-site — are carefully planned and coordinated to minimise disruption and safeguard the surrounding environment.

The objective is to proactively manage the impacts of construction traffic on public roads and internal site operations, with full consideration given to the requirements of key stakeholders, including the National Parks and Wildlife Service and the Environmental Protection Agency (EPA).

The overall construction programme is expected to span approximately 36 months. During this period, the number of personnel on site will vary depending on the phase of works. Based on similar developments, it is anticipated that workers will predominantly use shared transport and public transit, helping to reduce traffic volumes. Staff arrival and departure times will be scheduled to avoid peak traffic hours. Heavy Goods Vehicle (HGV) movements have been estimated in line with the Traffic and Transport Assessment prepared by ARUP.

5.2 Key Construction Activities

At this preliminary stage, the proposed development will involve the following key work stages:

- Appointment of the Contractor(s).
- Detailed Design Stage.
- Site preparatory works including the preparation of all required Detailed Safety and Health, and Environmental Management documents.
- Construction of Bat Houses.
- Site mobilisation.
- Site Demolition and Enabling Works.
- Construction Stage (including flood protection works).
- Completion.
- Demobilisation; and,
- Operational Stage.

5.3 Construction Site Access and Egress

In accordance with best practice guidance, construction vehicles will primarily use the strategic road network to minimise disruption to sensitive local roads. The anticipated routing is illustrated in Figure 5-1.

All heavy construction vehicles to be instructed to use N18, via the Clonmacken Roundabout and the R527 Condell Road and access to local road network via Salesian Roundabout then onto North Circular Road access the site. (See attached Figure 5-1).

- **Heavy construction vehicles** will be directed to use the **N18**, accessing the site via **Clonmacken Roundabout**, **R527 Condell Road**, and **Salesian Roundabout**, before entering **North Circular Road**.
- The **developer will proactively manage** all construction traffic throughout the works.
- **Staff and visitor parking** will be strictly confined to within the site boundary; **adequate on-site parking** will be provided.
- **Sustainable travel modes** such as public transport, walking, and cycling will be encouraged, with **bicycle parking** made available.
- **Material deliveries** must occur within designated on-site areas; **unloading outside the site boundary is prohibited**.
- **Continuous deliveries**, such as concrete pours, will be **phased and timed** to prevent vehicles from queuing or parking on public roads.
- **Routine deliveries and waste removal** will be scheduled to avoid peak traffic hours on local roads.
- The **developer will issue an information pack** to staff and haulage subcontractors detailing approved HGV routes, parking restrictions, and delivery schedules.
- **Vehicle cleanliness** will be maintained at all times; access points will be managed and adjacent public roads kept clean.
- Any **works on public roads** will require a **road opening licence** from the Local Authority, with full compliance to all conditions

Figure 5-1 – Site Access and Egress Routing

5.4 Routing of Stages Construction Traffic

The final construction strategy may involve the phased delivery of individual zones within the development boundary. A preliminary strategy supporting independent zone delivery has been developed, with logistical and construction considerations outlined across nine distinct stages.

Stage 1, comprising the construction of Bat Houses, is scheduled to commence in 2027 and will take approximately three months. Construction access and logistical movements for this stage will be facilitated via the existing site entrance on North Circular Road, accessed from the Salesian Roundabout, as illustrated in Figure 5-2.

Figures 5-2 to 5-10 detail the key considerations for each stage, including access and egress points, site compound locations, flood zone identification, site hoarding, and specific construction activities required to support development.

During the detailed planning phase, each contractor will be responsible for determining the location of their respective site compound, ensuring these are positioned away from environmentally sensitive receptors. Final locations for site offices and welfare facilities will be confirmed prior to commencement and agreed with the Client and Limerick City and County Council (LCCC).

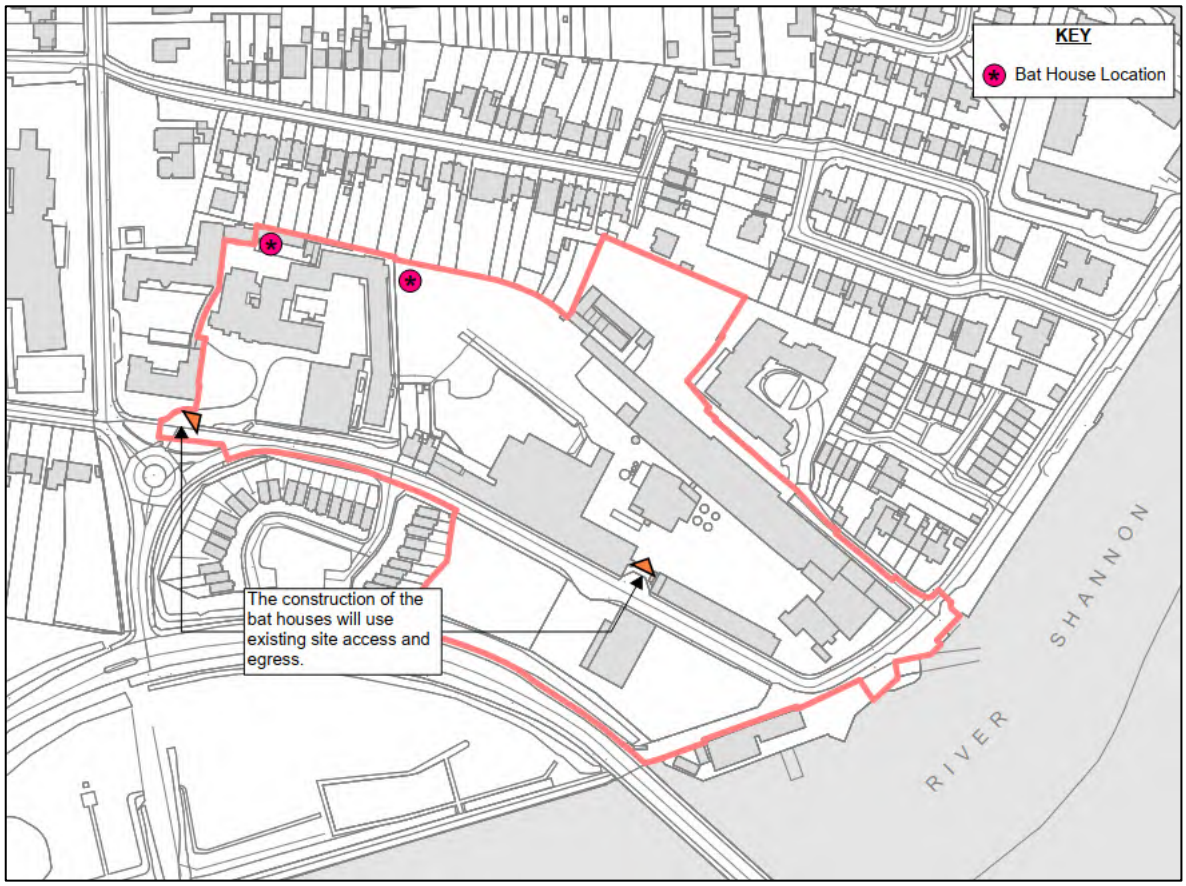
The main construction compound will accommodate offices for all subcontractors, the main contractor, and project managers. While the primary site office and welfare facilities will be located on the Shipyard site for most phases, independent compounds will be established in the O'Callaghan Strand and Quarry Zones following the construction of the Mobility Hub.

A breakdown of construction traffic routing for each stage is provided in the following section.

5.4.1 Stage 1

Stage 1 — the construction of Bat Houses — is scheduled to begin in 2027 and will take approximately three months to complete. For this stage construction traffic will access the site via two existing access points on North Circular Road and Salesian Roundabout as shown in Figure 5-2.

Figure 5-2 - Construction and Logistical Considerations Stage 1 - Bat Houses

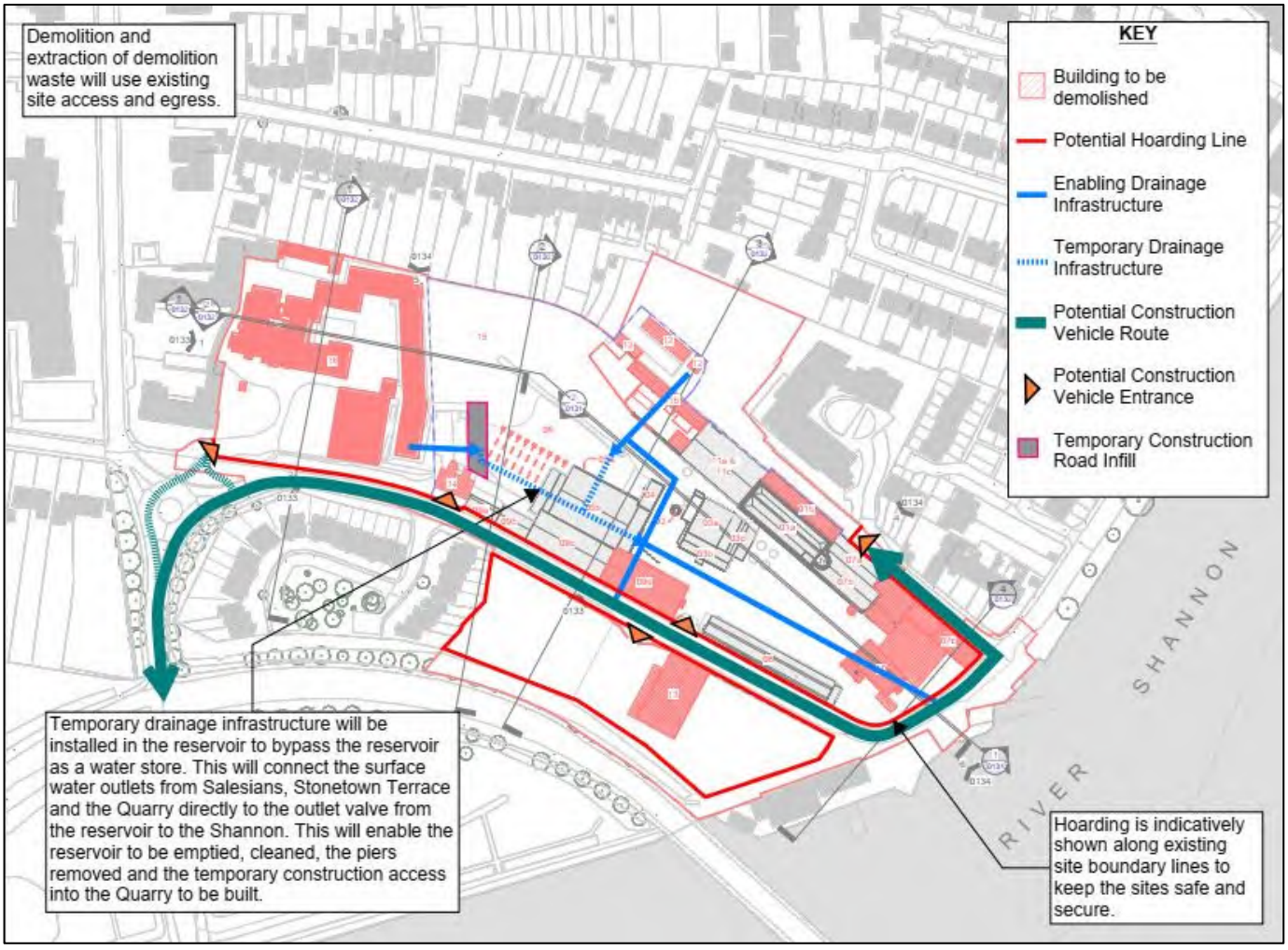


5.4.2 Stage 2

Stage 2 involves site demolition of building and enabling infrastructure works to the Flaxmill area of the site. It is anticipated that this phase will take 12-15months to complete. During this phase a number of construction access points to the site will be required as shown in Figure 5-3 including:

- the Salesian access road.
- two northern entrances: one via Quarry and one via Flaxmill Plaza.
- the south entrance into Shipyard.
- the Stonetown Terrace access road.

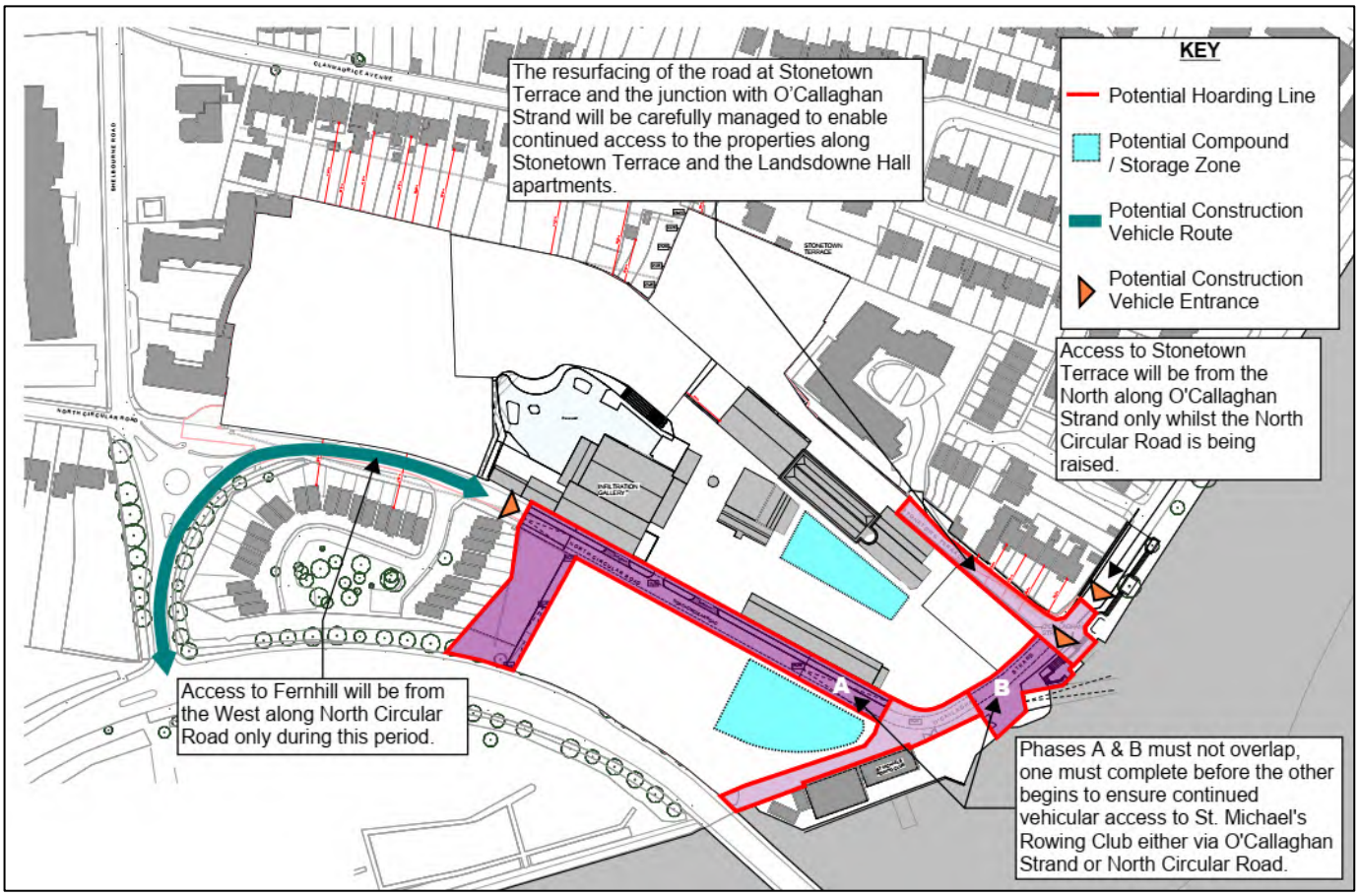
Figure 5-3 - Construction and Logistical Considerations Stage 2 - Demolitions and Infrastructure works



5.4.3 Stage 3

During Stage 3 the flood protection works will take place, lasting approximately 15 months. As shown in Figure 5-4: it is anticipated that some partial and full road closures may be required to facilitate these works. Advance warning signage will be agreed and were required local diversion will be sign posted. Local access will be maintained during the phases and works will not overlap for Stage 3a and Stage3b to ensure adequate local access is maintained. Please refer to Appendix A for further details of outline construction traffic management signage for Stage 3.

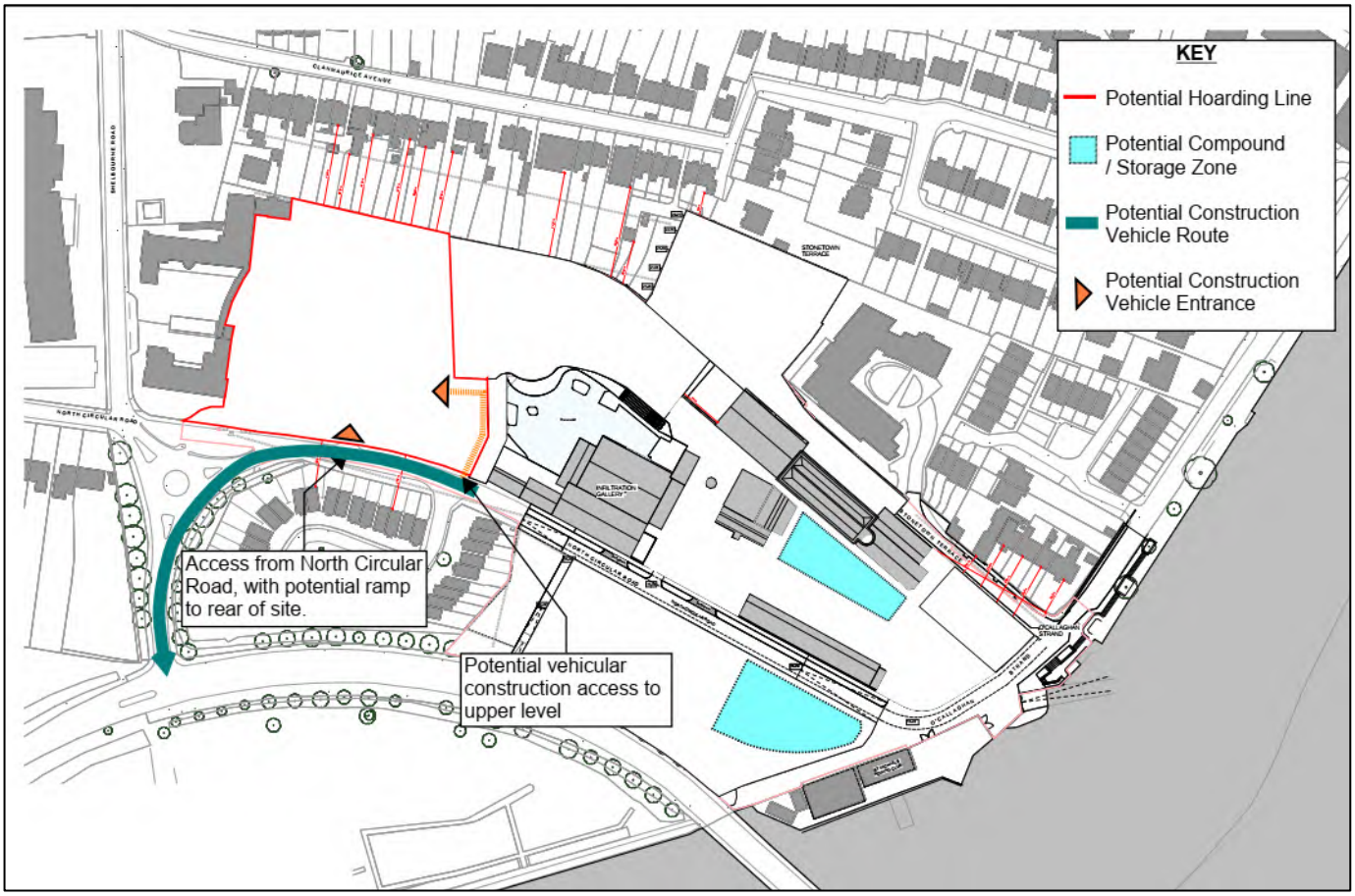
Figure 5-4 - Construction and Logistical Considerations Stage 3 - Flood Protection Works



5.4.4 Stage 4

The construction of Salesians zone development (Stage 4) will approximately take 18-24 months and is expected to start in 2028. Construction traffic access to the development zone is anticipated to be off North Circular Road as shown in Figure 5-5.

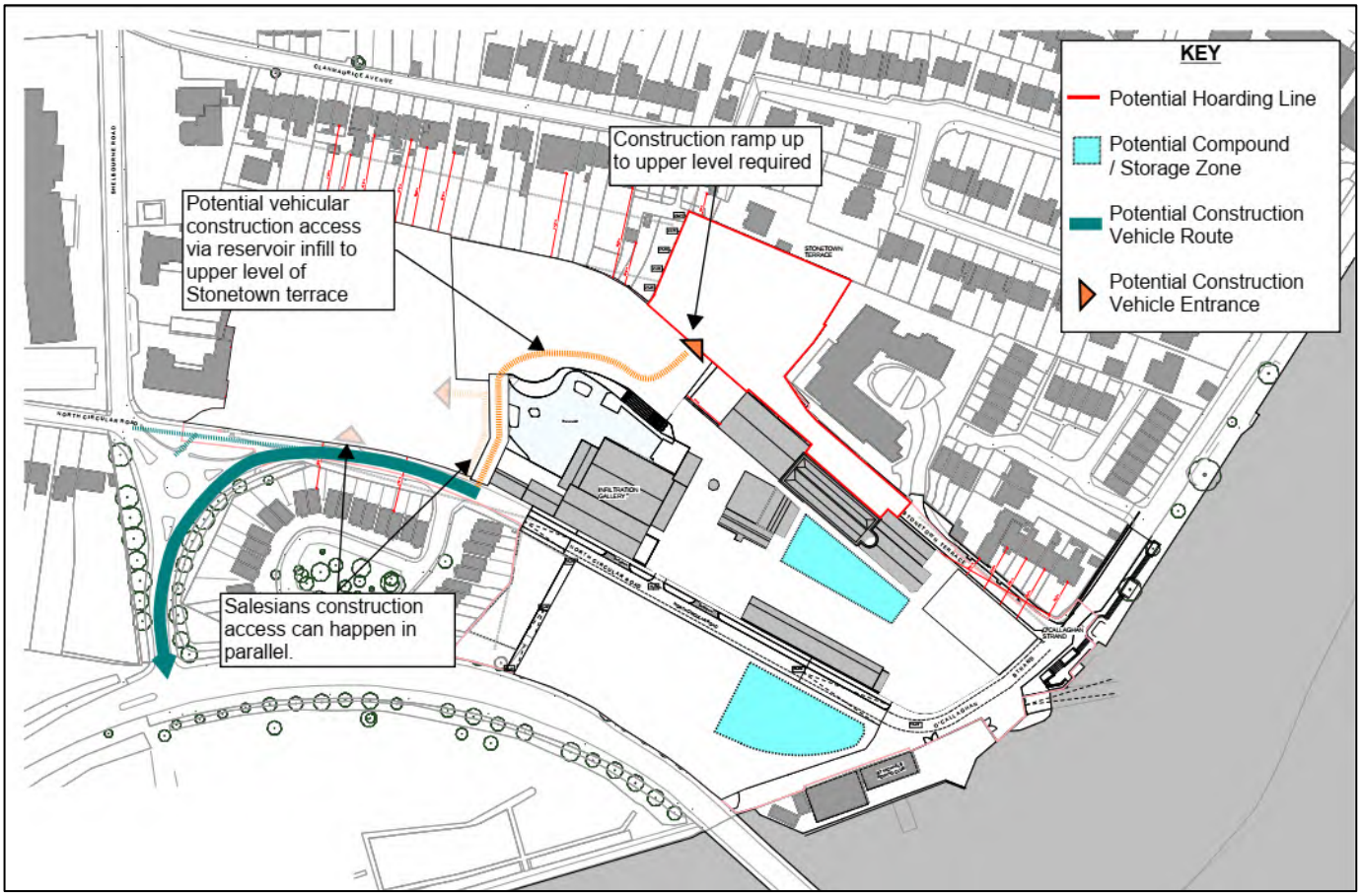
Figure 5-5 - Construction and Logistical Considerations Stage 4 - Salesians



5.4.5 Stage 5

The construction of Stonetown Terrace zone development (Stage 5) will approximately take 15-18 months and is expected to start in 2028 and run in parallel with Stage 4. The construction and logistical movements will occur in parallel with those for the Salesians Zone with access via North Circular Road. as presented in Figure 5-6 below.

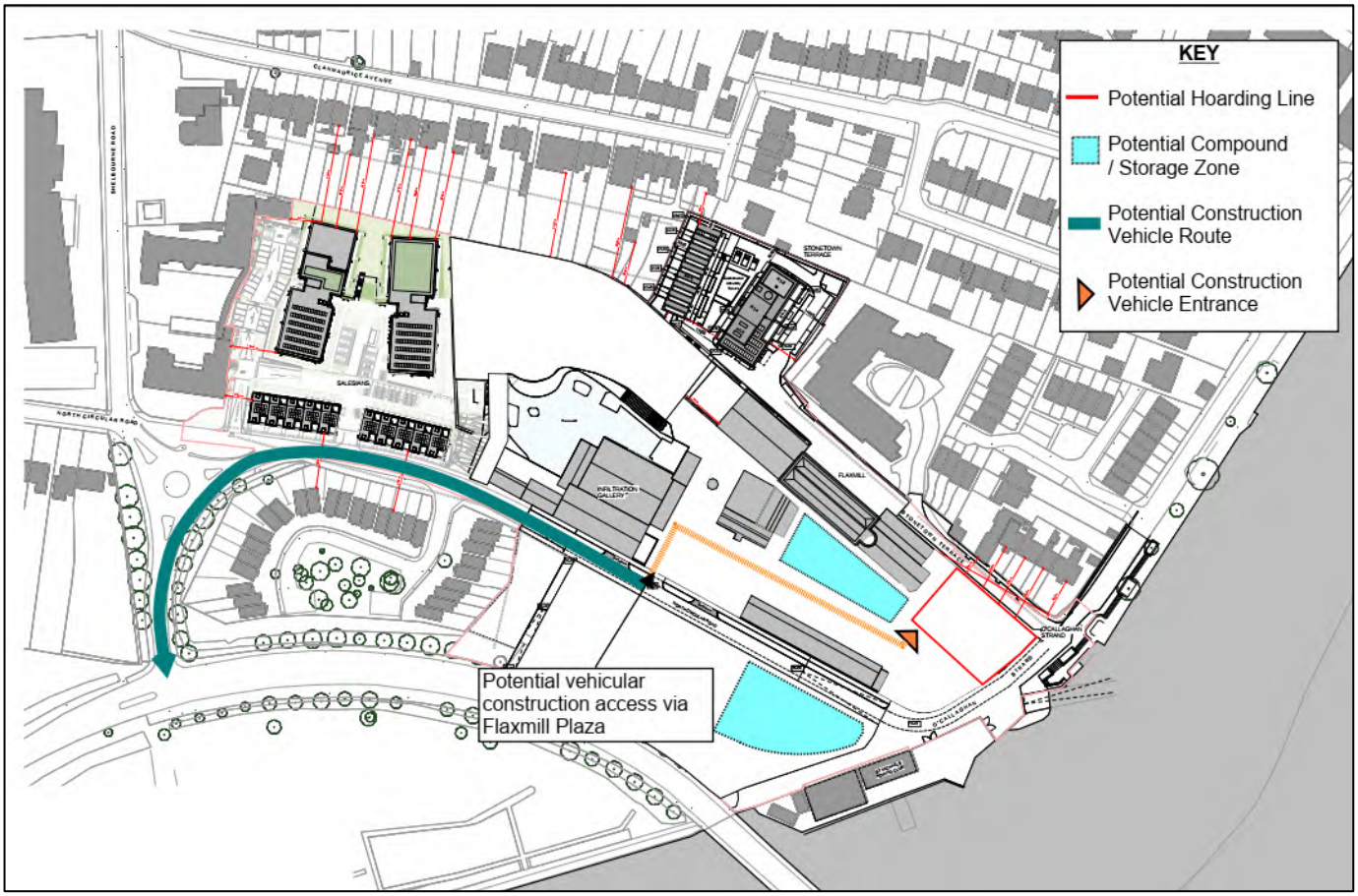
Figure 5-6 - Construction and Logistical Considerations Stage 5 - Stonetown Terrace



5.4.6 Stage 6

The construction of O'Callaghan Strand zone development (Stage 6) will approximately take 15 months and is expected commence in Q3 of 2028. The construction and logistical movements will occur from the site access on North Circular Road via Flaxmill Plaza as shown in Figure 5-7.

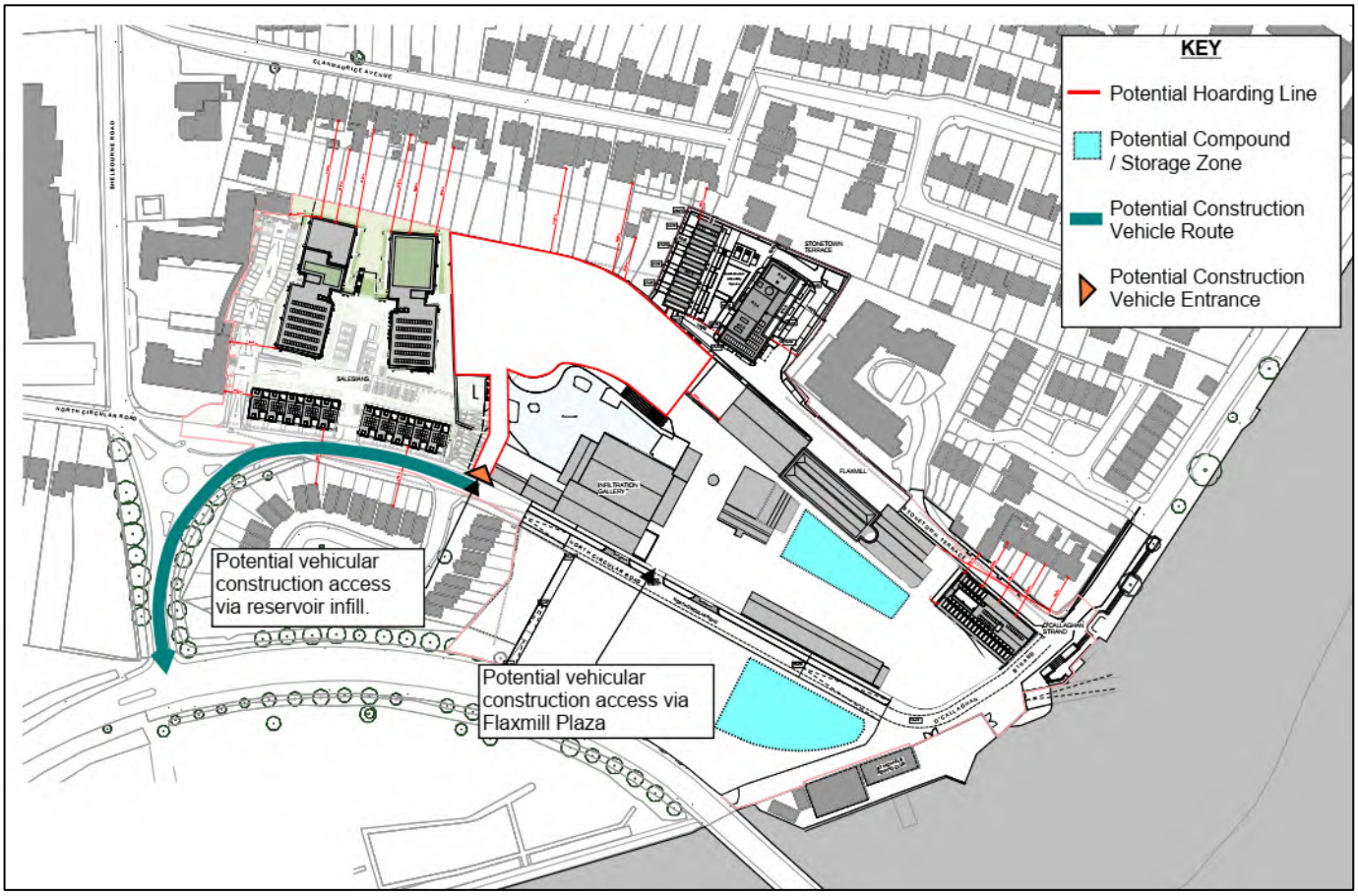
Figure 5-7 - Construction and Logistical Considerations Stage 6 - O'Callaghan Strand



5.4.7 Stage 7

The construction of Quarry Zone PBSA and Public Realm development (Stage 7) will approximately take 24 months and is expected to start in Q3 of 2028. The construction and logistical movements will occur from the site access on North Circular Road either through reservoir infill or through Flaxmill Plaza as presented in Figure 5-8 below.

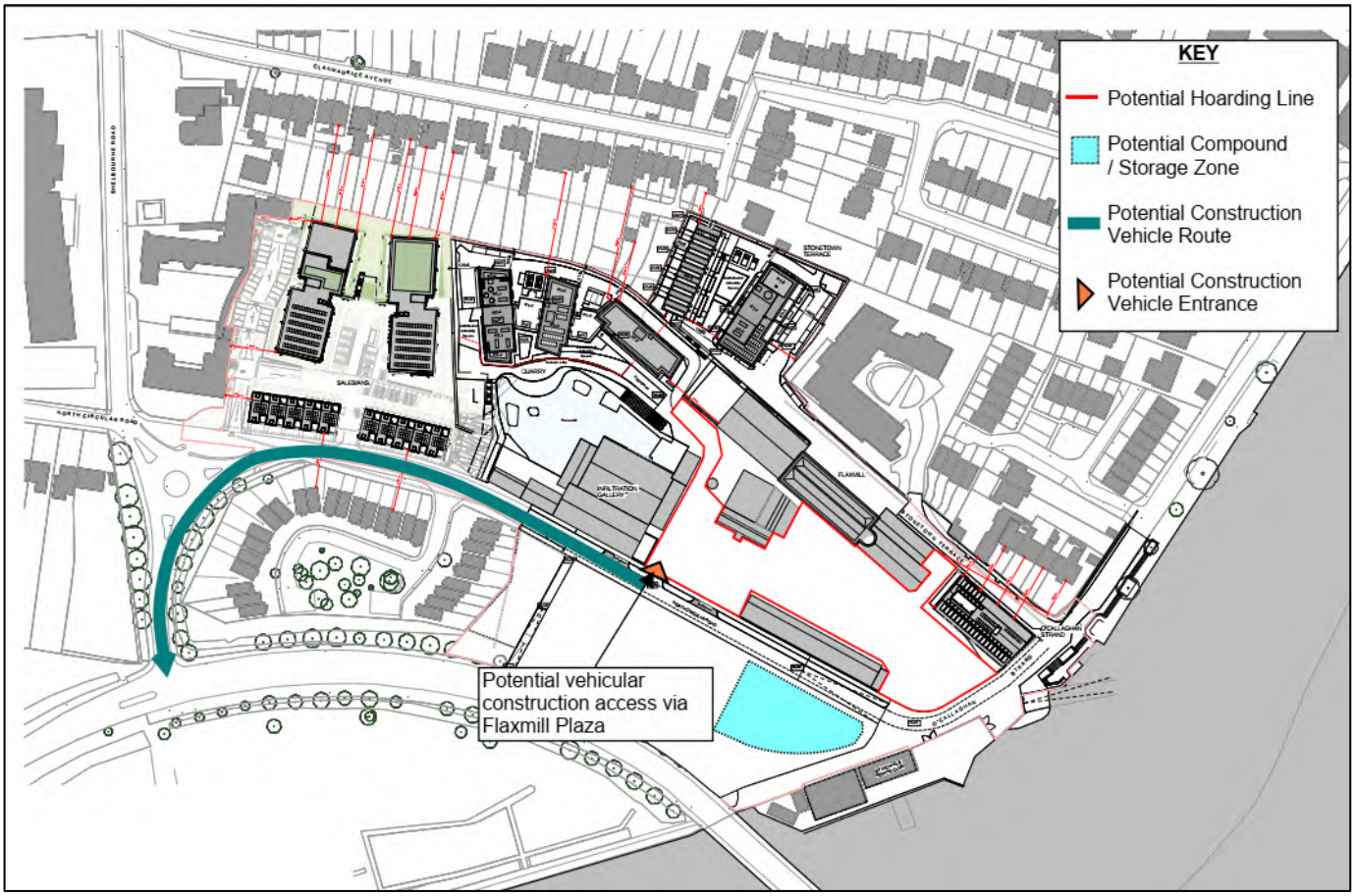
Figure 5-8 - Construction and Logistical Considerations Stage 7 - PBSA



5.4.8 Stage 8

The construction of Flaxmill Plaza and Riverside Public Realm (Stage 8) will approximately take 15 months and is expected to start in Q2 of 2029. The construction and logistical movements will occur from the site access on North Circular Road via Flaxmill Plaza as presented in Figure 5-9 below.

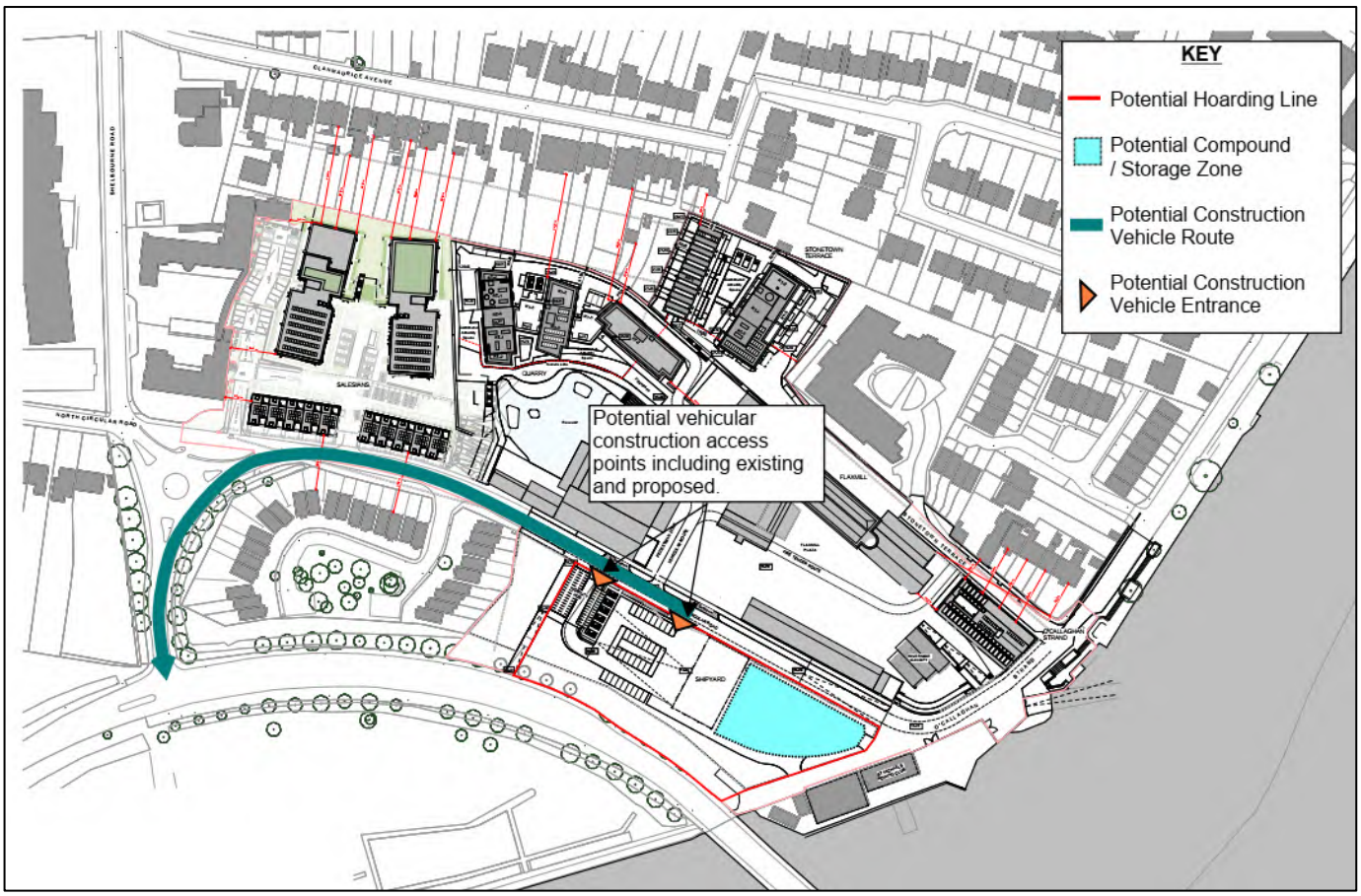
Figure 5-9 - Construction and Logistical Considerations Stage 8 - Flaxmill Plaza



5.4.9 Stage 9

The construction of Shipyard Mobility Hub (Stage 9) will approximately take 6 months and is expected to start in Q3 of 2030. The construction and logistical movements will occur from the site access on North Circular Road via existing car parking entrance and proposed site access road as presented in Figure 5-10 below.

Figure 5-10 - Construction and Logistical Considerations Stage 9 - Shipyard Mobility Hub



5.5 Construction Traffic Impact Analysis

To assess the impact of traffic generated during the construction of the proposed development, the construction trip generation has been compared against the existing traffic flows on the Salesians roundabout.

As noted above, it is expected that there will be no more than 20 additional construction vehicular trips per hour (10 in / 10 out). For robustness purposes, it has been assumed that 100% of construction vehicles travel through the Salesians roundabout.

The construction traffic uplift results in a 2% increase in flows through the Salesians roundabout during the AM and PM peak periods as in below. This is considered to be a marginal uplift, especially considering the robust trip generation assumption and the temporary nature of construction traffic.

Table 5-1 - Comparison of total traffic volumes through the Salesians roundabout – existing v. construction

	Existing vehicle traffic through Salesians roundabout	Expected vehicle traffic (with construction traffic generation)	% change
AM peak	1,052	1,072	2%
PM peak	1,048	1,068	2%

Material delivered by HGV in significant quantities throughout a project would include stone fill, steel reinforcement, blocks and bricks, mortar, precast concrete floors and balconies, timber and roof trusses, windows and cladding, roof tiles/slates, paving and drainage materials. Materials for general internal finishes would tend to be in smaller vehicles but some of the bulkier items would include timber, plaster slabs, kitchens and wardrobes, bathrooms and plumbing supplies. However, these vehicle movements will be spread out over the entire duration of the programme (approximately three years).

5.6 Key Construction Traffic Management Issues

The primary issues that affect construction projects include:

- General site access and egress.
- Interaction with existing facilities and operations.
- The location and amount of parking.
- The timing and extent of material deliveries.
- Traffic conflicts with both existing vehicles and other construction traffic.
- Traffic congestion and conflicts on external roads; and,
- Signage and directions.

5.7 Site Actions to overcome Construction Traffic Management Issues

To effectively manage construction traffic impacts, controlled access points will be established and carefully coordinated to minimise conflicts with other site activities. These measures will be refined and incorporated into the Detailed Construction Traffic Management Plan (CTMP), which will be prepared by the appointed contractor and approved by the Planning Authority prior to commencement.

The following measures, typically included in a CTMP, may be adopted during the construction phase:

- **Advance warning signage** will be installed at strategic locations to alert road users to construction access points.
- **Construction and delivery vehicles** will be restricted to approved access routes only, as agreed with the Local Authority.
- **HGV movements** will be limited during school drop-off and pick-up times to reduce disruption near adjacent educational facilities.
- **Environmental controls** will include the use of dust covers on vehicles transporting loose materials.
- **Site speed limits** will be enforced through appropriate signage to ensure safe vehicle movement.
- **Site vehicle parking** will be managed within designated areas; parking on public roads will be prohibited unless covered by approved traffic management measures.
- **Road sweepers** will be deployed to maintain cleanliness on public roads adjacent to the site.
- **Wheel washing facilities** will be provided to prevent debris from being carried onto the local road network.
- **Vehicle maintenance protocols** will be enforced to prevent leaks or spills; spill kits will be available on site, and off-site maintenance will not occur on public highways.

- **Pedestrian safety** will be prioritised through the provision of secure, alternative footpaths where existing routes are obstructed. These will include physical barriers and appropriate signage, with consideration for vulnerable and mobility-impaired users.

Collectively, these measures aim to minimise environmental impact and ensure public and worker safety throughout the construction period. To support efficient delivery, haulage routes, delivery schedules, and access arrangements will be continuously reviewed and adjusted as necessary to avoid congestion and maintain smooth operations — particularly for critical activities such as concrete pours.

Note: this is not an exhaustive list, and it will be the appointed contractor's responsibility to prepare a detailed Construction Traffic Management Plan to be approved with the Planning Authority, prior to commencement of construction..

5.8 Traffic Management Signage

Proposed signage will include warning signs to alert road users to construction traffic and works access/egress points. All signage will comply with Chapter 8 of the Department of Transport's Traffic Signs Manual — Temporary Traffic Measures and Signs for Roadworks.

Preliminary Construction Traffic Management signage has been developed based on the current understanding of project phasing, sequencing, and access arrangements. These initial plans are provided in Appendix A.

As the project progresses, these preliminary plans will be further refined and incorporated into the Detailed Construction Traffic Management Plan (CTMP), which will be prepared by the appointed contractor in consultation with the Local Authority, relevant stakeholders, and — where appropriate — the local community.

5.9 Additional Mitigation

5.9.1 Road Cleaning / Dust Suppression

The construction contractor will have appropriate controls on site to minimise dust and dirt from spreading onto the public highway. Where and when required the contractor will employ road sweeping and dust suppression equipment to prevent and or clean the highway.

5.9.2 Enforcement of OCTMP

All project staff and material suppliers will be required to adhere to the OCTMP. The Developer shall agree and implement monitoring measures to confirm effectiveness of the OCTMP.

6. Summary

This Outline Construction Traffic Management Plan (OCTMP) sets out the preliminary framework for managing construction-related traffic impacts associated with the Cleeves Riverside Quarter development. It outlines the phased approach to construction, identifies key access routes, and proposes mitigation measures to ensure safe and efficient movement of vehicles, materials, and personnel throughout the site.

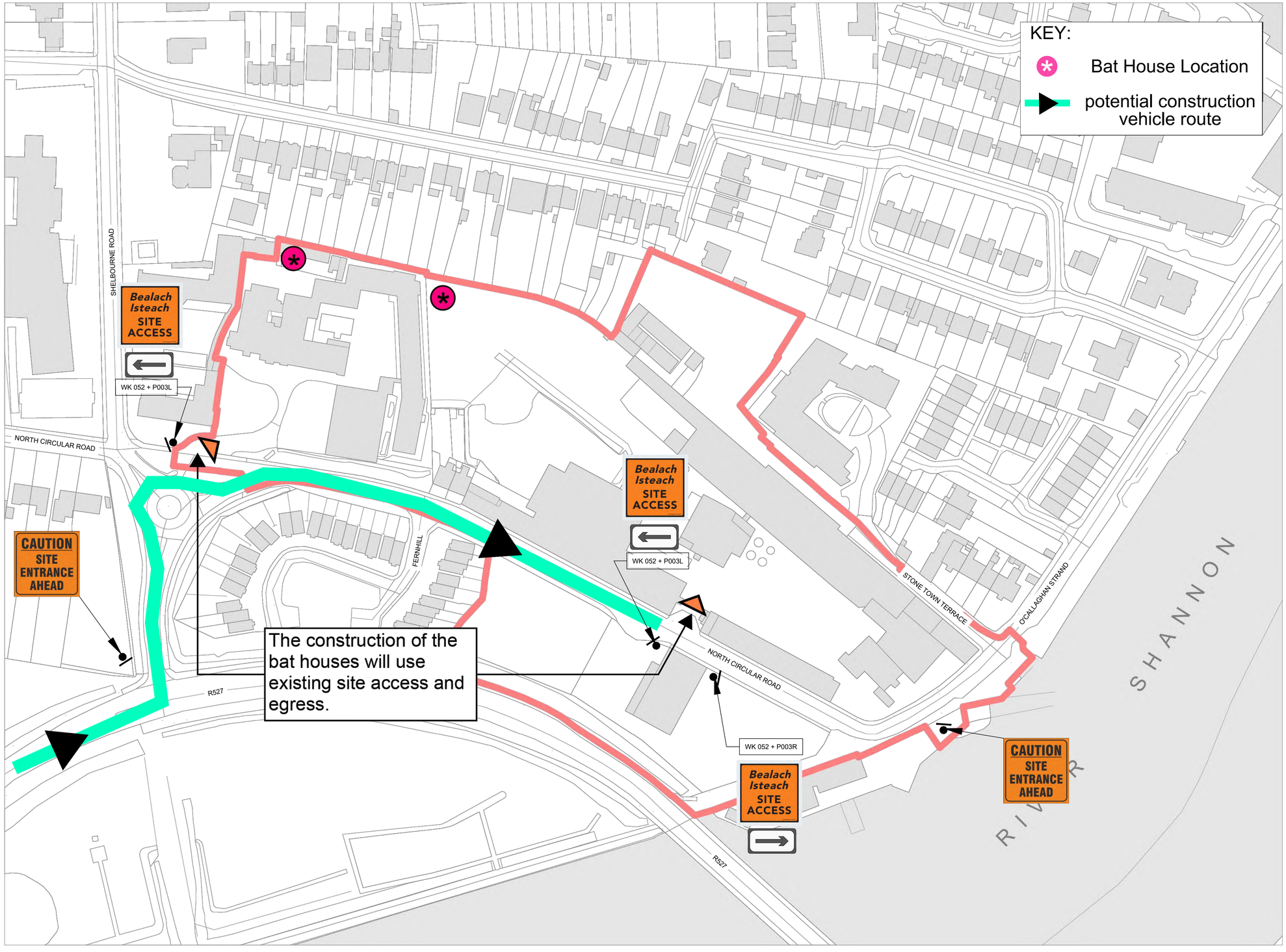
The development will be delivered in nine distinct stages between 2027 and 2030, beginning with ecological mitigation works and progressing through demolition, infrastructure upgrades, residential and public realm construction, and culminating in the delivery of a mobility hub. Each stage includes tailored traffic routing and compound arrangements, with flexibility built in to accommodate contractor-led adjustments.

Traffic impacts have been assessed and are expected to be minimal, with a projected 2% increase in peak-hour flows at the Salesians Roundabout. Measures such as scheduled deliveries, controlled access points, road cleaning, and signage will be implemented to mitigate disruption to the surrounding community and road network.

This OCTMP is a live document and will be refined into a Detailed Construction Traffic Management Plan (CTMP) by the appointed contractor in consultation with Limerick City & County Council and other stakeholders. The CTMP will ensure compliance with statutory requirements and support the safe, sustainable, and coordinated delivery of this transformative urban regeneration project.

APPENDICES

Appendix A. Construction Traffic Routing & Signage



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Project: CLEEVES RIVERSIDE QUARTER

Purpose: FOR PLANNING

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Demolition and extraction of demolition waste will use existing site access and egress.

KEY

- Building to be demolished
- Potential Hoarding Line
- Enabling Drainage Infrastructure
- Temporary Drainage Infrastructure
- Potential Construction Vehicle Route
- Potential Construction Vehicle Entrance
- Temporary Construction Road Infill

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Temporary drainage infrastructure will be installed in the reservoir to bypass the reservoir as a water store. This will connect the surface water outlets from Salesians, Stonetown Terrace and the Quarry directly to the outlet valve from the reservoir to the Shannon. This will enable the reservoir to be emptied, cleaned, the piers removed and the temporary construction access into the Quarry to be built.

Hoarding is indicatively shown along existing site boundary lines to keep the sites safe and secure.

SHELBOURNE ROAD
NORTH CIRCULAR ROAD
STONE TOWN TERRACE
O'CALLAGHAN STRAND
R527
RIVER SHANNON
Bealach Isteach SITE ACCESS
WK 052 + P003L
WK 052 + P003R
CAUTION SITE ENTRANCE AHEAD

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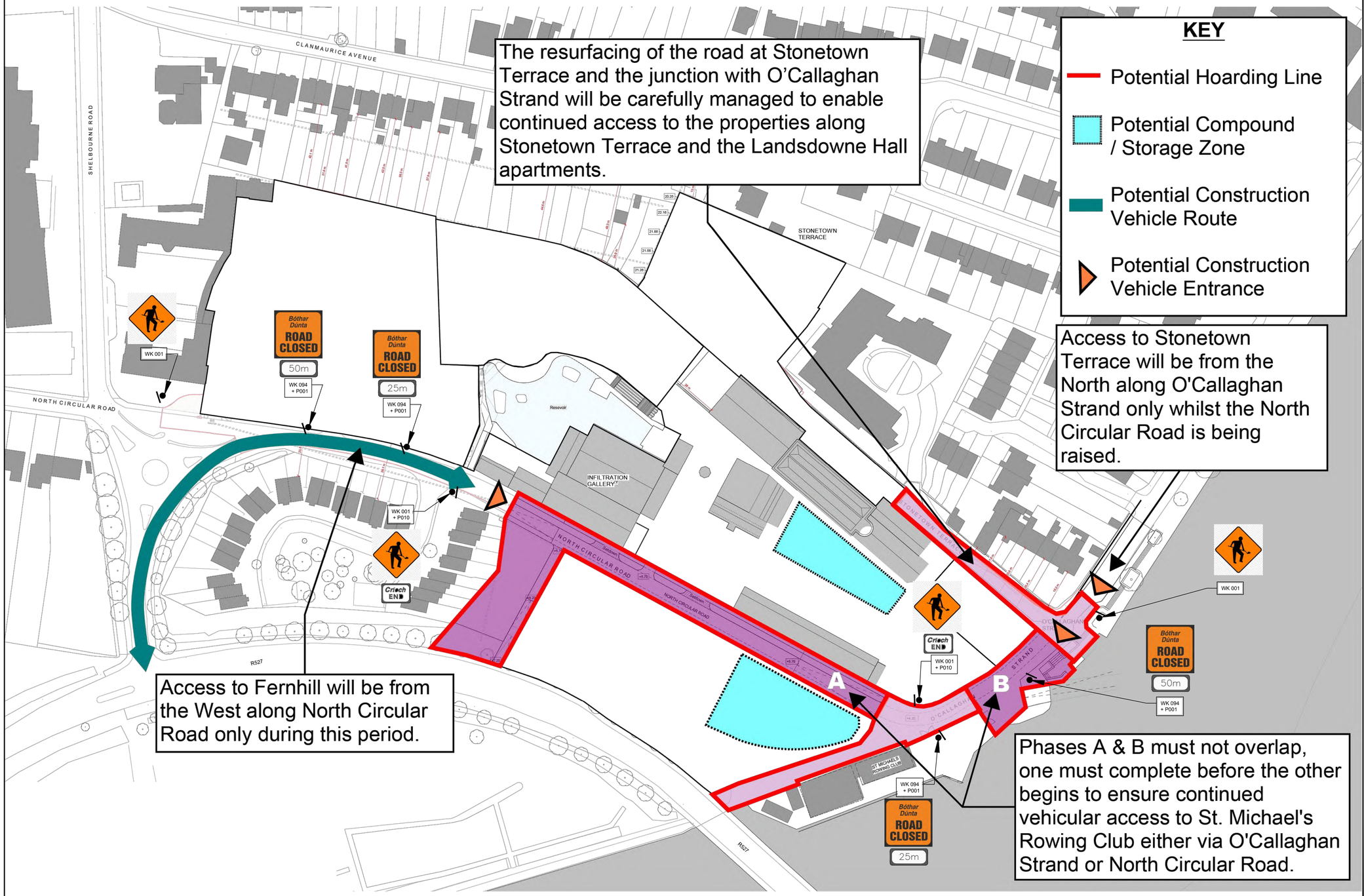

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FOR PHASE A, ACCESS ALONG NORTH CIRCULAR ROAD WILL BE PROVIDED THROUGH THE USE OF THE APPROPRIATE TRAFFIC MANAGEMENT MEASURES TO MANAGE THE ACCESS.

TRAFFIC MANAGEMENT MEASURES MAY INCLUDE TEMPORARY TRAFFIC LIGHTS OR A STOP OR GO SYSTEM. DETAILS TO BE DEVELOPED BY THE CONSTRUCTION OPERATORS UPON APPOINTMENT AND AGREED WITH THE RELEVANT STAKEHOLDERS.

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The resurfacing of the road at Stonetown Terrace and the junction with O'Callaghan Strand will be carefully managed to enable continued access to the properties along Stonetown Terrace and the Landsdowne Hall apartments.

KEY

- Potential Hoarding Line
- Potential Compound / Storage Zone
- Potential Construction Vehicle Route
- Potential Construction Vehicle Entrance

Access to Stonetown Terrace will be from the North along O'Callaghan Strand only whilst the North Circular Road is being raised.

Access to Fernhill will be from the West along North Circular Road only during this period.

Phases A & B must not overlap, one must complete before the other begins to ensure continued vehicular access to St. Michael's Rowing Club either via O'Callaghan Strand or North Circular Road.

CLANMAURICE AVENUE
SHELBOURNE ROAD
NORTH CIRCULAR ROAD
STONETOWN TERRACE
O'CALLAGHAN STRAND
R527
Reservoir
INFILTRATION GALLERY
ST MICHAEL'S ROWING CLUB
A
B

Trácht ar Mhalairt Slí
DIVERTED TRAFFIC
WK 091

Bóthar Dúnta
ROAD CLOSED
50m
WK 094 + P001

Bóthar Dúnta
ROAD CLOSED
25m
WK 094 + P001

Bóthar Dúnta
ROAD CLOSED
WK 094 + W 183

WK 001

WK 001 + P010

Criech EN

WK 001 + P010

WK 001

Bóthar Dúnta
ROAD CLOSED
50m
WK 094 + P001

Bóthar Dúnta
ROAD CLOSED
25m
WK 094 + P001

Bóthar Dúnta
ROAD CLOSED
WK 094 + W 183

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TRAFFIC NORTH FROM PHASE B WILL BE DIVERTED AT O'CALLAGHAN STRAND AND SARSFIELD SWIVEL BRIDGE AND ONLY AUTHORIZED AND PROPERTY OWNERS WILL HAVE ACCESS ON O'CALLAGHAN STRAND.

TRAFFIC APPROACHING FROM NORTH CIRCULAR ROAD WILL BE NOTIFIED OF ROAD CLOSURE AND THAT LOCAL ACCESS IS ONLY PERMITTED.

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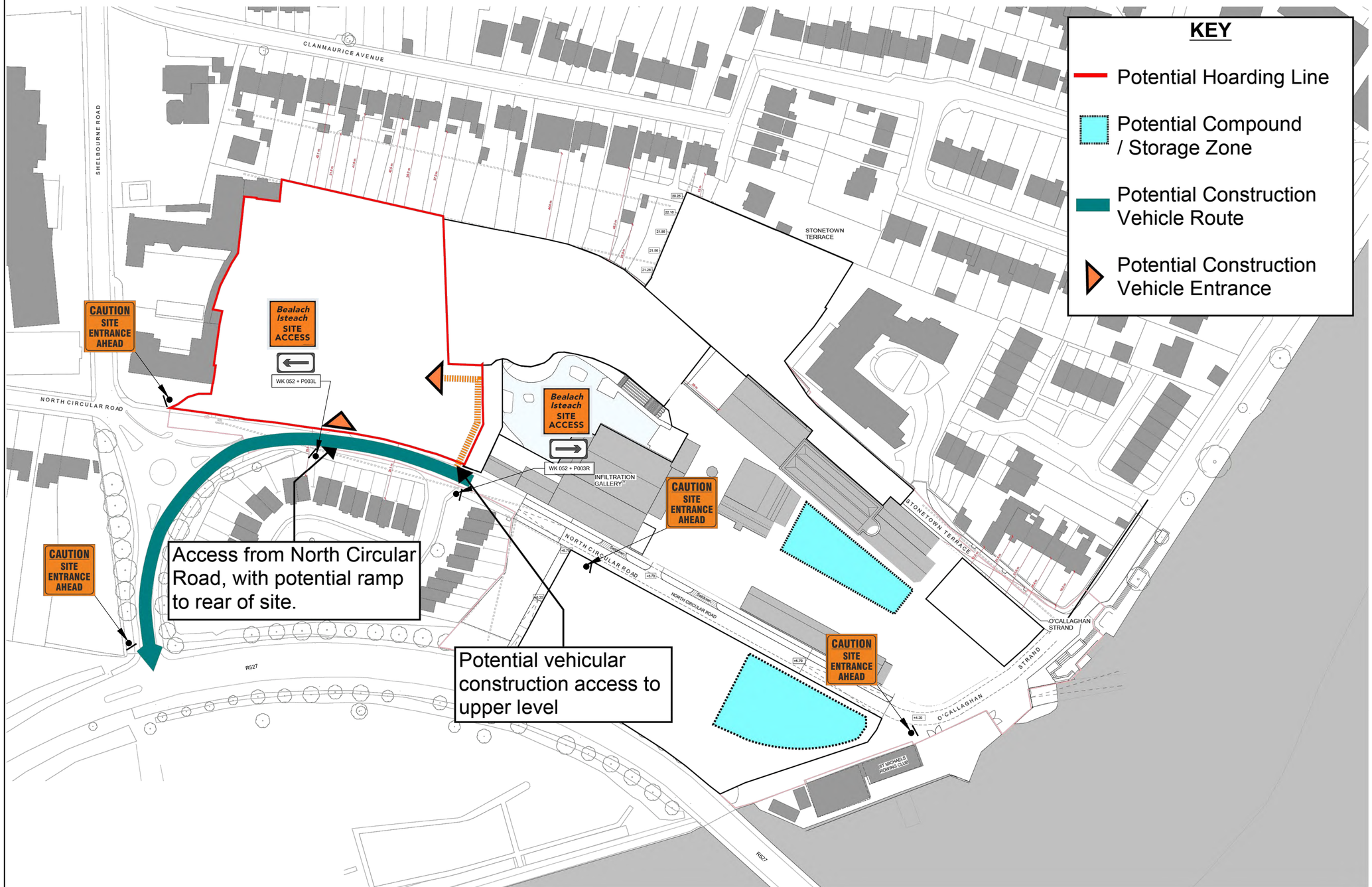

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2. ONLY WRITTEN DIMENSIONS SHALL BE USED. NO DIMENSIONS SHALL BE SCALED FROM THE DRAWINGS
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4. ALL COORDINATES ARE IN METRES AND ARE TO IRISH TRANSVERSE MERCATOR
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P01	FOR PLANNING	IC	30.09.25	PF	PF	PF

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Client: LIMERICK CITY & COUNTY COUNCIL IN PARTNERSHIP WITH LIMERICK TWENTY THIRTY DAC

Project: CLEEVES RIVERSIDE QUARTER

Purpose: FOR PLANNING

Title: STAGE 04 CONSTRUCTION TRAFFIC ACCESS ROUTE

Original Scale	Drawn	Checked	Reviewed	Authorised
N.T.C.	IC Date 30.09.25	PF Date 30.09.25	PF Date 30.09.25	PF Date 30.09.25

Status	Drawing Number	Rev
P	100117216-ATK-XX-00-DR-CE-900005	P01

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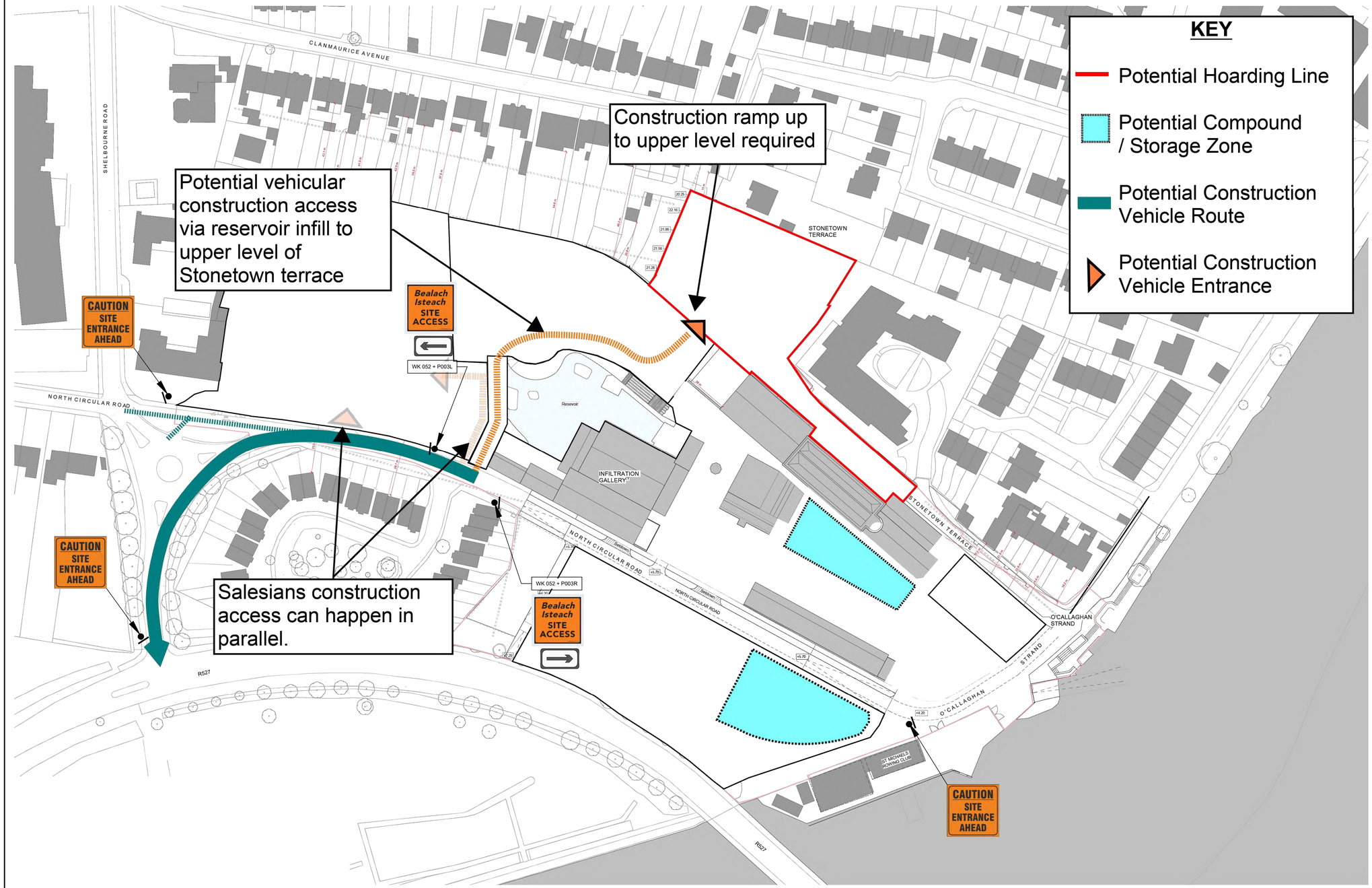

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P01	FOR PLANNING	IC	30.09.25	PF	PF	PF

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Client: LIMERICK CITY & COUNTY COUNCIL IN PARTNERSHIP WITH LIMERICK TWENTY THIRTY DAC

Project: CLEEVES RIVERSIDE QUARTER

Purpose: FOR PLANNING

Title: STAGE 05 CONSTRUCTION TRAFFIC ACCESS ROUTE

Original Scale	Drawn	Checked	Reviewed	Authorised
N.T.C.	IC Date 30.09.25	PF Date 30.09.25	PF Date 30.09.25	PF Date 30.09.25

Status	Drawing Number	Rev
P	100117216-ATK-XX-00-DR-CE-900006	P01

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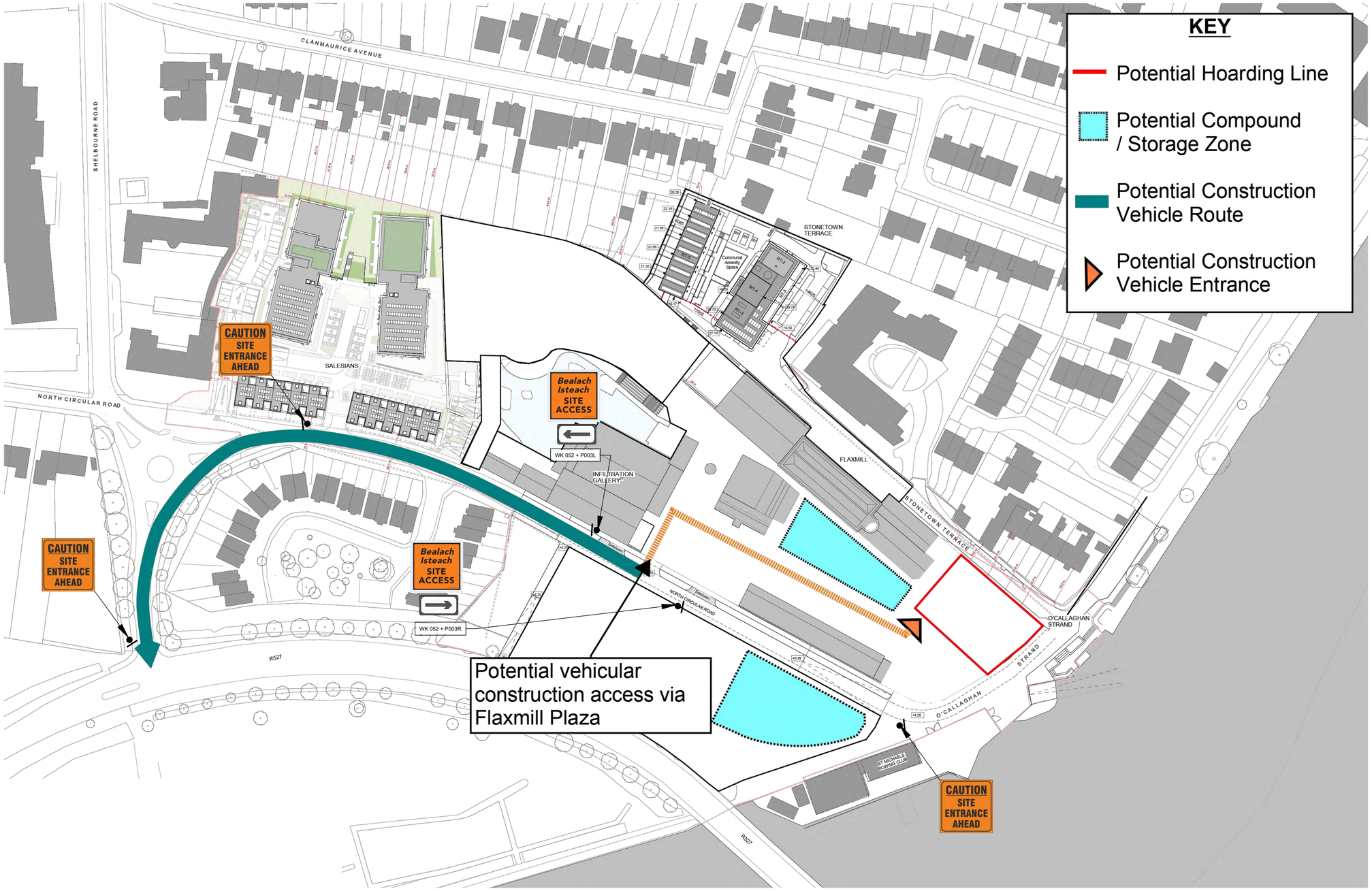

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Client: LIMERICK CITY & COUNTY COUNCIL IN PARTNERSHIP WITH LIMERICK TWENTY THIRTY DAC

Project: CLEEVES RIVERSIDE QUARTER

Purpose: FOR PLANNING

Title: STAGE 06 CONSTRUCTION TRAFFIC ACCESS ROUTE

Original Scale	Drawn	Checked	Reviewed	Authorised
N.T.C.	IC Date 30.09.25	PF Date 30.09.25	PF Date 30.09.25	PF Date 30.09.25

Status	Drawing Number	Rev
P	100117216-ATK-XX-00-DR-CE-900007	P01

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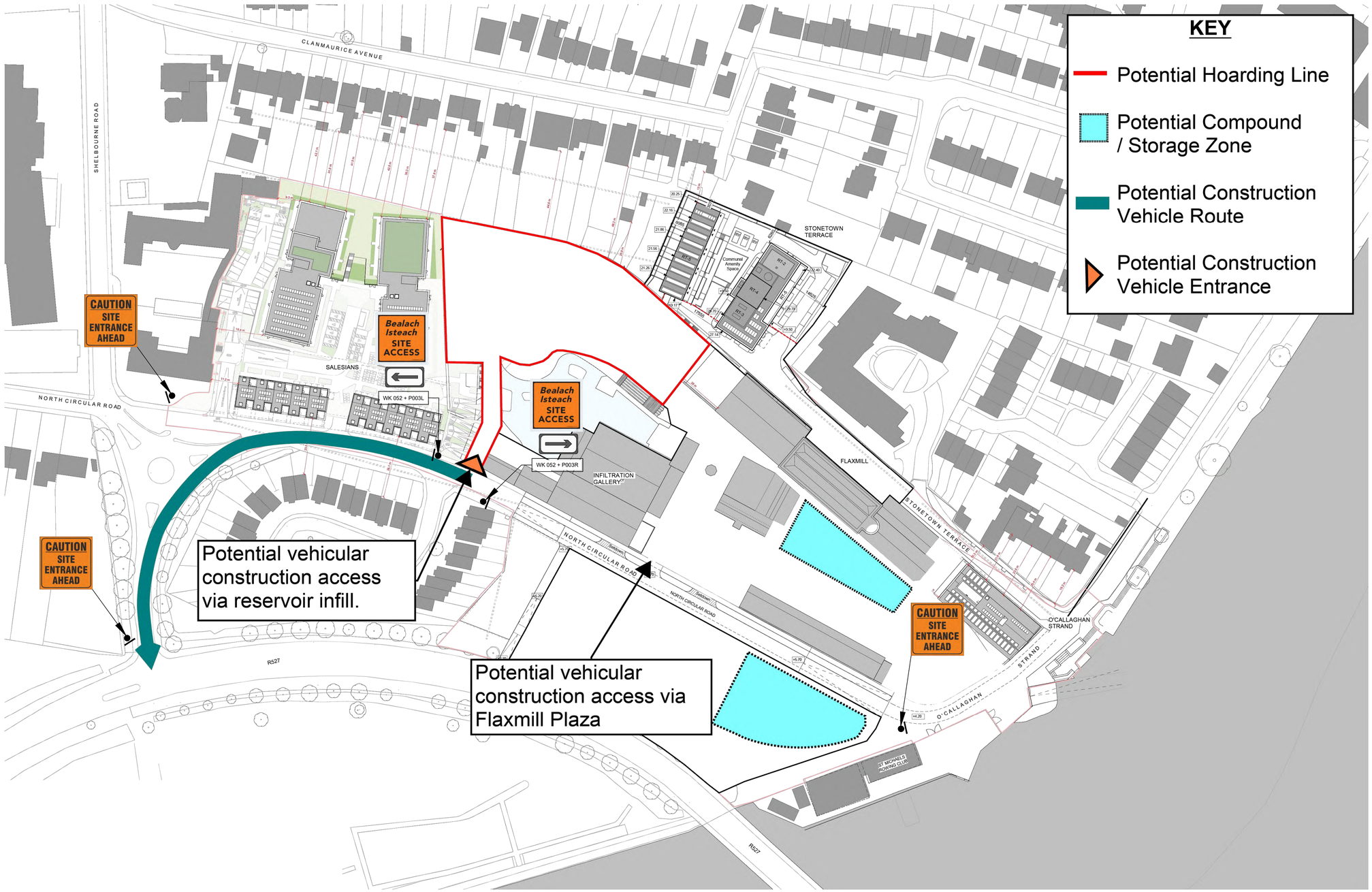

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Client: LIMERICK CITY & COUNTY COUNCIL IN PARTNERSHIP WITH LIMERICK TWENTY THIRTY DAC

Project: CLEEVES RIVERSIDE QUARTER

Purpose: FOR PLANNING

Title: STAGE 07 CONSTRUCTION TRAFFIC ACCESS ROUTE

Original Scale	Drawn	Checked	Reviewed	Authorised
N.T.C.	IC Date 30.09.25	PF Date 30.09.25	PF Date 30.09.25	PF Date 30.09.25

Status	Drawing Number	Rev
P	100117216-ATK-XX-00-DR-CE-900008	P01

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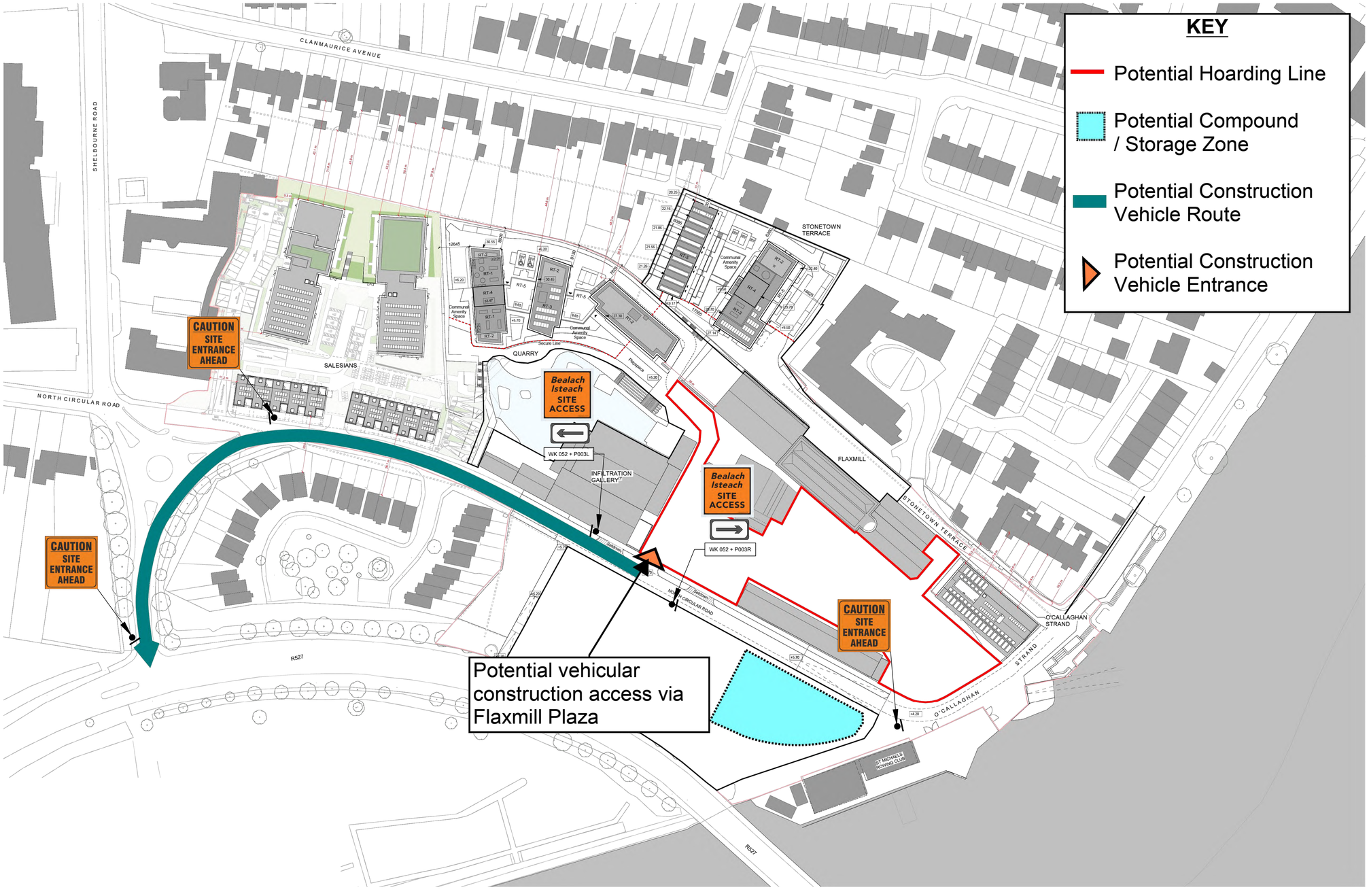

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Client: LIMERICK CITY & COUNTY COUNCIL IN PARTNERSHIP WITH LIMERICK TWENTY THIRTY DAC

Project: CLEEVES RIVERSIDE QUARTER

Purpose: FOR PLANNING

Title: STAGE 08 CONSTRUCTION TRAFFIC ACCESS ROUTE

Original Scale	Drawn	Checked	Reviewed	Authorised
N.T.C.	IC	PF	PF	PF
	Date 30.09.25	Date 30.09.25	Date 30.09.25	Date 30.09.25

Status	Drawing Number	Rev
P	100117216-ATK-XX-00-DR-CE-900009	P01

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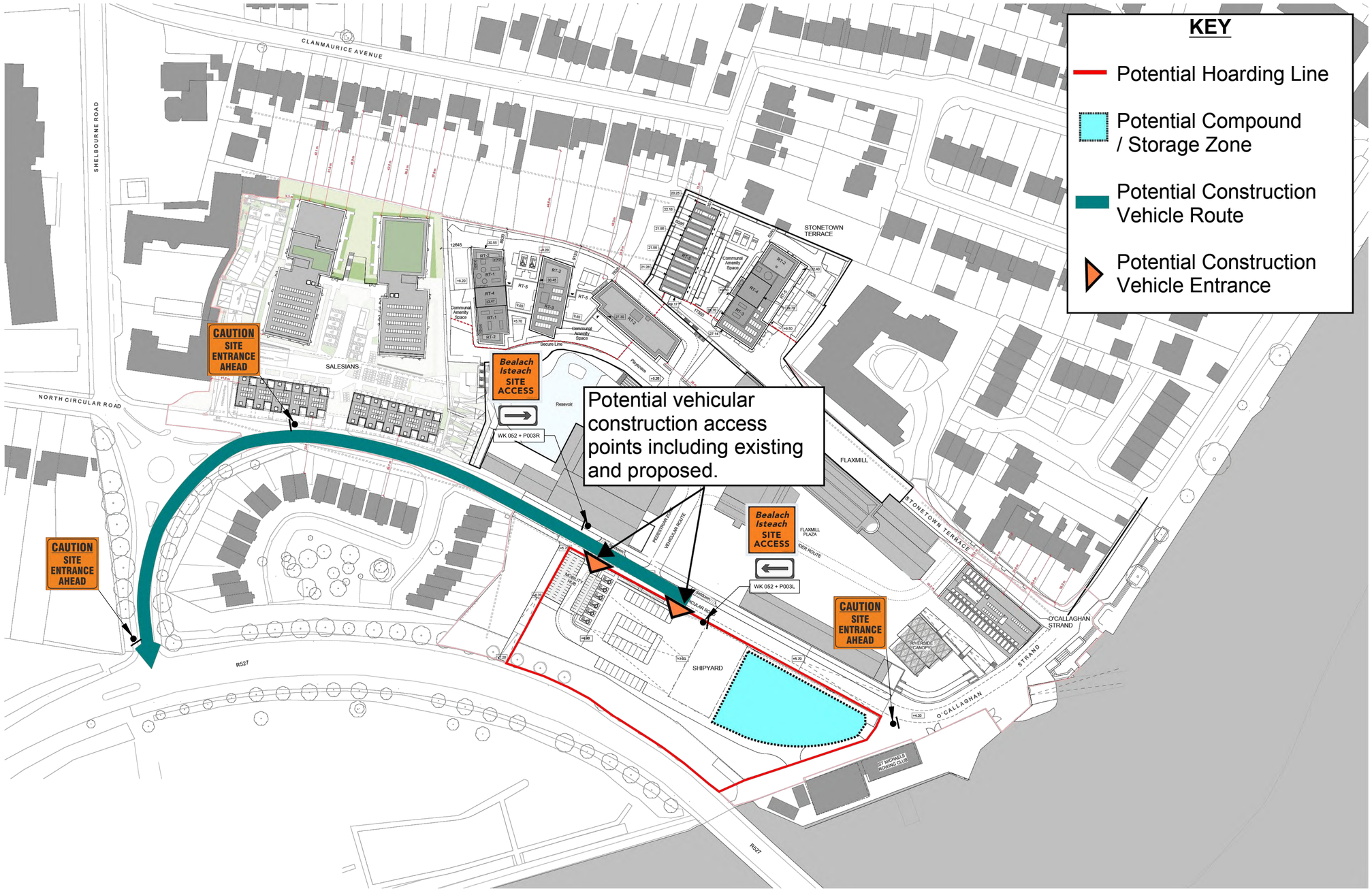

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Client: LIMERICK CITY & COUNTY COUNCIL IN PARTNERSHIP WITH LIMERICK TWENTY THIRTY DAC

Project: CLEEVES RIVERSIDE QUARTER

Purpose: FOR PLANNING

Title: STAGE 09 CONSTRUCTION TRAFFIC ACCESS ROUTE

Original Scale	Drawn	Checked	Reviewed	Authorised
N.T.C.	IC Date 30.09.25	PF Date 30.09.25	PF Date 30.09.25	PF Date 30.09.25

Status	Drawing Number	Rev
P	100117216-ATK-XX-00-DR-CE-900010	P01

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