Appendix 1.1

Role and EIAR Chapter	Responsible	Professional Qualifications and Relevant Experience
EIAR Project Manager Chapter 1 Introduction Chapter 2 Need for the Proposed Development Chapter 7 Air Quality Chapter 8 Climate Chapter 10 Population and Human Health Chapter 17 Material Assets Chapter 18 Major Accidents and Disasters Chapter 19 Cumulative Impacts and Environmental Interactions Chapter 20 Summary of Mitigation and Monitoring Chapter 21 Summary of Significant Residual Impacts	Sinead Whyte – Arup	MSc CMIWEM Sinead Whyte is an Associate Director with Arup and has over 27 years' experience as an Environmental Consultant. She holds a MSc in Experimental Physics and is Chartered for over 18 years with the Institute of Water and Environmental Management. She has been involved in environmental assessments of numerous developments including BusConnects Dublin and Galway, Irish Cement Alternative Fuels, DART Coastal, M20 Cork to Limerick Motorway, M7 Osberstown Interchange and R407 Sallins Bypass and N9/N10 Kilcullen to Powerstown. Sinead presented expert witness evidence at the An Bord Pleanála oral hearings into numerous developments.
EIAR Reviewer	Eddie Feely – Arup	BSc, MIES Eddie Feely is an Associate with Arup and has over 27 years' experience as an Environmental Consultant. He holds a BSc in Environmental Pollution Science, is a Member of the Institution of Environmental Sciences and is a Chartered Environmentalist. Eddie has managed the preparation of Environmental Impact Assessment Reports Statements for a number of infrastructure projects including BusConnects Dublin Core Bus Corridors Schemes, High Speed Two Phase 2a (West Midlands to Crewe) in the UK, Curragh Racecourse Redevelopment, DART Underground, Dublin Airport Visual Control Tower and Wicklow Port Access and Town Relief Road. Eddie presented expert witness evidence at the DART Underground and Wicklow Port Access and Town Relief Road oral hearings.
EIAR Contributor Chapter 2 Need for the Proposed Development	Máire McNamee – Arup	BSc, MSc, MRTPI Planning Policy and Guidance: Máire is a Principal Planner with 12 years' experience and is Chartered by the Royal Town Planning Institute. Máire's expertise ranges from advising on strategic infrastructure and renewable energy projects to developing Town Centre Masterplans and Urban Regeneration Strategies. Maire's experience also includes community and stakeholder engagement facilitation in accordance with IAP2 principals, project management, due diligence, masterplans mixed-use developments, statutory approval procedures and policy development.

Role and EIAR Chapter	Responsible	Professional Qualifications and Relevant Experience
EIAR Contributor Chapter 3 Alternatives Chapter 4 Description of the Proposed Development	Marco Mugnai – Arup	MA, ARB Marco Mugnai is an Associate with Arup and has over 14 years' experience as an Architect. He holds a Master's in Architecture and is a Member of the Architect Registration Board (ARB). He is an Architecture Leader for the Arup ASCMEP project team with extensive experience in designing data storage facilities for a confidential global technology company across multiple international sites. In the Netherlands, he led the design of two data storage facilities in Amsterdam, overseeing Masterplanning and Specialist Consultancy for EIA approvals, and currently manages construction coordination via RFIs and TS through an online portal. In the UK, Marco guided the adaptation of an existing building for data center use, providing comprehensive planning documentation and full architectural design from RIBA Stage 2 to RIBA Stage 5. In Ireland, he managed the final phase of a Data Centre Campus project, which includes 15 data storage facilities and a Campus Main Office, overseeing Planning and Multidisciplinary Design from RIBA Stage 2 to RIBA Stage 5, and currently coordinating construction via RFIs and TS submissions.
EIAR Contributor Chapter 3 Alternatives Chapter 4 Description of the Proposed Development	Beatrice Bagnara – Arup	Beatrice Bagnara is a Senior Architect with 12 years of experience in the field. She joined Arup Cork in 2022 and currently works on projects in the SIT sector, focusing on RIBA stages 0 to 4. Beatrice holds a Master's degree in Architecture and Engineering. Prior to joining Arup, she worked in the Netherlands as a Project Leader Architect at KAAN Architecten, where she contributed to the design of the National Amsterdam Courthouse among other projects. Her extensive portfolio includes large-scale residential developments, highly representative mixed-use buildings, office complexes, pharmaceutical facilities, and industrial projects.
EIAR Contributor Chapter 3 Alternatives Chapter 4 Description of the Proposed Development	Sara Cid – Arup	BArch, MArch, MRIAI Sara Cid is an Architect with Arup and has over 7 years of experience as an Architect. She holds a Master's in Architecture and is a Member of the Royal Institute of the Architects of Ireland (RIAI). Sara has a wide array of experience in architecture within Ireland including residential, offices, laboratories, educational buildings as well as in Science, industry and technology (SIT). During her working experience Sara has been involved in all stages of the project from initial design and planning applications to construction stage by dealing with further information requests. Prior to joining Arup, Sara worked in two different firms where she gained her first experience as an architect and with BIM environment technologies.
EIAR Contributor Chapter 5 Construction	Steven Cunningham – T&T	B. Eng. Steven Cunningham is a Project Director with Turner and Townsend. He has over 15 years' experience in the management of construction phases of data centre developments and other infrastructure projects.
EIAR Contributor Chapter 6 Traffic and Transport	Simon Van Jaarsveld – Arup	Simon van Jaarsveld is an Associate Director with Arup and has over 28 years experience as a Transport Planner. He holds both a BSc Hons in Town and Regional Planning and Transportation Planning and is Chartered for over 14 years with the Institute of Logistics and Transport, Ireland. . He has been involved in traffic and transportation assessments for numerous developments including data centers, industrial and warehouse developments, residential developments, office developments and mixed use developments. Simon has brought all of these studies to a successful conclusion by obtaining planning approval by dealing with further information requests and objections when received.
EIAR Contributor	Shane McCarthy – Arup	BA, MPLAN

Role and EIAR Chapter	Responsible	Professional Qualifications and Relevant Experience
Chapter 6 Traffic and Transport		Shane is a Project Engineer as part of the Transport Planning team with 4 years of experience. He holds a Masters in Planning and Sustainable Development from University College Cork. He has worked on a wide variety of projects for both the private and public sector with experience in Traffic Impact Assessments, Traffic and Junction Modelling, Mobility Management Planning and various other transportation elements.
EIAR Contributor Chapter 7 Air Quality Chapter 8 Climate	Sinead Whyte – Arup	See above
EIAR Contributor Chapter 9 Noise and Vibration	Mhairi Riddet – Arup	BSc, MSc, MIOA Mhairi is a senior acoustic consultant with Arup. She is a member of the Institute of Acoustics and holds an MSc in Acoustic Engineering from the Technical University of Denmark. Mhairi has over 15 years of general engineering experience, with over 8 years of acoustic specific experience working in environmental acoustic assessments including planning applications and environmental impact assessments for projects such as data centres, rail and road projects, and offshore wind farms.
EIAR Contributor Chapter 9 Noise and Vibration	Rob Eadon – Arup	BSc, MIOA Rob Eadon is an acoustic consultant with Arup. He is a member of the Institute of Acoustics and holds a BSc in Music Technology from Birmingham City University. Rob has experience of producing large-scale computer models of operational noise emissions for multiple data centre projects and uses these to produce suitable noise control strategies to achieve site-specific noise emissions limits. Rob has also liaised with local authorities to refine and discharge planning conditions relating to noise emissions from the operation of data centres in the UK.
EIAR Contributor Chapter 11 Biodiversity	Nichelle Murray – Arup	Nichelle Murray is Senior Ecologist with Arup and has over 8 years of professional experience working on large multidisciplinary marine and terrestrial projects in Scotland, England, Ireland and Northern Ireland. Nichelle is a Full Member of CIEEM and a Building with Nature Assessor. Nichelle's expert ecological grounding has formed the solid foundations for her to deliver complex ecological assessments, including Ecological Impact Assessments, Habitat Regulation Appraisals, Appropriate Assessments and Biodiversity Net Gain (BNG) Assessments. This has also included working closely with local authorities and Statutory consultees.
EIAR Contributor Chapter 11 Biodiversity	Amy Sproule – Arup	Amy Sproule is an environmental consultant with Arup and has previous experience in undertaking PEA assessments, Phase 1 surveys, EIA Screenings, AA Screenings and HRAs. Amy is a Qualifying Member of the CIEEM. Throughout the past two years with Arup, Amy has undertaken ecological assessments for a range of clients and projects and plans from private developments, infrastructure projects and local development plans. Amy has experience conducting a range of species specific surveys, impact assessments and recommending mitigation. She has experience in working across various regions and statutory requirements.
EIAR Contributor Chapter 12 Water	John MacCarthy – Arup	BSc. MIEI, CIOB John MacCarthy is a chartered construction manager and an Associate Director at Arup and leads the Site Infrastructure Business in Ireland and Europe. John leads a team of dedicated infrastructure engineers and project managers with a deep experience of civil engineering projects focusing on design and delivery of Science & Industry projects in Ireland and across Europe. John has over 30yrs experience in the industry.

Role and EIAR Chapter	Responsible	Professional Qualifications and Relevant Experience
		Prior to joining Arup, John worked in a number of civil/environmental engineering consultancies, where he gained his early experience in both infrastructural and environmental engineering assignments in the design of complex drainage systems for the dairy & pharma industry.
EIAR Contributor Chapter 12 Water	Louise Lodenkemper – Arup	BSc, MSc Louise Lodenkemper is a professionally registered Senior Scientist in the Water Group based in the Cork office. Louise has a BSc in Zoology, Ecology and Conservation Science from the University of the Witwatersrand in South Africa, a BSc Honours in Environmental Science and MSc Water Science from Rhodes University in South Africa. She has 10 years' experience in integrated water resource management with a focus on nature-based solutions. Louise has experience as task leader developing basin plans and catchment management plans in Kenya, Uganda, Rwanda, Malawi and South Africa. She has also provided specialist input to water balance, environmental flow, geomorphological and wetland studies; and has developed erosion, sediment delivery and land use capability assessment tools. Louise's recent and relevant projects include the water and water framework directive assessment for EIA assessments.
EIAR Contributor Chapter 12	Rodoula Gregoriou – Arup	MEng, CEng ICE Rodoula Gregoriou has 11 years' experience in flood risk management on a plethora of projects of varying scale and complexity. She has worked in several countries including UK, Ireland, India and Kenya assessing risk of flooding and designing flood risk management solutions. Rodoula has completed the Professional Diploma in Project Management by University College Dublin. She also has a Masters in Engineering Degree from Cardiff University. She is a Chartered Engineer with the Institute of Civil Engineers UK.
EIAR Contributor Chapter 13 Land, Soils, Geology and Hydrogeology	Kieran Butler – Arup	MEng (Hons), CEng MICE Kieran Butler is a Senior Geotechnical Engineer with 6 years experience in delivering geotechnical consultation for a range of medium to large scale projects in various sectors. Kieran's role focuses on management of ground risk both in terms of foundation and earthworks strategy development. Kieran is a Chartered Engineer and Member of the Institution of Civil Engineers (UK). Kieran has a MEng (Hons) Degree in Environmental and Civil Engineering from Queen's University Belfast.
EIAR Contributor Chapter 13 Land, Soils, Geology and Hydrogeology	Charlie Martin – Arup	BSc C.WEM, CSci, CEnv MCIWEM Charlie is an Associate with over twenty five years' experience in the geo environmental field, assessing and managing ground and groundwater risk. He is a Chartered Scientist, Chartered Environmentalist and a Chartered Water and Environmental Manager and he is Arup's Geonvironmental Skills lead for the UK and Globally. He is the SME in a number of fields including contaminated land assessment, waste management, permitting, and ground/ground water remediation. Charlie has been technical lead for the geology, hydrogeology and/or land contamination aspects for a number of Environmental Impact Assessments.
EIAR Contributor Chapter 13 - Land, Soils, Geology and Hydrogeology	Agnieszka Lopez-Parodi – Arup	BSc, MEng, CEng ICE Agnieszka Lopez-Parodi is a Principal Geo-environmental Engineer with over 15 years of experience in ground risk and focusing on land contamination and hydrogeology aspects. She is a Chartered Engineer and Member of the Institution of Civil Engineers (UK). She has a MEng (Hons) degree in Environmental Engineering from the Wroclaw University of Technology, Poland, and BSc (Hons) degree in Applied Sciences from the University of Glamorgan, Wales. Agnieszka has worked on geology, hydrogeology and/or land contamination aspects, and associated Environmental Impact Assessments for several large developments and infrastructure schemes across the United Kingdom and Northern Ireland.

Role and EIAR Chapter	Responsible	Professional Qualifications and Relevant Experience
EIAR Contributor Chapter 14 Archaeology, Architectural and Cultural Heritage	Margaret McCarthy – Arup	BSc, MSc Margaret McCarthy is a senior consultant archaeologist with over 30 years of experience as a director on a range of projects both in Ireland and the UK. She holds a Master's degree in Archaeology from University College Cork and is a full member of the Institute of Irish Archaeologists (IAI). She is fully licensed by the Department of Housing, Local Government and Heritage to direct all archaeological investigations including impact assessment, excavation, testing and monitoring.
EIAR Contributor Chapter 16 Waste and Resources	Janet Lynch – Arup	BE (Hons), CEng, MCIWM, MIEI Janet Lynch is a Chartered Engineer with 20 years experience in environmental engineering, project management, circular economy, resource efficiency and carbon advisory services. Janet leads teams delivering circular economy and net zero advisory projects. She specialises in material reuse, reducing carbon on engineering projects and environmental compliance for industry. She holds a Bachelors in Civil and Environmental Engineering from University College Cork, a full membership with the Chartered Institution of Waste Management (CIWM) and a full membership as a Chartered Engineer with Engineers Ireland
EIAR Contributor Chapter 16 Waste and Resources	Hannah Lesbirel – Arup	MEnviSci Hannah is a chartered resource and waste management consultant with over six years of experience in the waste and resources sector. Hannah has worked on projects across the UK, Ireland and globally. She holds a Masters in Environmental Science from the University of Southampton, a full membership with the Chartered Institute of Waste Management (CIWM) and a Practitioner membership with the Institute of Environment Management and Assessment (IEMA). Hannah has input into the resource and waste management environmental impact assessment for a number of large infrastructure schemes in both the UK and Ireland.

Bureau Veritas Certification

CERTIFICATE OF CONFORMITY

Google

Bureau Veritas Denmark verifies that the above organization has been audited under a limited assurance statement and found to be in accordance with

Standards

Climate Neutral Data Center Pact

CLIMATE NEUTRAL DATA CENTER

Self-Regulatory Initiative

Last update December 2022

Scope of verification

Energy Efficiency

Clean Energy

Water Conservation

Circular Economy

Circular Energy System

Verified with comments

Ref.:	**Details in Verification Report**
Original cycle start date:	**1st of July 2023**
Expiry date:	**30th of June 2027**

Certificate No: **BV-CNDCP-SRI-VC-0003** Version: **00** Revision Date: **29-Jun-2023**

Appendix 5.1: Construction Environmental Management Plan (CEMP)

1. Introduction

This Construction Environmental Management Plan (CEMP) has been prepared as part of the planning application by Google Ireland Limited (GIL) to develop a data centre (DC3) (hereafter referred to as the Proposed Development) adjacent to its existing GIL Campus located at Grange Castle Business Park South, Baldonnel Road, Dublin.

GIL will appoint a construction management team which will supervise aspects of the Construction Phase of the Proposed Development.

GIL's Project Management Consultant (PMC) will ensure that all Contractors/ subcontractors will comply with all the performance requirements set out in the tender documentation including the conditions attached to statutory consents which may be granted by South Dublin County Council (SDCC), Uisce Éireann and other relevant statutory consent authorities.

This document presents an outline construction sequence, supported by construction methodologies and techniques likely to be adopted during the construction of the Proposed Development. This plan seeks to demonstrate how such works can be delivered in a logical, sensible, and safe sequence, with the incorporation of specific measures to mitigate the potential effects on people, property, and the environment.

Nothing stated in this document shall supersede or be taken to replace the items of the Contract, the detailed design description issued with the Contract tender or the conditions of planning.

This CEMP sets out the duties and responsibilities which will be imposed on the Project Supervisor Construction Stage (PSCS) and appointed Contractors in the construction contract. GIL's construction management team will be responsible for ensuring that the PSCS and appointed Contractors comply with all the requirements of this CEMP.

Refer to Appendix 1.1 for details of the author of this CEMP.

1.1.1 Purpose

The purpose of this CEMP is to provide a framework that outlines how GIL will manage and where practicable minimise negative environmental effects during the construction of the Proposed Development. Construction is considered to include all site preparation, enabling works, demolition, materials delivery, materials and waste removal, construction activities and associated engineering works.

This CEMP identifies the minimum requirements about the appropriate mitigation, monitoring, inspection, and reporting mechanisms that need to be implemented throughout construction. Compliance with this CEMP does not absolve GIL from compliance with all legislation and bylaws relating to their construction activities.

This CEMP has been produced as part of the application for consent to ensure compliance with legislative requirements, the EIAR and associated ecological reports that have been prepared for the Proposed Development.

The CEMP will be used by the appointed Contractors, and the appointed contract personnel, as a guidance document for the Construction Phase of the Proposed Development, outlining procedures for the delivery of environmental mitigation measures and for addressing general day-to-day environmental issues that could arise during the Construction Phase of the Proposed Development.

The PSCS and the appointed Contractors will develop the CEMP in the event SDCC decides to grant approval for the Proposed Development. The CEMP will address the requirements of any relevant planning conditions, including any additional mitigation measures which are conditioned by SDCC.

1.1.2 Approach

This CEMP provides a framework to:

- Describe the programme for environmental management during construction;
- Implement those monitoring and mitigation measures identified in the EIAR and associated ecological reports;
- Outline the principles and minimum standards required during the development of the CEMP (and associated Method Statements) and throughout construction;
- Identify the relevant roles and responsibilities for developing, implementing, maintaining, and monitoring environmental management; and
- Outline the procedures for communicating and reporting on environmental aspects of the Proposed Development throughout construction.

It is intended that this CEMP would be expanded and updated prior to the commencement of any construction activities on site. The CEMP is a dynamic document and will remain up to date for the duration of the construction period. The CEMP may need to be altered during the lifecycle of the construction period to take account of monitoring results, legislative changes, outcomes of third-party consultations etc.

Following appointment, GIL's PMC, PSCS and appointed construction Contractors will be required to ensure that more specific Method Statements are developed that are cognisant of the proposed construction activities, equipment and plant usage and environmental monitoring plan for the Proposed Development. This CEMP should not be considered a detailed Construction Method Statement as it will be the responsibility of the PSCS and the individual Contractors, appointed to undertake the individual works, in association with GIL, to implement appropriate procedures and progress this documentation prior to commencement of construction.

This CEMP outlines the range of potential types of construction methods, plant and equipment which may be used by any Contractors appointed to enable their effects to be assessed for the purposes of the planning authority's environmental impact assessment and appropriate assessment prior to determining whether to grant planning permission.

1.1.3 Structure

This CEMP is structured as follows:

- Section 1.1 and 1.2 introduce the Proposed Development and outlines the purpose of the CEMP.
- Section 1.3 and 1.4 describe the construction strategy for the Proposed Development.
- Section 1.5 describes the management of construction traffic with reference to the full CTMP in Section 2 of this CEMP.
- Section 1.6 describes in detail the measures to be implemented to minimise likely significant negative effects, as far as practicable, during the construction of the Proposed Development.
- Section 1.7 sets out the framework and mechanisms through which environmental requirements would be managed; and
- Section 1.8 outlines the procedures to be employed during construction to manage environmental aspects.

1.1.4 Updates to the CEMP

The detailed CEMP is considered a 'live document' that will be reviewed and revised regularly as construction progresses. The process for update, review and approval of the CEMP must be documented in the detailed CEMP to ensure that all revisions can be easily understood, applied, and updated.

The PMC will be required to update the CEMP to ensure that it:

- Is in accordance with the mitigation measures specified in the EIAR, associated ecological reports and this CEMP;
- Is in accordance with any conditions that may be prescribed as part of the consent(s) for the Proposed Development;
- Aligns with those design and construction details described in the EIAR and associated ecological reports and ensures there is no material change in terms of significant effects on the environment;
- Where practicable the PMC should seek to identify opportunities for further reducing significant negative environmental effects and to implement best practice in as far as reasonably practicable, i.e., take every reasonable effort to reduce and prevent negative effects, while enhancing benefits; and
- Will have regard to the guidance contained in the handbook published by Construction Industry Research and Information Association (CIRIA, 2015).

It is expected that amendments to the CEMP may be necessary to reflect inter alia changes in the project scope, contract scheduling, PSCS appointments, environmental management policies, practices or regulations, and developments on the site. These reviews and updates are necessary to ensure that environmental performance is subject to continual improvement and that best practice is implemented throughout construction.

1.2 The Proposed Development

1.2.1 Site Location

The Proposed Development site is located is the south-western region of County Dublin in Grange Castle Business Park South adjacent to the existing GIL Campus. The Proposed Development site is approximately 12km southwest of the Dublin city centre and will be situated on a mixture of brownfield and greenfield lands. The surrounding area comprises a small number of residential properties, agricultural fields, industrial facilities to the north, Grange Castle Golf Course to the east and Casement Aerodrome to the south. The location of the Proposed Development with respect to Dublin City Centre and the Casement Aerodrome is shown in Figure 1.1

Figure 1.1: Location of the GIL Campus. Source: Google Earth

The majority of the Proposed Development is situated on land which is zoned for "Enterprise and Employment (EE)" with the small quadrant within the southeastern boundary of the GIL Campus zoned as "Rural (RU): to protect and improve rural amenity and to provide for the development of agriculture" under the SDCC County Development Plan (CDP) 2022 - 2028.

The Proposed Development shares boundaries with commercial and industrial properties as well as residential, agricultural and recreational open spaces. Lands to the north, east and west of the Proposed Development are zoned Enterprise and Employment (EE) and include various data centres, substations and other ancillary buildings. Directly east of the Proposed Development site is the Grand Castle Golf Club as well as Corkagh Park, a 120-hectare park comprised of a wide range of recreational facilities and tourist attractions including a cycle racing track, play areas, sport pitches and an adjoining caravan park.

The Proposed Development planning boundary with respect to the existing GIL Campus is shown in Figure 1.2. The Proposed Development is an extension of the existing GIL Campus and will provide a new data centre building and associated infrastructure.

Figure 1.2: Locations of DC1-3. Source: Google Earth.

The existing and Proposed Development sites can be accessed from Baldonnel Road through the R134 Nangor Road from the N7 as shown in Figure 1.3.

Figure 1.3: Location of Proposed Development within greater Dublin City road network.

1.2.2 Proposed Development Description

The objective of this project is to expand GIL's state-of the-art data storage facility located in the townlands of Aungierstown and Ballybane on a greenfield/brownfield site lying to the south of the existing two GIL data storage facilities on their campus in Clondalkin, Dublin 22. The facility will have the capability to host the servers required to handle the growth in use of GIL's service. The data storage facility will store, manage and distribute information to individuals, businesses and organisations.

DC3 (the Proposed Development), to which the planning application and EIAR relate, is the development of 72,400m^2 data storage facility which will incorporate data halls with associated support areas, a High Voltage (HV) compound, offices and staff facilities, a loading area, mechanical and electrical yards, internal and external utilities, together with ancillary buildings.

There are currently 110 employees working either directly or indirectly in the existing campus with approximately 50 additional employees (25 direct and 25 indirect) on the campus once operational. The facility will be developed on a 20.4ha greenfield site at the location described above, which is approximately 12.5km south-west of Dublin City Centre, just north of Casement Aerodrome.

The Proposed Development will include the following principal functional areas (refer Figure 1.4):

1.2.2.1 Site Infrastructure:

- HV compound
- Associated and ancillary site development works
- Security fence and gates required to ensure the security of the facilities.
- Internal roads, pedestrian and cycle routes required to provide access to the DC3 facilities and connectivity to the existing DC1 and DC2 facilities within the GIL site.
- The existing access entrance for the GIL site will provide access to DC3 as part of the whole campus with no requirement for an additional entrance block. A secondary entrance for construction works and emergency use will be provided to the east.
- Carparking
- A cycle/footpath link between Profile Park Road and Grange Castle Business Park Road

- 2 No. stormwater attenuation ponds and 1 No. stormwater attenuation tank
- 1 No. firewater retention tank
- Industrial and sanitary wastewater pumping station.
- 2 No. firewater pumping stations
- Additional landscaping; and
- Acoustic screening at the Electrical Yard (EYD) to the south of the site.

1.2.2.2 Data Storage Facility:

- Eight data halls with associated support areas
- Office and staff facilities
- Mechanical Yards (MYD) containing all plant and equipment necessary to maintain the temperature, humidity as required to run the facility.
- The trestle and conveyance pipe rack to connect the mechanical yard facilities to the main Data Centre building; and
- EYD containing all plant and equipment necessary to ensure continuous operativity of the data centre facility in case of failure of the main electrical network power supply.

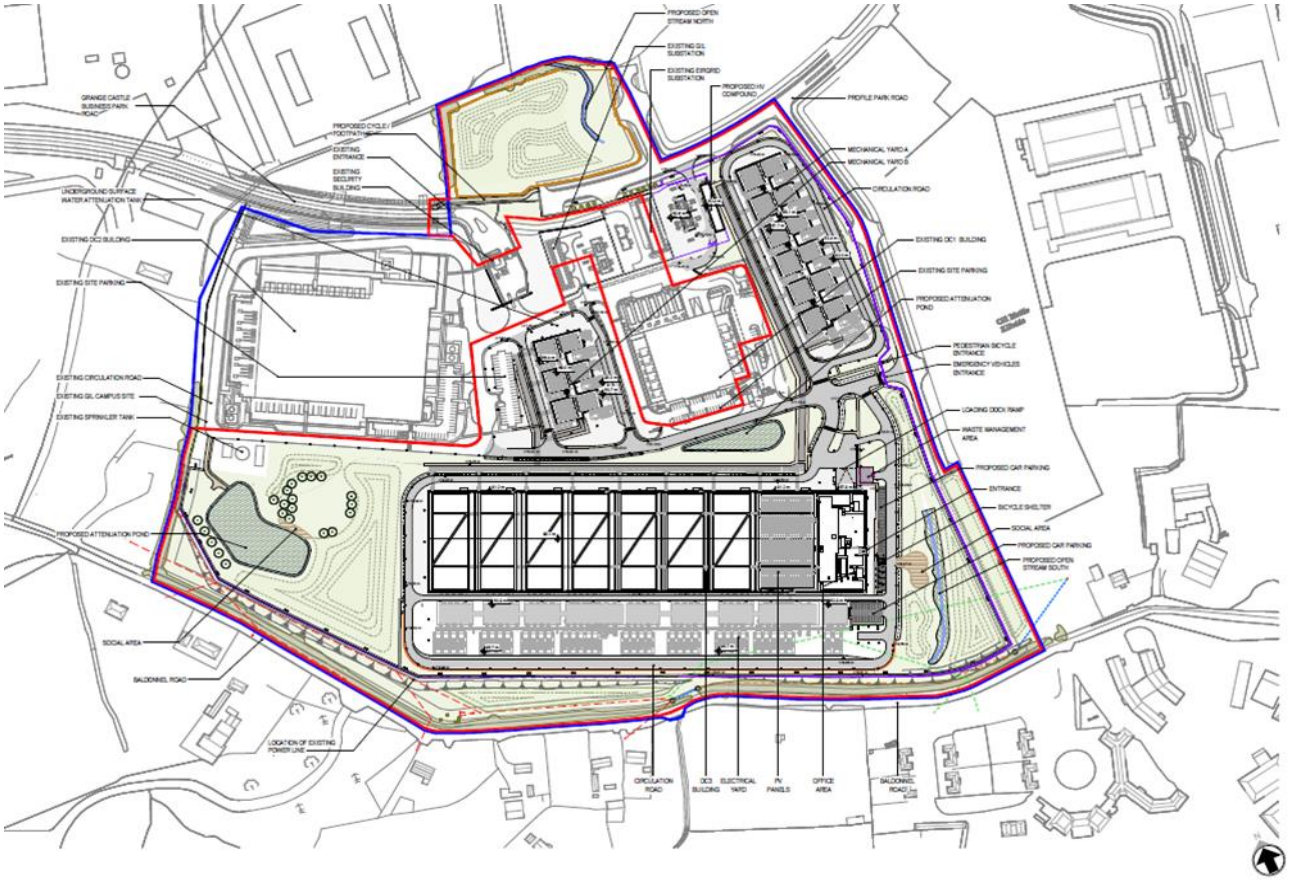

Figure 1.4: Site layout.

1.3 Construction Strategy

1.3.1 Duration and Phasing

A detailed construction programme has not been fully prepared without the engagement of the specialist Contractors; however, to enable assessment of likely environmental effects within this EIAR, an indicative, but feasible, agnostic development programme has been developed by GIL based on a number of qualifying assumptions, metrics and deep development knowledge. These assumptions have been informed by an understanding of current and future projected market conditions, technical considerations and professional experience, all of which are considered to be reliable.

Based on the assumption that planning consent is secured in Quarter 3/4 (Q3/4) 2024, the construction works would commence in Quarter 4 (Q4) in 2024. The works are anticipated to be undertaken over a period of 27 months, with a completion target of Quarter 2 (Q2) in 2027.

For the purposes of the EIA, it is assumed that Q1 2025 to Q2 2026 will be the peak time frame for construction works as this will include the site wide enabling works, groundworks and civils, and associated landscaping and biodiversity improvements and is likely to have the most overlap between the proposed works for the early phases and would result in: noisiest works, majority of waste generation (such as from excavations and ground clearance) and import associated with cut and fill; and associated heavy good vehicles (HGV) trips.

1.3.2 Site Preparation and Enabling Works

Following the successful grant of planning permission, and receipt of other required statutory permissions, on-site works will commence with the following enabling works, additional detail is presented in Section 5.3.1.1 of Chapter 5 (Construction) of this EIAR:

- Preparation and mobilisation of a pre-qualified specialist Contractors;
- Diversion, capping, and/or isolation of existing services running through or in close proximity to the Proposed Development;
- A 2.4m high security fence/hoarding and access/egress gates will be installed and maintained throughout the duration of the works programme. This will segregate pedestrians and the general public from the works and contain the work within the site boundary;
- Construction welfare facilities, offices for construction staff inclusive of car parking, and construction compounds will be constructed on site, the detailed locations of which will be contained within this CEMP and the CTMP; and
- All construction traffic will enter and exit the site via the R134 and through Profile Park sub roads.

1.3.3 Site Clearance and Demolition

Excavations in made ground will be monitored by an appropriately qualified person to ensure that, if any hotspots of possible encountered contamination are identified they will be segregated and disposed of appropriately. Any identified hotspots will be segregated and stored in an area where there is no possibility of runoff generation or infiltration to ground or surface water drainage. Care will be taken to ensure that the hotspot does not cross contaminate clean soils elsewhere throughout the site.

Excavations in virgin ground/ greenfield and removal of vegetation will be carefully managed to maintain segregation from made ground arisings. Any materials deemed adequate for reuse on site will be stored on site with any excess being hauled off site as required.

No demolition works are required.

1.3.4 Earthworks, Excavations and Substructure

1.3.4.1 Earthworks

The underlying ground conditions beneath the Proposed Development comprise made ground/topsoil over a thin layer of Dublin Boulder Clay. Superficial deposits overlie the Upper Carboniferous Limestone, known as the Lucan formation or locally as Calp. The Dublin Boulder Clay is typically 3m in thickness.

Regrading of the site is required to form finished levels and earthwork features. This comprises:

- Cutting to form the watercourse diversion in the southeastern corner;
- A cutting along the southern boundary to achieve the finished floor level for the proposed buildings;
- Removal of stockpiles where required;
- Constructing subformations for the proposed buildings and associated infrastructure; and
- Landscape bunds.

Where possible, excavated material during the earthworks will be re-used. It is proposed that some of the spoil generated will be reused below roads and hardstandings and as part of the landscaped areas (including bunds).

Any temporary storage of spoil will be managed, as set out under this CEMP to prevent accidental release of dust and uncontrolled surface run-off which may contain sediment and other contaminants.

Waste arisings from the site clearance, primary infrastructure and earthworks is expected to compromise of made ground/topsoil, gravel, rock and clay/silt material, and will be either reused onsite or removed off-site for appropriate reuse, recovery and/or disposal as required, as described in the Resource and Waste Management Chapter (Chapter 16) of this EIAR.

Where feasible classification for reuse on other construction site(s), for example as a “by product” under Regulation Article 27, will be considered. Where the material is not suitable for reuse it will be categorised in accordance with the EPA List of Waste and Determining if Waste is Hazardous or Non-hazardous (EPA, 2018).

Waste may only be transferred from site by a waste collection permit holder and delivered to an authorised waste facility (i.e. a facility which holds a Certificate of Registration, Waste Facility Permit or Waste Licence) for the specific waste types it receives.

Where removal from site of construction by-products for further use is proposed, this will take place in compliance with Regulation Article 27 of the European Communities (Waste Directive) Regulations, 2011, where appropriate.

The Contractors will be responsible for ensuring compliance with this article regulation where appropriate. Demolition and excavated material that is deemed hazardous will be treated at an authorised facility either in Ireland or abroad. Export of hazardous waste from the Proposed Development outside of the State is subject to a Europe-wide control system founded on EU Regulation 1013/2006 on the Shipments of Waste (known as the Transfrontier Shipment Regulations), as amended.

The Construction and Demolition Resource and Waste Management Plan (CDRWMP) included in Section 6 of this document.

1.3.4.2 Excavations

In addition to the sites regrading, the Proposed Development requires excavations for the construction of:

- Shallow foundations;
- The watercourse diversion profile;
- Attenuation basins;

- Infrastructure supporting the main buildings; and
- Firewater tank.

Excavations are typically 1-2m deep for foundations and external areas. In the southwest of the Proposed Development excavations up to 4-5m in depth are anticipated for the fire water tank.

Based on the expected ground conditions and site topography, the approximate unbulked earthworks excavation volumes for the permanent works comprise circa 368,500m^3.

Made ground below the Proposed Development is anticipated to be associated with the construction of hardstandings during development of the wider area. Due to the greenfield nature of the site, there is a low risk of contaminated made ground, including asbestos.

Possibilities for re-use of excavated material during the construction works, as engineered or landscaping fill, will be considered following appropriate testing to ensure the material is suitable from a geotechnical and geoenvironmental perspective.

It is estimated that up to 100,000m^3 of the unbulked excavated material may be suitable for reuse on site. The total unbulked volume to be taken off-site will therefore be 268,500m^3. The estimated unbulked volume required for import to the site is approximately 165,000m^3.

Excavations will comprise traditional excavation methods for the superficial deposits. Hard digging is anticipated for excavations within the Lucan Formation in the south of the site. Excavations in the south of the site are likely to require groundwater control.

See section above on Earthworks for how waste will be managed in line with the CDRWMP (Section 6 of this document).

1.3.4.3 Substructure

Shallow foundations are proposed for the structures across the site. The cast in situ reinforced concrete foundations will be installed using excavators and concrete placement methods, typical to those used elsewhere in the region. It is envisaged that the ground floor of each building will comprise reinforced concrete ground bearing slabs.

The exact depths of excavation required for the ground floor and foundation structures varies depending on existing ground level, the structural loading and the finished levels. Where excavations are required, these will typically be in the order of 1-2m for foundations (in addition to any regrading works).

1.3.4.4 Services and Utilities Requirements

Services required to accommodate the construction works include, but not limited to, power, water supply and effluent all of which will be pre-conditioned prior to commencement on site.

Power

The overhead Medium Voltage line on the southeastern portion of the Proposed Development site will be diverted prior to the commencement of main works. The diversion will be designed and executed by the Electricity Supply Board (ESB) under their powers.

Watermain

A temporary connection to the watermain will be required upon agreement with Uisce Eireann. The new watermain network connection will be designed in accordance with the Uisce Eireann “Code of Practice for Water Infrastructure” and detailed in accordance with the Uisce Eireann “Water Infrastructure Standard Details” documents.

Surface Water

Surface water generated on site during the Construction Phase will be diverted to on-site attenuation facilities. The outfall from these to be in agreement with the Office of Public Works (OPW).

Foul Discharge

A temporary connection to the effluent sewer system will be required upon approval and agreement with Uisce Eireann.

1.4 Detailed Construction Works

1.4.1 Construction Sequencing and Programming

A detailed construction programme has not been fully prepared without the engagement of the specialist Contractors; however, to enable assessment of likely environmental effects within this EIAR, an indicative, but feasible, agnostic development programme has been developed by GIL based on a number of qualifying assumptions, metrics and deep development knowledge. These assumptions have been informed by an understanding of current and future projected market conditions, technical considerations and professional experience, all of which are considered to be reliable.

Based on the assumption that planning consent is secured in Quarter 3/4 (Q3/4) 2024, the construction works will commence in Quarter 4 (Q4) in 2024. The works are anticipated to be undertaken over a period of 27 months, with a completion target of Quarter 2 (Q2) in 2027.

For the purposes of this EIAR, it is assumed that Q1 2025 to Q2 2026 will be the peak time frame for construction works as this phase will include the site wide enabling works, groundworks and civils, and associated landscaping and biodiversity improvements and is likely to have the most overlap between the proposed works for the early phases and would result in:

- Noisiest works
- Majority of waste generation (such as from excavations and ground clearance) and import associated with cut and fill; and
- And associated heavy good vehicles (HGV) trips.

1.4.1.1 Earthworks, Excavations and Substructure

A summary of the required earthworks, excavations and proposed substructure is provided in Section 1.3.4.

1.4.1.2 Superstructure Works

In general, it is envisaged that the superstructure of the main building will commence at the eastern side of the site, known as the FSA, and will continue sequentially across the main building through each data hall phase. The main structure will consist of structural steel and associated materials and equipment generally used widely across the construction industry.

In tandem with the main superstructure, other areas such as the Mechanical and Electrical yards will be in Construction Phase with their superstructure. The superstructure of these areas will consist of structural steel and associated materials and equipment generally used widely across the construction industry.

1.4.1.3 Façade and Fit Out Works

It is envisaged that the building envelope will follow closely behind the sequence of the superstructure of the main building and will commence at the Facility Support Area (FSA). It will then continue sequentially across the main DC3 building. The building envelope will consist of high performance insulated cladding panels and associated materials and equipment generally used widely across the construction industry.

The building envelope will be made weathertight by installing the roofing material in close sequence as the cladding installation.

With areas of the superstructure then deemed as weathertight, internal fitout will commence with architectural, electrical and mechanical installations. These will begin at the FSA and will flow sequentially through the DC3 building towards the west of the Proposed Development.

External electrical and mechanical installations will be in progress with large equipment installations ongoing in the Electrical and Mechanical yards. There will also be installations on the roof of the main building of mechanical and electrical equipment.

1.4.1.4 Fire Water Retention Tank

There is an existing fire water retention tank on the GIL Campus that is utilised by the DC2 building. This plant and associated pumps will be utilised for the DC3 building. Pipework will be run underground across the GIL Campus to provide a supply for the DC3 site.

1.4.1.5 Landscaping Works

As the building areas come to completion, the external areas will be landscaped accordingly, reusing the stockpiled site-won materials and other materials deemed necessary for the landscaping completion. Works will be completed from east to west on the main construction areas. Laydown areas, compounds and other areas will be completed last to allow for full utilisation of required areas to complete all other works.

The main site accommodation and welfare facility located to the north of the DC3 building will be last to be developed. Once the construction compounds are decommissioned, this area will be reclaimed as suitable green landscaping and biodiversity enhancement.

1.4.1.6 Proposed Plant

The following plant is expected to be required during each phase of the works:

Site Preparation Works

- Tracked excavator
- Dump truck
- Excavator mounted rock breaker
- Wheeled loader
- Diesel generator
- Electric drills
- Gas cutter
- Electric bolter
- Road Sweeper; and
- Road lorry.

Substructure (Preparation)

- Tracked excavator
- Dump truck
- Excavator mounted rock breaker
- Diesel generator
- Road sweeper
- Road lorry (Full)
- Hand-held hydraulic breaker
- Site fork lift trucks

- Water pump
- Compressor for hand-held pneumatic breaker
- Tower crane; and
- Wheeled mobile crane.

Substructure (Pouring)

- Diesel generator
- Road sweeper
- Road lorry
- Water pump
- Truck mounted concrete pump and boom arm
- Hydraulic vibratory compactor
- Mini planer
- Tower crane
- Wheeled mobile crane; and
- Concrete pump and cement mixer truck.

Superstructure

- Excavator mounted rock breaker
- Diesel generator
- Electric drill
- Gas cutter
- Electric bolter
- Road sweeper
- Road lorry
- Site fork lift trucks
- Compressor for hand-held pneumatic breaker
- Truck mounted concrete pump and boom arm
- Tower crane
- Lifting platform
- Hand-held welder
- Wheeled mobile crane
- Concrete pump and cement mixer truck
- Internal works / fit out
- Diesel generator
- Electric drills

- Road lorry; and
- Truck mounted concrete pump and boom arm.

External Works (Preparation)

- Tracked excavator
- Dump truck
- Excavator mounted rock breaker
- Diesel generator
- Road sweeper
- Compressor
- Site fork lift trucks
- Water pump
- Road breaker (hand-held pneumatic)
- External works (pouring)
- Diesel generator
- Road sweeper
- Site forklift trucks
- Truck mounted concrete pump and boom arm; and
- Bar bender, cutter.

1.4.1.7 Working Hours

Working hours will be agreed with SDCC but are expected to be:

- 07:00 to 19:00 hours Monday to Friday;
- 08:00 to 14:00 hours Saturday; and
- No working on Sundays or Bank Holidays.

In order to maintain the above working hours, the specialist Contractors may require, at certain times, a period of up to one hour before and after normal working hours, to undertake start and close down activities (this will not include works that are likely to exceed agreed maximum construction works noise levels).

Although working outside the stated hours would not normally be undertaken, it is possible that some deliveries may take place at night, and that certain works may have to be done during this period for safety and other considerations. If required, such works will be subject to reasonable notice and either securing the required licences or obtaining prior agreement with SDCC, who may impose certain restrictions.

All work which is intended outside of these hours, excluding emergencies, will be subject to prior agreement, and/or reasonable notice to SDCC.

1.5 Environmental Management Framework

1.5.1 Overview

The contract(s) awarded for the Proposed Development will include a requirement for all Contractors appointed by GIL or its agents to comply with relevant documentation including the EIAR, the associated reports, planning (and other statutory consent) conditions received and this CEMP.

As part of the environmental management framework Contractors will be required to comply with all relevant environmental legislation and take account of published standards, accepted industry practice, national guidelines, and codes of practice appropriate to the Proposed Development. Due regard should be given to the guidance and advice given by ISO14001 standard and Construction Industry Research and Information Association (CIRIA) guidance (CIRIA, 2002, 2015b, and 2015c).

The PMC and the appointed construction Contractors will be required to develop and implement an Environmental Management System (EMS) that follows the principles of ISO14001. Further, the PMC's EMS should include an environmental policy, operational, monitoring and auditing procedures to ensure compliance with all environmental requirements and to monitor compliance with environmental legislation and the environmental management provisions outlined in the relevant documentation.

1.5.2 Responsibilities

Outlined below is a summary of the key roles to appointed and their associated responsibilities in relation to the CEMP.

1.5.2.1 Employer

Google Ireland Limited (GIL) will be the employer responsible for ensuring that competent parties are appointed to undertake construction and that sufficient resources are made available to facilitate the appropriate management of risks to the environment.

1.5.2.2 Employer's Representative

The PSCS

The role of the project supervisor construction stage (PSCS) is to manage and co-ordinate health and safety matters during the construction stage. The PSCS is appointed before the construction work begins and remains in that position until all construction work on the project is completed.

The Project Management Consultant (PMC)

The Project Management Consultant (PMC) is accountable to ensure that all activities in accordance with the relevant environmental requirements including the consent documentation and other regulatory and contractual requirements are carried out by all appointed construction Contractors.

Site Manager

A Site Manager will be appointed by the PMC to oversee the day-to-day management of working areas within the site and ensure that effective, safe, planned construction activities are delivered on an ongoing basis to the highest standards. The Site Manager will be a suitably qualified, competent, and experienced professional that will oversee site logistics, communicate regularly with construction staff, accommodate project-specific inductions for staff on site and ensure that all work is compliant with the relevant design standards and health and safety legislation.

Project EHS Manager

A Project EHS Manager will be appointed by the PMC to ensure that the CEMP is effectively implemented. The Project EHS 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 requited. The Project EHS Manager will be responsible for:

- Preparing, maintaining, and implementing the CEMP;
- Establishing, implementing, and maintaining the EMS in line with ISO 14001;
- Conducting regular environmental inspections and audits as specified in the contract and checking adherence to the CEMP;

- Ensuring that construction occurs in accordance with the relevant environmental requirements and that such compliance is adequately recorded and documented;
- Completing a site inspection and compiling environmental compliance records as agreed and specified in the CEMP;
- Attending site and stakeholder meetings alongside the Project Environmental Manager (PEM) (or equivalent), as required;
- Keeping up to date with relevant environmental best practice and legislative change;
- Liaising with the relevant staff to prepare Method Statements and relevant plans for all activities where there is a risk of environmental damage including (but not limited to) dewatering plans, surface water management, piling and groundwater monitoring, vibration monitoring, etc.;
- Having a detailed level of knowledge on all aspects of environmental information associated with the Proposed Development;
- Ensuring all personnel have undertaken adequate environmental inductions, awareness briefings and training (including subcontractors);
- Managing and responding to environmental incidents and ensuring that all incidents are recorded and reported in an appropriate manner; and
- Ensuring the Construction and Demolition Resource and Waste Management Plan measures, procedures, guidelines, and controls are implemented prior to, during and upon completion of construction activities. Refer to the Construction and Demolition Resource and Waste Management Plan in Section 6.

Public Relations

GIL will nominate a manager who will act as the Project Environmental Manager (PEM) (or equivalent), who will be named at the secured site entrance, with a contact telephone number. The contact's name and details would be provided to all the relevant stakeholders by GIL prior to the start of the construction works.

The PEM will have primary responsibility for dealing with SDCC and other stakeholders on environmental matters, and all key stakeholders will be notified whenever a change of responsibility occurs for the PEM role. The PEM will keep neighbours, SDCC and other relevant parties informed of the nature of the on-going works, their duration and programme to establish and maintain good relationships with them.

It is anticipated that regular meetings will take place between the PEM and SDCC to review progress and to agree to any necessary actions. The PEM will also deal with enquiries from the general public, including any complaints. Any complaints will be logged and reported to the relevant individual within SDCC (and vice versa) as soon as practicable.

The PEM will coordinate responses to queries and address issues in a timely and satisfactory manner.

Environmental Specialists Engaged by the PMC

To fulfil its obligations under the CEMP and to support the Project EHS Manager, the PMC will be responsible for engaging suitably qualified and experienced professionals including where necessary the following (i.e., depending on the scope of the contract) competent experts:

- Project archaeologist; and
- Project ecologist.

1.5.2.3 Communication Procedures

Community and Stakeholder Engagement

GIL will take all reasonable steps to engage with stakeholders in the local community, focusing on those who may be affected by the construction works including residents, businesses, community resources and specific vulnerable groups.

Communication with the local community, South Dublin County Council and other relevant stakeholders shall be undertaken at an appropriate level and frequency throughout construction. Where communications are related to environmental issues the Project EHS Manager / PEM will be informed and engaged with, as appropriate.

Community Liaison

GIL recognises the importance of effective community liaison to reduce nuisance to residents, to ensure public safety and welfare and to help ensure the smooth running of construction activities. Important issues in ensuring good relations are:

- Providing information for the public during the Construction Phase, (particularly nearby sensitive receptors);
- Providing the correct points of contact and being responsive; and
- Ensuring good housekeeping in all aspects of the operations.

A 'good neighbour' policy will be implemented, as far as possible. Key aspects of this policy include:

- Early implementation of the policy i.e., from the commencement of construction;
- Reduction of nuisance factors;
- Maintaining access to neighbouring premises and businesses;
- Clear and concise information; and
- Undertaking timely liaison with stakeholders.

Advance Notice of Works

GIL or its agents will ensure that residents, businesses, occupiers, general users of the area and stakeholders are informed in advance of construction activities that may affect them. Relevant obligations and procedures in relation to advance notice of works will be identified in this CEMP.

All notifications will detail the nature, estimate duration and working hours. All notifications will include a project-specific contact number to which any enquires can be directed. GIL will be responsible for preparing and issuing the notifications subject to the relevant approval and consents.

GIL in consultation with South Dublin County Council and statutory stakeholders will decide whether to arrange any further targeted consultation with the public or relevant stakeholders in advance of specific construction activities on a local basis.

Emergency Contacts

An emergency contact list will be established and made available to all construction staff employed. The contact list shall be displayed prominently on site as well as at suitable locations where construction activity is being carried out around working areas. The contact list will include key environmental representatives that may need to be contacted in the event of an incident, refer to Section 5 for further details.

Enquiries and Complaints

GIL or its agents will establish a process for handling all enquiries including complaints. All enquiries will be recorded, and a log will be maintained to include details of the response and action taken.

This will be available upon request for inspection to SDCC. All enquiries, whether a query or a complaint, will be dealt with in a timely manner.

The Project EHS Manager / PEM will be immediately informed of any environmental-related issues that have been raised. Where appropriate, the Project EHS Manager/PEM will be responsible for informing SDCC, relevant stakeholders and statutory bodies.

1.6 Site Management

1.6.1 Health and Safety

All works on site will be undertaken in accordance with the Safety, Health and Welfare at Work Act 2005 and the relevant health and safety regulations. Health and Safety requirements will be expanded and developed within the PSCS's Construction Management Plan and Construction Stage Health and Safety Plan required to be prepared by the Project Supervisor at Construction Phase, prior to the commencement of construction works on site.

All Method Statements will incorporate regulatory safety matters and a Health and Safety File will be maintained on site for inspection by the Health and Safety Authority, SDCC and others as appropriate.

1.6.2 Hoarding

Hoardings/security fencing of 2.4m height will be erected around the site to provide clear and secure demarcation between operations activities and other areas. Particular attention will be paid to locations supporting high volumes of pedestrian movement, construction routes, access gates and security arrangements.

The maintenance of the hoarding will be for the duration of the construction lifecycle and will promote the ´clean site´ policy by maintaining an aesthetically appropriate presentation standard and upkeep.

1.6.3 Site Security

Site will be secured, both internally and externally, by an appointed security specialist. The scope of the security detail will include, but not limited to:

- Access control and management for both construction staff and vehicles;
- Perimeter surveillance and monitoring;
- CCTV and intruder detection;
- Mobile dispatch and monitoring; and
- 'On-foot' patrols and monitoring.

1.6.4 Site Compound and Material Storage

The main site compound will be located to the northern side of the development site, on the land that forms part of the planning application.

All construction materials will be appropriately stored on site to minimise damage by vehicles, vandals, weather or theft.

Due to the limited amount of space on site, where practical, Contractors will operate a ´just-in-time´ policy for delivery and supply of construction materials, and packaging will be returned. This means that materials will be brought to the site just before their incorporation into the work, thereby minimising the need for on-site storage.

Where possible, and as per GIL design requirements, prefabricated and modular elements will be lifted directly into position from delivery vehicles. This will assist in reducing on site storage, labour requirements and construction noise levels, thereby reducing potential nuisances to surrounding receptors.

1.6.5 Cranage

It is presumed, until the appointment of specialist Contractors, that all cranage on site will be conducted using mobile crane units. These will range from light cranes, rough terrain cranes and heavy lift specialist cranes.

1.6.6 Dust

Dust suppression techniques, such as damping down, use of temporary screens and sealing/covering of stockpiles will be implemented.

Dust suppression measures such as damping down during dry periods, vehicle wheel washes, road sweeping and general good housekeeping practices will ensure that the surrounding environment is free of nuisance dust and dirt.

A detailed Dust Management Plan will be developed, implemented, and will be included as part of the CEMP incorporating measures outlined in Chapter 7 (Air Quality) of the EIAR.

1.6.7 Road Cleanliness

During initial phases of construction, especially with site clearance and civil works, it is anticipated that regular road sweeping will be undertaken during full site working hours.

This will be an additional measure to on-site wheel wash facilities implemented at enabling works stage as part of the site setup (see Section 1.8 for more details).

1.6.8 Noise

Proposed noise and vibration limit values are provided in Table 1.1 and Table 1.2 respectively.

Table 1.1: Construction noise thresholds.

Period	Measured Noise Level $dBL_{Aeq,T}$	Baseline Noise Category	Construction Noise Threshold (CNT) Value $L_{Aeq,1hr}$ (dB)
Day	62 – 68	B	70
Evening	56 – 58	B	60
Night	42 – 60	B	50

Construction work is only expected during daytime periods, therefore only the daytime limits are applicable.

Table 1.2: Transient vibration guide for cosmetic damage for light framed buildings.

Type of Building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
	4 Hz to 15 Hz	15 Hz and Above
Unreinforced or light framed structures. Residential or light commercial buildings.	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

1.6.9 Road and Footpath Maintenance

The surrounding road network will be maintained with the operation of logistics specialist Contractor that will be deployed on the site. This specialist will undertake, but not limited to, road sweeping (with mechanical road sweeper), minor road and footpath maintenance, litter picking all in accordance with the agreement with SDCC.

1.7 Environmental Management Procedures

1.7.1 Training, Awareness and Competence

The PMC and other construction Contractors will be selected with due consideration of relevant qualifications and experience.

The PSCS 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 Contractors will identify specific training needs for the construction workforce and will ensure that appropriate training requirements are fulfilled.

The PMC and Contractors will establish an Environmental Training and Awareness Programme and ensure that all personnel receive adequate training prior to the commencement of construction activities. A baseline level of environmental awareness will be established through the site induction programme. Key environmental considerations and objectives will be incorporated into this induction. Specifically, site inductions will cover the following as a minimum:

- Introduction to the Project EHS Manager;
- Description of the CEMP and consequences of non-compliance;
- The requirements of due diligence and duty of care;
- Overview of conditions of consents, permits, and licences;
- Requirements associated with community engagement and stakeholder consultation;
- Identification of environmental constraints and notable features within the site; and
- Procedures associated with incident notification and reporting.

Nobody will work on site without first receiving environmental induction. Signed records of environmental training will be established, maintained, and made available to the Employers Representative.

Site briefings and talks will be carried out on a regular basis to ensure that construction staff have an adequate level of knowledge on environmental topics and community relations and can effectively follow environmental control procedures throughout construction.

1.7.2 Meetings

GIL and/or the Employer's Representative will arrange regular meetings to discuss environmental matters and ensure effective coordination to be attended by:

- GIL;
- The Employer's Representative;
- PSCS;
- The PMC;
- Site Manager;
- Project EHS Manager; and
- Environmental Specialists – engaged by either GIL and/or the Contractors.

The Project EHS Manager will be responsible for arranging and holding monthly meetings and site walk overs with the Employer's Representative. The Project EHS Manager will develop and distribute minutes of the monthly meetings and distribute them accordingly.

1.7.3 Monitoring, Inspections and Audits

For the duration of the contract(s), the environmental performance of the Contractors will be monitored through site inspections and audits.

The programme for monitoring, inspections and audits shall be specified in the contract and it is likely to be a combination of internal inspections and independent external audits that may be either random or routine.

Records of all inspections carried out will be recorded on standard forms and all actions should be closed out in a reasonable time. This CEMP will include further details of inspection procedures.

1.7.3.1 Monitoring

Mitigation and monitoring will be carried out in accordance with the requirements of the EIAR and associated ecological reports so that construction activities are undertaken in a manner that does not give rise to significant negative effects. Suitable monitoring programmes will be developed, implemented, documented, and assessed.

The results of all environmental monitoring activities will be reviewed by the Project EHS Manager on an ongoing basis to enable trends or exceedance of criteria to be identified and corrective actions to be implemented as necessary. The Contractors will be required to inform the Employer's Representative of any exceedances of criteria, whether continuous or not.

1.7.3.2 Inspections

Routine inspections of construction activities will be carried out by the Project EHS Manager daily to ensure all necessary environmental measures relevant to the construction activities are being effectively implemented by construction staff, ensuring legal and contractual conformity.

More detailed inspections will be undertaken by the Project EHS Manager on a weekly basis.

The weekly inspections will be appropriately documented by the Project EHS Manager and copies of these records and any action required to be undertaken should be made available to the Employers Representative.

Each month one of the weekly inspections will include a review of environmental documentation and records. The monthly inspection will be recorded on a standard form and reported to the Employers Representative within five days of the inspection taking place. This standard form will address the following as a minimum:

- Summary of compliance/non-compliance with the CEMP;
- Results and interpretation of the monitoring programme;
- Key issues noted in inspections and/or audits;
- Summary record of non-conformities, incidents and corrective actions;
- Summary of environmental complaints and queries received in relation to environmental matters; and
- Summary record of environmental training undertaken by staff.

1.7.3.3 Audits

GIL will arrange for independent environmental audits to be carried out by a third-party during construction. External audits provide the opportunity for an independent auditor to advise on compliance with applicable environmental regulatory requirements, the efficacy of the environmental management approaches used, and recommendations for reducing identified environmental risks (if considered appropriate).

Further, regulatory, and statutory bodies may undertake site visits to monitor compliance with legislative and regulatory requirements. These site visits may occur randomly throughout the construction period. The Contractors will facilitate these visits and the Project EHS Manager will be available to provide information as required and deal with any issues that may arise during, or because of, these visits.

Planned and documented audits aimed at evaluating the conformance of the EMS will also be carried out by the Project EHS Manager. The Project EHS Manager will establish a schedule for internal audits and this inspection calendar will be made available to the Employer's Representative. These environmental audits will be scheduled at least once every three months.

Standard forms for reporting and audit items will be prepared and will include but not be limited to the following activities:

- Review of environmental documentation to establish if relevant requirements are being achieved and if continual improvement is occurring;
- Site inspection and interviews with onsite personnel;
- Reporting with recommendations;
- For any environmental nonconformities found, the auditor will prepare a Corrective Actions Report to describe and record the findings of the non-conformance. The verification of previous Corrective Actions; and
- Reports should be also recorded.

Upon completion of an audit, the auditor will review all Corrective Actions Reports and prepares an Audit Report to summarise:

- Corrective action requests raised;
- Previous corrective action requests closed; and
- Observations made during the audit.

The Project EHS Manager will be entitled to participate in all audits. Notwithstanding this, the Employers Representative shall produce and provide the Contractors with a copy of each audit report within five working days of the audit. Each audit report will detail the findings from the auditor, specify non-conformances identified and outline the proposed corrective action.

1.8 Construction Phase Mitigation and Monitoring Measures

1.8.1 Traffic and Transport

1.8.1.1 General

Construction traffic will be limited to certain routes and times of day, with the aim of keeping disruption to existing traffic and residents to a minimum. To minimise disruption to the local areas, construction traffic volumes will be managed through the following measures:

- The majority of construction traffic will be required to arrive at and leave the site outside of the AM and PM peak periods, where practical;
- During peak hours, ancillary, maintenance, and other site vehicular movements will be discouraged;
- Daily construction programmes will be planned to minimise the number of disruptions to the surrounding area by staggering HGV deliveries to site;
- HGV routes to and from the will be developed in agreement with South Dublin County Council and with the objective of minimising the potential effect on the local areas for residents and businesses;
- Car parking will be provided for construction workers in a designated area in agreement with South Dublin County Council to avoid construction staff vehicles parking on public roads; and
- All Contractors will be required to promote travel by sustainable modes of transport.

1.8.1.2 Construction Traffic Management Plan (CTMP)

A CTMP has been prepared as part of this CEMP This will be agreed with SDCC in advance of the works. This includes provision of mobility management measures, wheel washing facilities, noise reduction measures, etc.

The CTMP will provide details of intended construction practices for the development, including:

- Access and egress;
- Routing of construction vehicle;
- Pedestrian and cycle provision;
- Parking and access;
- Traffic management signage;
- Timing of material deliveries;
- Traffic management speed limits;
- Vehicle cleaning;
- Road cleaning and conditions;
- Road closures and diversions (if any);
- Enforcement of the traffic management plan; and
- Emergency procedures during construction.

The CTMP and the Construction Stage Mobility Management Plan will propose realistic targets for the number of construction staff vehicles arriving and departing from the site.

The specific measures to reduce the potential number of vehicular arrivals and departures and the promotion of sustainable modes of transport will be defined and clarified once the construction force has been identified and an understanding can be made in terms of where construction staff is travelling from, how far staff are travelling, travel options available and what the potential for car sharing is. The effect of these mitigating measures is an expected reduction in the number of car-based trips to site. The reduction in construction traffic is expected to have limited effect on the operation of Junctions 2, 3 and 4 as car use reduction would typically be between 5 to 15% at best. Although this will have a slight improvement in junction operation Junctions no. 2 and 4 is still expected to operate over capacity. Therefore, the effect is still expected to remain the same from an impact definition point of view.

1.8.1.3 Construction Mobility Management

As part of the construction contract, the PSCS and the appointed Contractors will be required to prepare a construction mobility management plan for its workforce to encourage access to the Proposed Development site by means other than by private car.
The construction mobility management plan will address the following:

- Appointment of a mobility management champion and a team to support him/her;
- Carrying out a staff survey to develop an understanding of staff travel patterns;
- Identifying practical measures to reduce car-based transport by staff including awareness campaigns for sustainable transport options, research into available options, pairing staff for car share based on living locations, providing welfare facilities on site, providing showers and lockers, providing cycle parking amongst others;
- Setting realistic mode share targets for vehicle utilisation;
- Monitoring travel behaviour during the construction months on a regular basis;
- Developing a live mobility management plan document to record the staff results, measures identified, targets and monitoring results;
- Making adjustments to the mobility management plan where targets are not reached; and
- Feedback to SDCC.

The Decommissioning Phase will be similar to the Construction Phase. The mitigation measures as outlined in Section 6.6.1 of Chapter 6 (Traffic and Transport) for the Construction Phase, will be updated in order to reflect best practice at the time, and will be implemented for the Decommissioning Phase.

1.8.2 Air Quality

The following mitigation measures will be implemented for the Construction Phase of the Proposed Development, in order to reduce the dust risk associated with construction, earthworks and track-out, in accordance with IAQM guidance (IAQM, 2024).

1.8.2.1 Measures Specific to All Sites

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
- Display the head or regional office contact information.

Site Management

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the logbook.

Monitoring

- Carry out regular site inspections of cleanliness, record inspection results, and make an inspection log available to the local authority when asked.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

Preparing and Maintaining the Site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being reused on site. If they are being re-used on-site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating Vehicle/Machinery and Sustainable Travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable.

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/ mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management:

- No bonfires and burning of waste materials.

1.8.2.2 Measures Specific to Construction

The following measures are specific to construction:

- Ensure sand and other aggregates are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.

1.8.2.3 Measures Specific to Trackout

The following measures are specific to trackout:

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use;
- Avoid dry sweeping of large areas;
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport;
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;
- Record all inspections of haul routes and any subsequent action in a site logbook;
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned;
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable); and
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.

Dust deposition monitoring will be conducted at locations to the south and east of the Proposed Development where works are occurring within 250m. Monitoring will be carried out using the Bergerhoff method, i.e. analysis of dust collecting jars left on-site (German Standard VDI 2119, 1972). Results will be compared to the TA Luft guidelines (VDI, 2002). At least one month of dust deposition monitoring will be carried out in advance of the commencement of works to determine a baseline.

1.8.3 Climate

This section outlines the proposed Construction Phase mitigation measures for climate. A series of mitigation measures have been incorporated into the construction design with the goal of reducing the embodied carbon associated with the Construction Phase of the Proposed Development. These mitigation measures include:

- The substitution of concrete containing Portland cement with concrete containing 25% ground granulated blast furnace slag (GGBS). This measure will lead to an estimated saving of c.2,200 tonnes of CO_{2eq} during the Construction Phase.
- Opportunities for materials reuse will be incorporated within the extent of the Proposed Development including the use of reclaimed asphalt and recycled aggregate. This measure will lead to an estimated saving of 5,300 tonnes of CO_{2eq}.
- Opportunities for the use of recycled steel, up to a minimum of 50%, will be incorporated within the extent of the Proposed Development construction. This measure will lead to an estimated saving of 1,335 tonnes of CO_{2eq}.
- Where practicable, materials will be sourced locally to reduce the embodied emissions associated with transport.
- The combined measures, including the incorporation of GGBS, recycled and reused material, and recycled steel, will lead to an estimated saving of 8,885 tonnes of CO_{2eq}.
- The Construction Traffic Management Plan (CTMP) will have the effect of reducing emissions from Construction Phase traffic, refer to further details in Section 2, and
- All Field Integration & Assembly (FIA) products will be prefabricated and manufactured offsite before being shipped to site. This innovative solution limits construction waste reduces the embodied carbon of the products and improves the construction efficiency.

1.8.4 Noise and Vibration

Guidance on the approximate attenuation achieved by barriers surrounding the Proposed Development site is provided in BS 5228-1. It states that when the top of the plant is just visible to the receptor over the noise barrier, an approximate attenuation of 5 dBA can be assumed, while a 10 dBA decrease can be assumed when the noise screen completely hides the sources from the receptor. Due to the proximity of the NSRs, a barrier height will be chosen to completely hide the source, and a 10 dBA reduction in noise levels is predicted at NSRs. BS5228 Parts 1 and 2 offer detailed guidance on the control of noise and vibration from demolition and construction activities. Specific examples of such mitigation measures include:

- Limiting the hours during which site activities likely to create high levels of noise or vibration are permitted;
- Establishing channels of communication between the Contractors/developer, Local Authority, and residents;
- Appointing a site representative responsible for matters relating to noise and vibration;
- Monitoring levels of noise and/or vibration during critical periods and at sensitive locations; and
- All site access roads will be kept even to mitigate the potential for vibration from lorries.

Furthermore, it is envisaged that a variety of practicable noise control measures will be employed. These may include:

- Selection of plant with low inherent potential for generation of noise and/ or vibration;
- Erection of barriers as necessary around items such as generators or high duty compressors; and
- Situate any noisy plant as far away from sensitive properties as permitted by site constraints and the use of vibration isolated support structures where necessary.

It is proposed that during any rock breaking or similar vibration-generating works, vibration from construction activities to off-site residences be limited to the values set out in Table 9.6 in Chapter 9 (Noise and Vibration) through monitoring of vibration at the Proposed Development site boundary or at noise-sensitive locations. It should be noted that these limits in Table 9.6 in Chapter 9 (Noise and Vibration) are not absolute but provide guidance as to magnitudes of vibration that are very unlikely to cause cosmetic damage. Magnitudes of vibration slightly greater than those in the table are normally unlikely to cause cosmetic damage, but construction work creating such magnitudes should proceed with caution. Where there is existing damage, these limits may need to be reduced by up to 50%, as stated in BS5228.

1.8.5 Biodiversity

The mitigation measures have been drawn up in line with current best practice and include avoidance of sensitive habitats at the design stage and additional measures to prevent significant ecological impacts. The following mitigation measures will be implemented.

1.8.5.1 General Mitigation Measures

Industry good practice guidance will be followed by the Contractors during the Construction Phase including, where relevant, those listed in the guidance below:

- Construction Industry Research and Information Association (CIRIA), (CIRIA, 2001). C532 Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors.
- C650 Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (CIRIA, 2005).
- BPGCS005, Oil Storage Guidelines.
- Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition projects, (EPA, 2021).
- The SuDS Manual, CIRIA (C753).
- Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters, (IFI, 2016).
- The Management of Waste from National Road Construction Projects, GE-ENV-01101, (TII, 2017); and
- Best practice biosecurity measures.

Best practice construction processes will be implemented throughout the Construction Phase by the appointed Contractors which include pollution prevention control measures to manage surface water runoff. In addition, there will be monitoring and reduction of aerial emissions and noise. These measures are a standard operating procedure to adhere with Industrial Emissions Licence requirements; they are not included to protect any European site.

1.8.5.2 European sites

The AA and NIS report (Arup, 2024) provides proposals which will mitigate against the potential adverse effects of the Proposed Development on QIs/SCIs through the Construction Phase. The potential adverse effects were identified to be:

- Potential impairment of water quality through accidental spills in construction; and
- Potential impairment of water quality through sedimentation in construction.

1.8.5.3 Monitoring

- A suitably qualified Environmental Clerk of Works (EnCoW) and Ecological Clerk of Works (ECoW) will be appointed prior to commencement of works and employed when/where appropriate during the Construction Phase. The duties of these will be to monitor the efficacy of mitigation measures implemented by the Contractors and to report on the application and success of these measures.

- Water quality monitoring will be undertaken by a qualified person once in advance of construction to establish baseline levels of potential contaminants in an upstream and downstream location along the watercourse within the boundaries of the Proposed Development site.
- At the upstream culvert location background samples (i.e. baseline) will be collected in the same season as the watercourse construction will occur to ensure the results are representative.
- The downstream background samples will be tested at a laboratory for a range of parameters that occur naturally and for pollutants[1] including temperature, Electrical Conductivity (EC), pH, Dissolved Oxygen (DO), Turbidity, Total Petroleum Hydrocarbon (TPH) and Diesel Range Organics (DRO).
- Water pollution trigger levels will be determined against baseline monitoring results. The baseline monitoring results will present naturally occurring water quality conditions. Any abnormally high concentrations, when compared against baseline will be monitored by the EnCoW/ ECoW during construction and will flag for construction to be stopped.
- During construction within the watercourse, field parameters (temperature, pH, turbidity, DO and EC) should be monitored upstream and downstream of the construction works twice a day. Visual inspections of the watercourse at these locations will be conducted daily during construction to identify any plumes of sediment or sheens of oil which may indicate spillages. If these are identified, works will stop until the source has been identified and remediated; and
- In the event of pollution occurring or the potential to occur, the EnCoW and ECoW have a 'Stop Works' authority to ensure measures to stop a pollution event are implemented immediately.

1.8.5.4 Prevention of Release of Hydrocarbons and Contaminants

During construction, the Contractors will be required to implement the following specific mitigation measures to prevent the release of hydrocarbons, polluting chemicals, sediment/silt:

- Storage of sand/gravel/soil will be as far as practicable from watercourses and grading adjacent to these stockpiles kept to a minimum.
- Surface water run-off from temporary works area to be collected in silt/gravel traps prior to discharge to the surface water drainage network.
- Silt fences (to Hy-Tex Premium specification or similar) and silt traps will be installed prior to commencement of works and will be inspected daily to inform adaptive management as required. The locations of same will be determined by the EnCoW.
- All refuelling to take place in bunded enclosures and a minimum of 50m from any watercourse.
- Visual checks of the working areas and all silt/gravel traps will be carried out during weekly audits and maintenance works undertaken, if required.
- All chemical/fuel etc. will be stored in bunded containers and all storage will have sufficient bunding for all liquids stored (110% of the capacity of the largest drum).
- Spill kits will be maintained on sites and works areas.
- The Contractors will prepare a spill response procedure and implement it, if required.
- Spill incidents will be reported to the EnCoW.
- Oil interceptors will be installed on surface water drainage network at the Proposed Development works areas for the Construction Phase.
- No foul sewer discharge will be allowed to enter the surface water drainage network; and

[1] According to CIRIA (2001) pollutants are defined as substances that occur either in a location where it is not naturally occurring or in an abnormally high concentration.

- Toolbox talks for all staff will be carried out by the Contractors before work commences to identify environmental and ecological issues.

1.8.5.5 Protection of Watercourses

- Construction works for the watercourse re-alignment shall take place as part of the enabling works and prior to the main Construction Phase. The sequencing of the new re-aligned channel and culverts and subsequent connection of the existing watercourse to this channel shall ensure limited increase in water levels upstream or downstream of the Proposed Development site.
- For works occurring within 50m of the open watercourse, weather forecasts will be monitored prior to and during works to avoid working in adverse weather conditions such as heavy rains. No excavations for watercourse crossings will take place during a yellow, or higher, issued rain warning by Met Eireann.
- Excavated material will be placed in such a way as to avoid any disturbance of areas near to the banks of watercourses and any spillage into the watercourses.
- An ECoW will be present for the entire duration of any instream works and monitoring will be conducted in line with the monitoring requirements above.
- Settlement tanks, silt traps / bags and bunds will be used where required to remove silt from surface water runoff. Sizing of the tanks will be based on best available guidelines. Any construction work within a 10m buffer zone of the watercourse edge will be provided with these measures to minimise sediment discharge to a watercourse.
- Where over pumping of water is required, flow will be discharged back to the watercourse at a downstream location to maintain continuity and avoid flooding and water quality impacts.
- Surface water generated on site will be diverted to on-site attenuation facilities. The outfall from these to be in agreement with the OPW.
- All machinery will have been suitably serviced and inspected prior to site delivery. A hydrocarbon/oil boom will be available at working areas for immediate deployment within the watercourse in the event of any hydrocarbon spillage at the Proposed Development site. A fuel spillage will be considered to be any loss of fuel, oil or lubricant, including hydraulic oil and spot leakage.
- Deposition areas for spoil will be enclosed with silt fencing to prevent mobilisation of solids during adverse weather conditions and no drainage from these areas will be directed into the temporary drainage systems. A SuDS will be implemented to allow controls to be designed for the retention of large volumes of water that may arise from spoil deposition areas.
- Silt traps and fencing to be placed in working areas that have the potential to carry silt laden material from the working area to aquatic environments. Silt traps and fences will not be erected within flowing watercourses as these can act as a barrier for movement of species.
- Re-seeding of all areas of bare ground or the placement of jute matting will take place as soon as practicable to prevent run-off.
- All onsite welfare facilities will be installed and managed as per regulations to prevent nutrient overloading of aquatic environments; and
- Mitigation measures in relation to soil stripping, earth removal, stockpiling are detailed in Chapter 13 (Land, Soils, Geology and Hydrogeology) of the EIAR.

1.8.5.6 Habitats

Loss of habitat

Due to the permanent loss of dry meadows, grassy verges, hedgerows, scrub, treelines and watercourse, planting will be required to compensate for this impact.

The SDCC Development Plan (SDCC, 2022) highlights the importance of these habitats and requires development to align a series of measures, including (but not limited to) those listed below:

1. NCBH5 Objective 1: To ensure that development does not have a significant adverse impact on biodiversity, including known rare and threatened species, and that biodiversity enhancement measures are included in all development proposals.
2. NCBH11 Objective 4: To protect the hedgerows of the County, acknowledging their role as wildlife habitats, biodiversity corridors, links within the County's green infrastructure network, their visual amenity and landscape character value and their significance as demarcations of historic field patterns and townland boundaries.
3. GI1 Objective 7: To develop linked corridors of small urban 'Miyawaki' native mini woodlands, a minimum of 100m² in size, to capture carbon and encourage biodiversity in suitable existing built-up areas, in low grade parkland, and other areas of zoned lands were deemed suitable and appropriate.
4. GI2 Objective 2: To protect and enhance the biodiversity and ecological value of the existing GI network by protecting where feasible (and mitigating where removal is unavoidable) existing ecological features including tree stands, woodlands, hedgerows and watercourses in all new developments as an essential part of the design and construction process, such proactive approach to include provision to inspect development sites post construction to ensure hedgerow coverage has been protected as per the plan;
5. GI2 Objective 5: To protect and enhance the County's hedgerow network, in particular hedgerows that form townland, parish and barony boundaries recognising their historic and cultural importance in addition to their ecological importance and increase hedgerow coverage using locally native species including a commitment for no net loss of hedgerows on any development site and to take a proactive approach to protection and enforcement.
6. GI5 Objective 4: To implement the Green Space Factor (GSF) for all qualifying development comprising 2 or more residential units and any development with a floor area in excess of 500 sq m. Developers will be required to demonstrate how they can achieve a minimum GSF scoring requirement based on best international standards and the unique features of the County's GI network. Compliance will be demonstrated through the submission of a GSF Worksheet; and
7. GI3 Objective 4: To uncover existing culverts where appropriate and in accordance with relevant river catchment proposals to restore the watercourse to acceptable ecological standards.

Compensation for scrub, hedgerow and treeline vegetation is proposed through the landscape plan which concept is about integration and strengthening existing Green Infrastructure elements, to assist in implementing the objectives outlined above. The elements are further discussed in relation to mitigation of habitat loss under the following headings.

Hedgerow/scrub planting

Compensation has been proposed through compensation planting of hedgerow and scrub species. A total area of 2000m^2 is proposed through the landscape plan. The landscape plan seeks to improve habitat by providing a variety of habitat structure with native scrub species such as hawthorn, blackthorn bramble, hazel etc along the boundaries to provide increased connectivity and foraging opportunities. The southern boundary will be with the addition of low-level border planting and an acoustic barrier. This in turn provides security benefits for the data centre.

The typical planting palette has been designed to promote and enhance biodiversity (native seeds, fruits, and pollinator friendly species). The remainder have been chosen from the 'All Ireland Pollinator Plan'(AIPP). See Section 11.6.6 of Chapter 11 (Biodiversity) for more enhancements to be considered from the AIPP.

Species were also selected to respond to the requirement to provide structural planting to strengthen the ecological connections and wildlife corridors. For example, the native riparian buffer mix included hawthorn, elder, goat, willow, and blackthorn.

Tree planting

Tree removal is limited to the hedgerow and treeline habitat extending from the south boundary into the centre of the site (approximately 175m in length). Trees will be retained along the south and south-west boundaries. The tree planting strategy element of the landscape plan details woodland planting will occur to the south-west, along the south boundary, south-west and northern portion of the site. The total area to be planted under woodland is 24,340m^2.

The landscaping plan demonstrated the inclusion of Miyawaki forest to obtain forest cover. This design should be developed through collaboration between a qualified ecologist and the landscape designer on the project. SDCC Development Plan (SDCC, 2022_ makes reference to "Miyawaki forest". GI1 Objective 7: To develop linked corridors of small urban 'Miyawaki' native mini-woodlands, a minimum of 100 m^2 in size, to capture carbon and encourage biodiversity. This method of creating forest cover is considered effective because it is based on natural reforestation principles, i.e. using trees native to the area and replicating natural regeneration processes. The method is considered to have significant benefits over more traditional forestry methods when used in smaller afforestation projects and is particularly effective in the urban environment. Trees grow much faster and have been found to support more biodiversity than in neighbouring woodland, so it is considered an approach that replicated natural woodland ecosystems quicker.

Landmark trees to be planted adjacent the SuDS Pond to the south-west, include native trees such as bird cherry (*Prunus padus*), holly (*Ilex aquifolium*) and oak.

The landscaping plan demonstrated the inclusion of Miyawaki forest in the south-west corner, south-east corner, north and along the south boundary of the Proposed Development. This design should be further developed through collaboration between a qualified ecologist and the landscape designer on the project.

Water features

To comply with policy and mitigate (through compensation) the loss of the watercourse habitat the Proposed Development has included the diversion of the watercourse as detailed in Section 11.4.1 of Chapter 11 (Biodiversity). The realigned watercourse will result in the lengthening of the open watercourse habitat by approximately 40m. The landscape plan includes the planting of a new native riparian habitat along the diverted stream to add to the existing green corridors. This consists of native riparian species, reflective of species already present around the watercourse e.g. elder, hawthorn and willow spp.

Two attenuation basins (SuDS) are proposed. The basins will be planted with diverse mix of water tolerant and slope stabilising species. Species included in the attenuation basin mix include bugle (*Ajuga reptans*), yellow iris (*Iris pseudacorus*), soft rush (*Juncua effusus*) and hard rush (*Juncus inflexus*). The inclusion of SuDS ponds aligns with the SDCC Development Plan Objective GI4 1: ensure that SuDS is integrated into all new development in the County. One of the attenuation basins, will be an integration of bioswales (wetland) to expand the capacity for water harvesting and storage capacity needs. The planting plans includes native species such as common reed (*Phragmites australis*), brooklime (*Veronica beccabunga*) and branched bur-reed (*Sparganium erectum*). The bioswale will be located to the north of the Proposed Development building.

A re-naturalised zone is proposed using native soil to be re-used on site to enable native seedbank to establish.

Changes to Hydrology

The watercourse runs through the Proposed Development, and it is important that construction activities do not result in pollution of this watercourse, either through siltation, which interferes with water flow, vegetation growth and aquatic fauna, or pollution (e.g. chemical). Refer to the mitigation proposed in Section 1.8.5.2 of Chapter 11 (Biodiversity) that is also stated in Chapter 12 (Water) for water pollution prevention.

Habitat Degradation

Invasive species

Despite no scheduled invasive species were identified on the Proposed Development, best practice measures outlined within the CEMP will be adhered to. If any invasive species are found on site, a method statement detailing the treatment/management of invasive species will also be required.

The SDCC Development Plan (SDCC, 2022) highlights (NCBH10 Objective 1) if developments are proposed on sites where invasive species are or were previously present, applicants should submit a control and management programme with measures to prevent, control and / or eradicate the particular invasive species as part of the planning process and to comply with the provisions of the European Communities Birds and Habitats Regulations 2011 (S.I. 477 / 2011).

Water quality

A SWMP has been developed as part of this CEMP in Section 4. This includes all mitigation measures listed in Chapter 12 (Water) and any other water related mitigation measures listed in other chapters including but not limited to the Chapter 13 (Land, Soils, Geology and Hydrogeology). Please review Section 11.6.3.2 of Chapter 11 (Biodiversity) and the SWMP (Section 6) for mitigation in that relate to water pollution but also changes to hydrology.

Dust Management/Aerial Emissions

Best practice construction processes (CIRIA, 2015) will be implemented throughout the Construction Phase by the appointed Contractors which include pollution prevention control measures to manage dust emissions. In addition, there will be monitoring and reduction of aerial emissions and noise. These measures are a standard operating procedure to adhere with Industrial Emissions Licence requirements; they are not included to protect any European site.

Protected and Notable Species

- Amphibians:
  - Direct mortality

As a precautionary measure, a visual search of the watercourse will be carried out in the days prior to commencement of maintenance works and any frogs or smooth newt will be removed to alternative habitats elsewhere within the landholding (northern boundary). This will be carried out under licence from the NPWS and under supervision of the EcOW.

  - Loss of foraging habitat

To mitigate against the loss of foraging habitat it is proposed that where possible a replacement ratio of 2:1 is achieved. As discussed above in Section 11.6.3.1 in Chapter 11 (Biodiversity), additional water features are proposed as part of the landscape plans (attenuation pond and bioswale) which will increase foraging habitat. The realigned watercourse will result in the lengthening of the open watercourse habitat by approximately 40m. The landscape plan also includes the planting of a new native riparian habitat enhancing the connectivity for amphibians.

- Bats:
  - Direct mortality

In accordance with current guidance, trees with low suitability were not subject to further survey. No roosts were recorded at the trees with moderate or high suitability. However, the BCT Best Practice Guidance states the difficulty in ascertaining if bat roosts are absent from trees and therefore on a precautionary basis this report makes precautionary recommendations in relation to tree clearing immediately prior to felling.

Where trees are considered to have potential for bats, a PRF (potential roosting feature) inspection survey will be conducted the day of the proposed felling by a suitably qualified and experienced ecologist.

Access to PRFs on the day of removal will be facilitated using a cherry picker/Mobile Elevating Work Platform (MEWP) where possible and the PRFs will be inspected with the aid of an endoscope and/or torch. Where bats are encountered, all relevant works will cease and an application for a derogation licence must be submitted to the NPWS to permit removal of the roost.

Where it is not possible for a qualified ecologist to inspect the PRFs at height, a bat emergence and re-entry survey should be conducted the night prior to felling. Where a bat roost is encountered, all relevant works will cease and an application for a derogation licence must be submitted to the NPWS to permit removal of the roost. If bat roosts are not encountered during the survey, trees will be section-felled (soft-felling) in the presence of a suitably qualified ecologist. Soft felling can be defined as:

"*Work should be conducted in a sensitive manner, and where reasonably practicable, timber with bat potential should not be directly sawn through. If such timber is removed, it should be left at the base of the tree for at least 48 hours. Where it is impractical to lower potential bat roosts, piles of brash or logs can be used to soften the impact of them hitting the ground*" (Natural England, 2013).

Tree sections with PRFs will be left in-situ with bat access points facing upwards for 48 hours to allow any bats that may be present to emerge.

Bat roost potential in the area will be increased in the short to medium term through the installation of bat boxes (these should be woodcrete rather than wooden to ensure a "like for like "replacement) on hedgerows. It is recommended that these replace PRFs lost on a 2:1 ratio. Therefore, eight bat boxes should be placed on the south boundary vegetation.

- Loss of foraging habitat

To mitigate against the loss of foraging habitat it is proposed that where possible a replacement ratio of 2:1 is achieved. However, given the lack of space available this is not possible to achieve on site. Mitigation focuses on promoting habitat diversity and enhancing quality to increase the availability of insect prey. The following is therefore proposed as mitigation:

- Comply with Landscape proposals of obtaining 11,000m^2 of Miyawaki forests.
- Comply with Landscape proposals of obtaining 1,350m^2 of riparian buffer.
- Comply with Landscape proposals of obtaining 2,000m^2 of hedgerow and scrub planting; and
- Comply with Landscape proposals of obtaining 5 types of water features habitat (diverted watercourse, bioswale and SuDS).

The landscaping plan also includes native species with consideration made to night scented species to include in herbaceous borders to attract invertebrate prey. Species such as yellow iris, bugle and yarrow (*Achillea millefolium*). Tree species have also been included that promote the same benefit for foraging bats: pedunculate oak (*Quercus robur*), elder and hawthorn.

Breeding Birds

- Direct mortality

  The following mitigation measures are proposed to comply with legislation protecting birds and their nests:

  – In order to avoid disturbance of breeding birds, their nests, eggs and/or their unfledged young, all works involving the removal of trees or hedgerows will be undertaken outside of the nesting season (1st March to 31st August inclusive). Or where this seasonal restriction cannot be observed then; and

  – A pre-construction check will be undertaken, prior to works commencing by an SQE in order to confirm whether birds are nesting within suitable habitat affected by or immediately adjacent to the subject lands. If no breeding birds are found nesting in trees or hedgerows on the Proposed Development, this vegetation must be removed within 48 hours or repeat surveys will be necessary. Should nesting birds be present during surveys, the removal of trees or hedgerows may be required to be delayed until after the nesting season (1st March to 31st August inclusive).

- Loss of foraging and breeding habitat

  To mitigate against the foraging and nesting habitat, replacement nesting habitat will fulfil woodland, hedgerow and scrub planting across the site (approximately 29,000 m^2). Nesting boxes are proposed within the Landscape plan and should be included to mitigate loss of nesting habitat in the short term. Six nesting boxes are proposed around the boundaries of the site.

- Disturbance from noise and vibration

  Noise and vibration will be managed through best practice constructions measure implemented as part of this CEMP.

- Other mammals

Disturbance from foraging and commuting habitat or direct mortality

- Badger

  Badger and their sets are protected under the Wildlife Acts. Given the evidence that badger are utilising the site (commuting only) and there is suitable habitat [redacted] (embankments with rabbit burrows) to support resting badger the following mitigation measures are required to comply with legislation:

  – a pre-construction check for badger should be undertaken by a SQE 48 hours or less prior to works commencing to ensure that no additional setts have been constructed in the intervening period that may be impacted by the proposed works;

  – if, during vegetation clearance, signs of badger are identified, including unidentified holes/burrows, works within that area should be stopped immediately, an exclusion area (30m) established and the SQE contacted to undertake a check;

  – if a sett is identified consultation with NPWS is recommended as a licence may be required;

  – an accompanying toolbox talk will be delivered to inform relevant construction staff of the sensitivities of working near an area utilised by badgers and include the following measures;

  – during construction, any open excavations should be covered over night to ensure animals cannot fall in and become trapped. If this is not possible, a ramp should be provided that is at a suitable angle for animals to use as a means of escape; and

  – avoidance of facing light towards sensitively commuting corridors at night.

- West European hedgehog and pygmy shrew

  An SQE should be installed for any woody vegetation removal to ensure that there are no pygmy shrew or west European hedgehog utilising the site during construction works.

- Loss of foraging and commuting habitat

  To mitigate against the habitat lost a replacement for foraging and commuting habitat is proposed for the scrub, treeline and hedgerow habitats lost as a result of the Proposed Development. This will be achieved along the east, south and west boundary with the planting of native scrub and tree species. Miyawaki forest to the north will also provide this habitat. Please refer to Chapter 15 (Landscape and Visual).

1.8.6 Water

1.8.6.1 Project Wide Mitigation Measures

Industry good practice guidance will be followed by the Contractors during constructed including, where relevant, those listed in the guidance below:

- Construction Industry Research and Information Association (CIRIA), (CIRIA, 2001). C532 Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors.

- C650 Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (CIRIA, 2005.
- BPGCS005, Oil Storage Guidelines
- Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition projects, (EPA, 2021).
- The SuDS Manual, CIRIA (C753).
- Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters, (IFI, 2016); and
- The Management of Waste from National Road Construction Projects, GE-ENV-01101, (TII, 2017).

The PSCS and the appointed Contractors will be required to implement measures outlined in the Surface Water Management Plan (SWMP) in Section 4 of this CEMP to protect the water environment during construction. This will include all mitigation measures listed in Chapter 12 (Water) and any other water related mitigation measures listed in other chapters including but not limited to the Chapter 11 (Biodiversity) and Chapter 13 (Land, Soils, Geology and Hydrogeology).
The appointed Contractors immediately following appointment, must update the SWMP to include detail of how it is intended to effectively implement all the applicable measures identified in this EIAR and any additional measures required pursuant to planning conditions imposed by any grant of approval.

The SWMP includes all the control and management measures that will be implemented. This includes measures relating to:

- A requirement for a Pollution Incident Response Plan;
- Construction Compound management including the storage of fuels and materials;
- Control of sediment;
- Use of concrete;
- Management of vehicles and plant including refuelling and wheel wash facilities; and
- Monitoring.

1.8.6.2 Specific Mitigation Measures

Other specific water pollution and flooding mitigation and / or monitoring measures include:

Monitoring

- A suitably qualified Environmental Clerk of Works (EnCoW) and Ecological Clerk of Works (ECoW) will be appointed prior to commencement of works and employed when/where appropriate during the Construction Phase. The duties of these will be to monitor the efficacy of mitigation measures implemented by the Contractors and to report on the application and success of these measures.
- Water quality monitoring will be undertaken by a qualified person once in advance of construction to establish baseline levels of potential contaminants in an upstream and downstream location along the watercourse within the boundaries of the Proposed Development site.
- At the upstream culvert location background samples (i.e. baseline) will be collected in the same season as the watercourse construction will occur to ensure the results are representative.
- The downstream background samples will be tested at a laboratory for a range of parameters that occur naturally and for pollutants6 including temperature, Electrical Conductivity (EC), pH, Dissolved Oxygen (DO), Turbidity, Total Petroleum Hydrocarbon (TPH) and Diesel Range Organics (DRO).
- Water pollution trigger levels will be determined against baseline monitoring results. The baseline monitoring results will present naturally occurring water quality conditions.

Any abnormally high concentrations, when compared against baseline will be monitored by the EnCoW during construction and will flag for construction to be stopped.

- During construction within the watercourse, field parameters (temperature, pH, turbidity, DO and EC) should be monitored upstream and downstream of the construction works twice a day. Visual inspections of the watercourse at these locations will be conducted daily during construction to identify any plumes of sediment or sheens of oil which may indicate spillages. If these are identified, works will stop until the source has been identified and remediated.
- In the event of pollution occurring or the potential to occur, the EnCoW and ECoW have a 'Stop Works' authority to ensure measures to stop a pollution event are implemented immediately; and
- Raising the finished floor levels raised above the 1%AEP event with a 30% allowance for climate change (HEFS) and an appropriate freeboard. Finally, development is set back from the open stream sections of the watercourse.
- Prevention of Release of Hydrocarbons and Contaminates

During construction, the Contractors will be required to implement the following specific mitigation measures to prevent the release of hydrocarbons, polluting chemicals, sediment/silt:

- Storage of sand/gravel/soil will be as far as practicable from watercourses and grading adjacent to these stockpiles kept to a minimum.
- Surface water run-off from temporary works area to be collected in silt/gravel traps prior to discharge to the surface water drainage network.
- Silt fences (to Hy-Tex Premium specification or similar) and silt traps will be installed prior to commencement of works and will be inspected daily to inform adaptive management as required. The locations of same will be determined by the EnCoW.
- All refuelling to take place in bunded enclosures and a minimum of 50m from any watercourse.
- Visual checks of the working areas and all silt/gravel traps will be carried out during weekly audits and maintenance works undertaken, if required.
- All chemical/fuel etc. will be stored in bunded containers and all storage will have sufficient bunding for all liquids stored (110% of the capacity of the largest drum).
- Spill kits will be maintained on sites and works areas.
- The Contractors will prepare a spill response procedure and implement it, if required.
- Spill incidents will be reported to the EnCoW.
- Oil interceptors will be installed on surface water drainage network at the Proposed Development works areas for the Construction Phase.
- No foul sewer discharge will be allowed to enter the surface water drainage network; and
- Toolbox talks for all staff will be carried out by the Contractors before work commences to identify environmental issues.

Protection of Watercourses

- Construction works for the watercourse re-alignment shall take place as part of the enabling works and prior to the main Construction Phase. The sequencing of the new re-aligned channel and culverts and subsequent connection of the existing watercourse to this channel shall ensure limited increase in water levels upstream or downstream of the Proposed Development site.
- For works occurring within 50m of the open watercourse, weather forecasts will be monitored prior to and during works to avoid working in adverse weather conditions such as heavy rains. No excavations for watercourse crossings will take place during a yellow, or higher, issued rain warning by Met Eireann.

- Excavated material will be placed in such a way as to avoid any disturbance of areas near to the banks of watercourses and any spillage into the watercourses.
- An ECoW will be present for the entire duration of any instream works and monitoring will be conducted in line with the monitoring requirements above.
- Settlement tanks, silt traps / bags and bunds will be used where required to remove silt from surface water runoff. Sizing of the tanks will be based on best available guidelines. Any construction work within a 10m buffer zone of the watercourse edge will be provided with these measures to minimise sediment discharge to a watercourse.
- Where over pumping of water is required, flow will be discharged back to the watercourse at a downstream location to maintain continuity and avoid flooding and water quality impacts.
- Surface water generated on site will be diverted to on-site attenuation facilities. The outfall from these to be in agreement with the OPW.
- All machinery will have been suitably serviced and inspected prior to site delivery. A hydrocarbon/oil boom will be available at working areas for immediate deployment within the watercourse in the event Page 25 of any hydrocarbon spillage at the Proposed Development site. A fuel spillage will be considered to be any loss of fuel, oil or lubricant, including hydraulic oil and spot leakage.
- Deposition areas for spoil will be enclosed with silt fencing to prevent mobilisation of solids during adverse weather conditions and no drainage from these areas will be directed into the temporary drainage systems. A SuDS will be implemented to allow controls to be designed for the retention of large volumes of water that may arise from spoil deposition areas.
- Silt traps and fencing to be placed in working areas that have the potential to carry silt laden material from the working area to aquatic environments. Silt traps and fences will not be erected within flowing watercourses as these can act as a barrier for movement of species.
- Re-seeding of all areas of bare ground or the placement of jute matting will take place as soon as practicable to prevent run-off.
- All onsite welfare facilities will be installed and managed as per regulations to prevent nutrient overloading of aquatic environments; and
- Mitigation measures in relation to soil stripping, earth removal, stockpiling are detailed in Chapter 13 (Land, Soils, Geology and Hydrogeology).

Works to Manage Flooding

The Contractors will be required to put in place a Flood Risk Management Plan (FRMP) to minimise damage to the construction works in case of flooding and to reduce risk of flooding to nearby properties. As part of the FRMP, the following will be included:

- The work near or associated with the watercourse will be planned to be undertaken at appropriate periods when low flow is expected.
- Weather warning notifications will be issued, and the weather forecast checked regularly when working near areas at risk of flooding; and
- A flood warning system and management plan will be implemented.

1.8.7 Land, Soils, Geology, Hydrology

1.8.7.1 Loss of Mineral Resources

Excavated material, where possible will be reused within the Proposed Development. The appointed Contractors will ensure acceptability of the material for reuse for the Proposed Development with appropriate handling, processing and segregation of the material in accordance with this CEMP. Refer to Chapter 16 (Resources and Waste Management).

Care will be taken in reworking this material to minimise dust generation, groundwater infiltration and generation of runoff. Any surplus suitable material excavated that is not required for the Proposed Development, will be reused/recycled as set out in Chapter 16 (Resources and Waste Management).

1.8.7.2 Excavation of Made Ground

Any excavations within made ground will follow the criteria outlined in this CEMP. The CEMP will be updated by the Contractors prior to the commencement of construction.

Excavations in made ground will be monitored by an appropriately qualified person to ensure that any localised areas of contamination encountered are identified, segregated and disposed of appropriately and to ensure soils are consistent with the descriptions and classifications according to the waste acceptance criteria testing carried out as part of the site investigations. Any identified localised areas of contamination will be segregated and stored in an area where there is no possibility of runoff generation or infiltration to ground or surface water drainage.

Care will be taken to ensure that the contaminated material does not cross-contaminate clean soils elsewhere throughout the site.

Samples of ground suspected of contamination will be tested for contamination and ground excavated from these areas will be disposed of to a suitably licensed or permitted site in accordance with the current Irish waste management legislation.

Any dewatering in areas of contaminated ground will be designed to minimise the mobilisation of contaminants into the surrounding environment. Where dewatering in such areas is unavoidable the water will be adequately treated prior to discharge.

1.8.7.3 Pollution of the Water Environment

The CEMP will be updated by the Contractors prior to the commencement of construction.

Good construction management practices will be employed to minimise the risk of transmission of hazardous materials as well as pollution of the diverted watercourse and groundwater.

The construction management of the Proposed Development site will take account of the recommendations of the CIRIA guidance Control of Water Pollution from Construction Sites – Guidance for consultants and Contractors (Masters-Williams et al., 2001) to minimise as far as possible the risk of soil, groundwater, and surface water contamination.

Measures to be implemented to minimise the risk of spills and contamination of soils and waters will include:

- Employing only competent and experienced workforce, and site-specific training of site managers, foremen and workforce, including all subcontractors, in pollution risks and preventative measures.
- Ensure that all areas where liquids (including fuel) are stored, or cleaning is carried out, are in designated impermeable areas that are isolated from the surrounding area and within a secondary containment system, e.g. by a roll-over bund, raised kerb, ramps or stepped access.
- The location of any fuel storage facilities will be considered in the design of all construction compounds and will be fully bunded. These are to be designed in accordance with relevant and current guidelines and codes of best practice at the time of construction.
- Good housekeeping will be maintained at the site (daily site clean-ups, use of disposal bins, etc.) during the entire Construction Phase.
- All concrete mixing and batching activities will be located in designated areas away from the watercourse and drains.
- Potential pollutants will be adequately secured against vandalism in containers in a dedicated secured area.

- Provision of proper containment of potential pollutants according to relevant and current codes of practice and legal requirements.
- Thorough control during the entire construction stage to ensure that any spillage is identified at early stage and subsequently effectively contained and managed; and
- Spill kits to be provided and to be kept close to the construction area and temporary construction compounds. Staff to be trained on how to use spill kits correctly.

1.8.7.4 Monitoring

Excavations in made ground will be monitored by an appropriately qualified person to ensure that any contaminated material is identified, segregated and disposed of appropriately. Any material from identified localised areas of contamination shall be segregated and stored in an area where there is no possibility of runoff generation or infiltration to ground or surface water drainage.

Care will be taken to ensure that the localised area of contamination does not cross-contaminate clean soils elsewhere. All excavations will be monitored in accordance with good practice and guidelines at the time of the works.

Any excavation and stockpiled material shall be monitored during earthworks to ensure the stability of slopes and to ensure that the soils excavated for disposal are consistent with the descriptions and classifications according to the waste acceptance criteria testing carried out as part of the Proposed Development site investigations. Implementation of the CEMP will be monitored on an ongoing basis.

1.8.8 Archaeology and Cultural Heritage

In order to prevent accidental damage to the archaeological resource including any potential sub-surface archaeological finds or features, the below mitigation strategies are proposed.

1.8.8.1 Pre-Construction Phase

While there are no recorded archaeological sites within the lands proposed for development, the discovery of numerous archaeological sites during recent infrastructural work in the wider area highlights the archaeological potential of the Proposed Development. In this regard, the following pre-Construction Phase mitigation is proposed:

- Given the overall size of the Proposed Development site, it is proposed that a comprehensive geophysical survey be undertaken within the undisturbed greenfield land.
- The geophysical survey will inform where anomalies exist and such anomalies will subsequently be investigated by means of a comprehensive programme of archaeological test trenching. This work will be undertaken by a suitably qualified archaeologist licensed by the Department of Housing, Local Government and Heritage. Test trenching will determine if sub-surface archaeological features are present and the extent to which they may be affected by the construction of the Proposed Development. In the event of archaeological features being exposed during testing, further work on the Proposed Development site will require consultation with the archaeological staff of the National Monuments Service, Department of Housing, Local Government and Heritage. Should archaeological artefactual material be uncovered, the requirements of the National Museum of Ireland with regard to such items shall be implemented; and
- A comprehensive photographic and descriptive record of the townland boundary extending north-south through the Proposed Development site should be undertaken by the archaeologist contracted to undertake the test excavation.

1.8.8.2 Construction Phase

The Construction Phase of any development involves considerable ground disturbance, therefore, the greatest potential effects on the archaeological resource will occur during the removal of topsoil and the reduction of ground levels. It is possible that archaeological features may exist in those areas not tested during the pre-Construction Phase of investigation.

The following mitigation measures are proposed during the Construction Phase:

- All topsoil removal operations shall be fully monitored by a qualified archaeologist. In addition, the monitoring archaeologist should be present to record the removal of the townland boundary that is required as part of the development. The archaeologist will require an excavation licence for archaeological monitoring, to be issued by The National Monuments Service, Department of Housing, Local Government and Heritage and approved by the National Museum of Ireland. Sufficient time will be allowed for the archaeologist to obtain an archaeological licence prior to the commencement of construction works, usually four weeks. The time-scale for the Construction Phase shall be made available to the archaeologist at an early stage with information on where and when topsoil stripping will take place.
- The monitoring archaeologist shall be empowered to halt the development if buried archaeological features or finds are uncovered. If archaeological remains are encountered, these sites will be protected by the National Monuments legislation. Further work on the site will require consultation with the archaeological staff of The National Monuments Service; and
- Provision, including financial and time, shall be made to facilitate any excavation or recording of archaeological material that may be uncovered during the developmental works. The excavations shall be undertaken in compliance with any measures that the National Monuments Service and the National Museum of Ireland deem appropriate. Following completion of monitoring, and other possible archaeological investigations, the archaeologist shall submit a report to the National Monuments Service and the National Museum of Ireland.

1.8.9 Landscape and Visual

The following measures are proposed to mitigate the potential negative landscape and visual impacts in the Site Clearance Phase:

- The site compound, car park and storage areas are located so as to minimize the impact to the existing vegetation to be retained;
- Securing of the construction site with fencing and hoarding to screen low level views of site works and construction;
- Provision of fencing in accordance with BS5837: 2012 for the protection of all existing vegetation to be retained; and
- Retention of topsoil for the creation of landscape berms and for reinstatement of disturbed landscape areas.

1.8.10 Resources and Waste

A CDRWMP is included Section 6. This plan meets the requirements outlined in the Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects (EPA, 2021). The appointed Contractors will be obliged to further develop, implement and maintain the waste management plan and CDRWMP during the Construction Phase.

The key principles underlying the waste management plan and the CDRWMP will be to minimise waste generation and to segregate waste at source. The measures to achieve these which are relevant to the Proposed Development include:

- Where waste generation cannot be avoided, waste disposal will be minimised.
- Where possible, recyclable material will be segregated and removed off site to a permitted / licensed facility for recycling. Waste stream colour coding and photographs will be used to facilitate segregation by clearly labelling waste types.
- All staff on-site will be trained on how to minimise waste (i.e., training, induction, inspections, and meetings).
- Materials on-site will be correctly and securely stored.

- Waste generated on-site will be removed as soon as practicable following generation for delivery to an authorised waste facility.
- Excavated material not required for the construction of the Proposed Development, will be screened by the appointed Contractors for suitable end uses.
- The appointed Contractors will record the quantity in tonnes and types of waste and materials leaving the site during the Construction Phase. The name, address and authorisation details of all facilities and locations to which waste and materials are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility. Records will show material, which is recovered, which is recycled, and which is disposed of.
- Any hazardous waste arising will be managed by the appointed Contractors in accordance with the applicable legislation.
- Waste generated from on-site offices will be source separated at least into residual waste, dry mixed recyclables, and organic waste; and
- The relevant appropriate waste authorisation will be in place for all facilities that wastes are delivered to (i.e., certificate of registration, waste facility permit and / or EPA waste licence).

1.8.11 Material Assets

1.8.11.1 Power Supply and Telecommunications

No specific mitigation or monitoring measures are required as no Significant Adverse effects are likely to arise.

1.8.11.2 Water

No specific mitigation or monitoring measures are required as no Significant Adverse effects are likely to arise. Refer to Chapter 12 (Water) and this CEMP for measures to prevent surface water contamination with silt, and also control surface water runoff during construction.

1.8.12 Major Accidents and Disasters

As mentioned previously, the design of the Proposed Development has evolved through comprehensive design iteration, with particular emphasis on avoiding or reducing the potential for environmental effects, where practicable, whilst ensuring the objectives of the Proposed Development are attained. The design of the Proposed Development has been developed in compliance with the relevant design standards which include provisions to reduce the likelihood of risk events occurring (e.g. structures have been designed to avoid the risk of collapse, drainage systems have been designed to cater for increased rainfall events etc.).

Regulation 15 of the Safety, Health and Welfare at Work (Construction) Regulations places a duty on designers carrying out work related to the design of a project to take account of the 'General Principles of Prevention' as listed in Schedule 3 of the Safety, Health and Welfare at Work Act. In addition to the duties imposed by Regulation 15 of the Safety, Health and Welfare at Work (Construction) Regulations, designers must comply with Section 17 (2) of the Safety, Health and Welfare at Work Act which requires persons who design a project for construction work to ensure, so far as is reasonably practicable, that the project is designed and is capable of being constructed to be safe and without risk to health, can be maintained safely and without risk to health during use, and complies in all respects, as appropriate, with other relevant legislation. This includes S.I. No. 138/2012 - Building Regulations (Part A Amendment) Regulations 2012 and, if the works being designed are intended for use as a workplace, the relevant parts of the Safety, Health and Welfare at Work (General Application) Regulations. In accordance with these requirements, the Proposed Development engineering design team established a consistent and appropriate means of assessing the risks that may arise from design decisions and of applying the General Principles of Prevention, mitigation measures that are to be embedded into the design of the Proposed Development.

2. Construction Traffic Management

2.1 Site Access

The majority of construction traffic will enter the Proposed Development via Profile Park Business Park from the R134 Nangor Road. Construction staff vehicles car parking will be located at the northern aspect of the Proposed Development site during construction, whereas construction vehicles and deliveries will access the Proposed Development site from the eastern approach of the Proposed Development.

All HGV movements to and from the Proposed Development site during the Construction Phase will follow the proposed construction traffic route on Profile Park Road, R134 New Nangor Road, R136 Grange Castle Road, N7 Naas and M50 Western Parkway in order to minimise traffic on local roads in the area. This proposed construction route is shown in Figure 2.1.

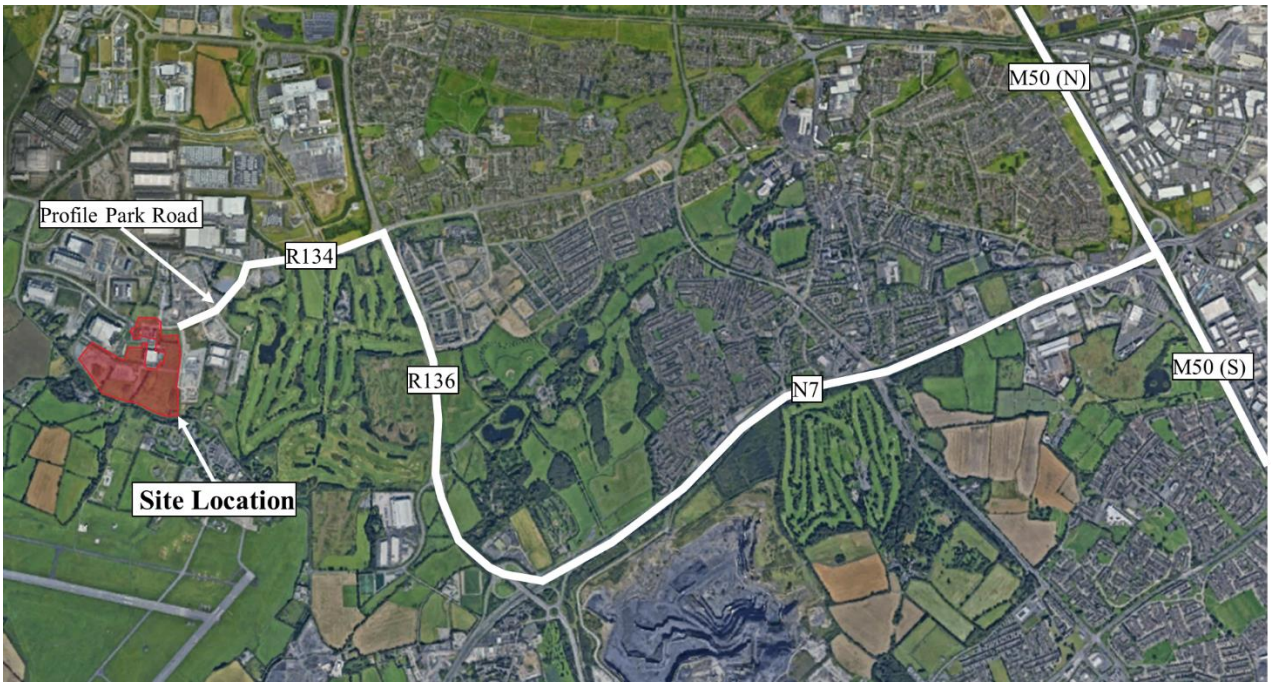

Figure 2.1: HGV construction traffic route.

2.2 Construction Traffic Management Plan (CTMP)

2.2.1 Introduction

Upon the appointment of specialist Contractors, a CTMP will be developed. This will be agreed with SDCC in advance of the works.

The CTMP will provide details of intended construction practices for the development, including:

- Location of materials compound(s) including area(s) identified for the storage of construction refuse.
- Location of areas for construction site offices and staff facilities.
- Details of site security fencing and hoardings.
- Details of any on-site and off-site car parking facilities for site workers during the course of construction.
- Details of the timing and routing of construction traffic to and from the construction site and associated directional signage, to include proposals to facilitate the delivery of abnormal loads to the site.
- Measures to obviate queuing of construction traffic on the adjoining road network.
- Measures to prevent the spillage or deposit of clay, rubble, or other debris on the public road network.

- Alternative arrangements to be put in place for pedestrians and vehicles in the case of the closure of any public road or footpath during the course of site development works.
- Details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels.
- Containment of all construction-related fuel and oil within specially constructed bunds to ensure that fuel spillages are fully contained. Such bunds shall be roofed to exclude rainwater.
- Off-site disposal of construction/demolition waste and details of how it is proposed to manage excavated soil; and
- Means to ensure that surface water run-off is controlled such that no silt or other pollutants enter local surface water sewers or drains.

2.2.2 Construction Traffic Mitigation

Construction traffic will be limited to certain routes and times of day, with the aim of keeping disruption to existing traffic and residents to a minimum. To minimise disruption to the local areas, construction traffic volumes will be managed through the following measures:

- Construction traffic will be required to arrive at and leave the site outside of the AM and PM peak periods.
- During peak hours, ancillary, maintenance, and other site vehicular movements will be discouraged.
- Daily construction programmes will be planned to minimise the number of disruptions to the surrounding area by staggering HGV deliveries to site.
- HGV routes to and from the will be developed in agreement with South Dublin County Council and with the objective of minimising the impact on the local areas for residents and businesses.
- Interface liaison will take place on a case-by-case basis, to ensure that there is coordination between projects which may be under construction concurrently, so that any additional construction traffic mitigation measures required to deal with cumulative effects are managed appropriately; and
- Parking restrictions and management measures on adjacent streets/residential areas will be reviewed and implemented as necessary in discussion with the local residents and businesses and SDCC to avoid any site parking overspill issues.

2.2.3 Construction Mobility Management Plan

As part of the construction contract, the PSCS and the appointed Contractors will be required to prepare a Construction Mobility Management Plan (MMP) as part of the CTMP for the workforce to encourage access to the site by means other than by private car.

The MMP will address the following:

- Appointment of a mobility management champion and a team to support him/her;
- Carrying out a staff survey to develop an understanding of staff travel patterns;
- Identifying practical measures to reduce car based transport by staff including awareness campaigns for sustainable transport options, research into available options, pairing staff for car share based on living locations, providing welfare facilities on site, providing showers and lockers, providing cycle parking amongst others;
- Setting realistic mode share targets for vehicle utilisation;
- Monitoring travel behaviour during the construction months on a regular basis;
- Developing a live mobility management plan document to record the staff results, measures identified, targets and monitoring results;
- Making adjustments to the mobility management plan where targets are not reached; and

- Feedback to SDCC

3. Invasive Species Management Plan

3.1 Introduction

This Invasive Species Management Plan (hereafter referred to as the ISMP) for the Proposed Development contains management recommendations in respect of preventing the spread of and managing a range of non-native invasive species within the area of the Proposed Development. Invasive Species (IS), Invasive Alien Species (IAS) or Invasive Alien Plant Species (IAPS) are terms sometimes referenced in legislation and or guidance. They are referred to as non-native invasive species in this ISMP but are interchangeable.

The ISMP describes the options available to manage and prevent the spread of Third Schedule, non-native invasive plant species identified in the vicinity of the Proposed Development. Only non-native invasive species listed on the Third Schedule of S.I. No. 477 of 2011 – European Communities (Birds and Natural Habitats) Regulations 2011 (hereafter referred to as the Birds and Natural Habitats Regulations) are dealt with in this ISMP.

The ISMP will be developed by the appointed Contractors and PSCS prior to the commencement of any on-site works for the Proposed Development. Construction works can disturb stands of Third Schedule non-native invasive plants and / or soils contaminated with non-native invasive plant material, as well as potentially lead to a new infestation. Therefore, management measures which will be contained in the ISMP will be implemented to avoid any direct or indirect impacts to habitats and species contained within the locality or as a result of its introduction to the area.

3.2 Methodology

3.2.1 Guidance

This ISMP and the mitigation strategies that are discussed relating to invasive plant species have been prepared with regard to the following guidance documents, where relevant:

- The Management of Invasive Alien Plant Species on National Roads – Technical Guidance (TII 2020a).
- The Management of Invasive Alien Plant Species on National Roads – Standard (TII 2020b).
- The Environment Agency (EA) Managing Japanese knotweed on development sites - the Knotweed Code of Practice (Version 3, amended in 2013, withdrawn from online publication in 2016) (EA 2013). (This document, although no longer supported by the EA, is nonetheless a practical document in determining the approach and control mechanisms for Japanese knotweed).
- Managing Invasive Non-Native Plants in or near Freshwater (EA 2010).
- Invasive Species Ireland (ISI) Best Practice Management Guidelines for Japanese knotweed (ISI 2008a).
- Best Practice Management Guidelines for Himalayan balsam (ISI 2008b);
- Best Practice Management Guidelines for Giant hogweed (ISI 2008c).
- Non-Native Species Secretariat (NNSS) Allium triquetrum (Three-cornered garlic) Great Britain Non-Native Organism Risk Assessment Scheme (NNSS 2011).
- Countryside Management Publications, Giant hogweed (Department of Agriculture and Rural Development (Northern Ireland) (2016).

- Good Practice management, New Zealand pygmyweed (Crassula helmsii) Version 1, August 2018 (Animal and Plant Health Agency et al. 2018).
- Management Measures for Widely Spread Species (WSS) in Northern Ireland Nuttall's waterweed (Elodea nutallii) (Northern Ireland Environment Agency 2021).
- Aquatic and Riparian Plant Management: Controls for Vegetation in Watercourses, Technical Guide (EA 2014); and
- Biosecurity Protocol for Field Survey Work (IFI 2010).

3.2.2 Surveys

The initial surveys in January 2024 were carried out at a sub-optimal time of year for habitat/flora surveys (which are ideally conducted between April-September). It is also a sub-optimal time of the year to record Invasive Non-Native Species (INNS). Repeat site visits were therefore undertaken in April and May 2024 to ensure habitats and flora, including any INNS could be appropriately identified.

A dedicated invasive species survey was undertaken in 9th of May 2024 by an Arup ecologist. Invasive species listed on Irish Legislation or noted as medium or high by National Biodiversity Data Centre (NBDC) were recorded if present. The site walk over was undertaken during the growing season and within appropriate weather conditions.

3.3 Survey and Desk Study Results

During the desk study several INNS were identified in the NBDC records within the Proposed Development area:

- American mink (*Mustela vison*)
- black currant (*Ribes nigrum*)
- brown rat (*Rattus norvegicus*)
- butterfly-bush (*Buddleja davidii*)
- cherry laurel (*Prunus laurocerasus*)
- eastern grey squirrel (*Sciurus carolinensis*)
- European rabbit (*Oryctolagus cuniculus*)
- giant hogweed (*Heracleum mantegazzianum*)
- greater white-toothed Shrew (*Crocidura russula*)
- harlequin ladybird (*Harmonia axyridis*)
- Himalayan balsam (*Impatiens glandulifera*)
- Japanese knotweed (*Fallopia japonica*)
- Jenkins' spire snail (*Potamopyrgus antipodarum*)
- Spanish bluebell (*Hyacinthoides hispanica*)
- sycamore (*Acer pseudoplatanus*); and
- three-cornered garlic (*Allium triquetrum*).

No INNS were identified during the initial habitat survey in January 2024; however, this was carried out in a sub-optimal time of the year to record most INNS. A separate INNS survey was undertaken on the 9th of May 2024.

No INNS species listed under Irish Law (Section 3.1) were identified within the boundary of the Proposed Development. However, Spanish bluebell (*Hyacinthoides hispanica*) was identified on the existing GIL Campus at (O 03479 30336), approximately 15m from the boundary of the Proposed Development.

Several species were identified that are noted by the NBDC as medium impact invasive species:

- Buddleja (*Buddleja davidii*): Medium impact
- Sycamore (*Acer pseudoplatanus*): Medium impact; and
- Pampas grass (*Cortaderia selloana*): Medium impact.

3.4 General Measures to Control and Prevent the Spread of Non-Native Invasive Plant Species

3.4.1 Introduction

The unintentional spread of non-native invasive species during construction works (within a construction site or unwittingly from outside of a site, such as through the importation of materials or poor biosecurity practices regarding plant and machinery) can be a significant issue, and if not managed properly, can result in the spread of non-native invasive species to uninfested areas (within or adjacent to works areas), which would increase the future cost and effort required to control the species and could pose further public health and safety risks (Japanese knotweed can cause damage to weaknesses in built environment, whilst Giant hogweed is an environmental public health hazard).

The most common ways that invasive species can be spread is:

- Site and vegetation clearance, mowing, hedge-cutting or other landscaping activities;
- Spread of seeds or plant fragments during the movement or transport of soil;
- Spread of seeds or plant fragments through the local surface water and drainage network;
- Contamination of vehicles or equipment with seeds or plant fragments which are then transported to other areas;
- Importation of soil from off-site sources contaminated with invasive species plant material; and
- Leaving riparian corridors bare of vegetation thus allowing establishment of seed material from outside the site.

3.4.2 Site Establishment

During advance works and prior to the commencement of construction, any areas where Third Schedule non-native invasive species have been recorded by the pre-construction surveys must be clearly fenced off prior to and during construction (in order to avoid spreading seeds or plant fragments around or off the construction site) until such time that the mitigation measures are implemented and treatment has been completed, or that works in these areas are monitored in accordance with the requirements of the ISMP.

This includes the Construction Compounds and the entirety of the Proposed Development footprint. Earthworks or machinery movement must be avoided in any areas where non-native invasive species have been identified during the pre-construction surveys, until the relevant stands have been eradicated.

3.4.3 Biosecurity and Site Hygiene

It is important to ensure that the spread of non-native invasive species, where present, is curtailed. It is also necessary to ensure that in areas where non-native invasive species are not present, that they are not unintentionally spread (e.g. through the importation of contaminated material being brought onto the site).

Unwashed construction equipment, plant, vehicles, and footwear can provide a vector for the spread of non-native invasive species within the Proposed Development and from areas outside the Proposed Development, where infestation is present or where vector material potentially containing seed / root material is attached to plant.

3.4.4 Soil Excavation

Where the excavation of soil containing Third Schedule non-native invasive species (vector material) is the preferred option, the operation shall be monitored for its entirety until the risk of spread of Third Schedule non-native invasive species is negated.

3.4.5 Disposal of Material

Where any non-native invasive plant material is collected (e.g. by hand-pulling or mowing), it is important that its disposal does not result in a risk of further spread. The movement of invasive plant material, off site, requires a licence from the NPWS, as per the Birds and Natural Habitats Regulations. Invasive species (particularly roots, flower heads or seeds) must be disposed of at licensed waste facilities or composting sites, appropriately buried, or incinerated having regard to relevant legislation (e.g. Waste Management Act, as amended, Section 4 of Number 6 of 1987 - Air Pollution Act, 1987, relevant local authority byelaws and any other relevant legislation). All disposals must be carried out in accordance with the relevant waste management legislation and guidance.

3.4.6 Importation of Soil and Other Material

The bulk importation of material from off site could potentially result in the accidental spread of Third Schedule non-native invasive species, as it is uncertain if these site(s) are free from non-native invasive species. In terms of landscaping, if soil is imported to the site for landscaping, infilling or embankments, the appointed Contractors shall seek documentation from suppliers confirming that the material is free from invasive species.

4. Surface Water Management Plan

4.1 Introduction

This Surface Water Management Plan (hereafter referred to as the SWMP) for the Proposed Development details the control and management measures for avoiding, preventing, or reducing any significant adverse impacts on the surface water environment during the Construction Phase. The control and management measures are best practice approaches that can be used to protect surface water during the Construction Phase of the Proposed Development.

The SWMP will be developed by the appointed Contractors and PSCS prior to the commencement of any on-site works for the Proposed Development.

4.1.1 Objectives

The objectives of the SWMP are to:

- Ensure sediment and pollution control requirements can be built into the design stage and land requirements for the Proposed Development as far as practicable.
- Minimise, and where possible, avoid potential for sediment, silty water, and other contaminants such as oil, fuel, concrete, cement, and other materials to discharge to a watercourse.
- Minimise the area and duration of exposed ground which has the potential to create runoff; and

- Minimise any potential impacts in the event of an accidental spillage or site runoff by providing appropriate control and containment measures on-site and by maintaining sediment and pollution controls throughout the Construction Phase of the Proposed Development.

4.1.2 Scope

The SWMP contains the following details:

- Section 7.1 – Introduction
- Section 7.2 - Site Specific Control Measures.
- Section 7.3 - Control and Management Measures.
- Section 7.4 – Monitoring of Water Bodies.

4.2 Site Specific Control Measures

Refer to 1.8 for the water mitigation measures to be implemented during the Construction Phase of the Proposed Development.

4.3 Control and Management Measures

4.3.1 Construction Compounds

4.3.1.1 Construction Compound Establishment

All surface water runoff will be intercepted and directed to appropriate treatment systems / settlement facilities for the removal of pollutants prior to discharge. Further information of the Construction Compounds is provided in Chapter 5 (Construction) of this EIAR.

4.3.1.2 Security

The Construction Compounds will be fenced off, lit (during working hours) and secured with Closed-Circuit Television (CCTV), to ensure safe storage of all material, plant and equipment, if required, to prevent acts of vandalism that could result in leaks or spills from materials.

4.3.1.3 Welfare and Sanitary Facilities

The Construction Compounds will be engineered with appropriate services as discussed in Chapter 5 (Construction) of this EIAR. Water and wastewater disposal etc. will be organised by the appointed Contractors. Temporary welfare facilities will need to be used, for example, portable toilets in the vicinity of works. Welfare facilities will discharge wastewater either to an existing sewer, with the permission of the sewerage undertaker, or will be collected and disposed of in an appropriate manner to a suitably licensed facility off site to prevent water pollution and in accordance with the relevant statutory requirements.

4.3.1.4 Fuel Storage

- All hydrocarbons used during the Construction Phase will be appropriately handled, stored, and disposed of in accordance with recognised standards as laid out by the EPA.
- All chemical and fuel filling locations will be contained within signposted, designated bunded areas, a minimum of 10m from any surface water drain or watercourse.
- At the Construction Compounds, where the site is pervious, an area of hard standing will be installed in a demarcated area for refuelling, and vehicle / plant cleaning and service areas. This area will be drained to a soak away if possible, or to local surface water drains, with the permission of the asset owner.
- Suitable precautions will be taken to prevent spillages from equipment containing small quantities of hazardous substances (for example, chainsaws and jerry cans) including:

  - Each container or piece of equipment will be stored in its own drip tray made of a material suitable for the substance being handled.
  - Spill kits and drip trays will be provided for all equipment and at locations where any liquids are stored and dispensed, and staff will be trained on the procedures to be followed; and
  - Containers and equipment will be stored on a firm, level surface.

- Procedures and contingency plans will be in place at each works area to address the cleaning up of small spillages as well as dealing with an emergency incident. A stock of absorbent materials such as sand, spill granules, absorbent pads and booms will be kept at each work site, on plant working near water and particularly at refuelling areas and where fuel or oil is stored.
- When working in or in close proximity to watercourses, an absorbent containment boom will be installed across the watercourse or around the works, securely and closely anchored to the banks or working platform.
- The storage of fuels, other hydrocarbons and other chemicals within the Construction Compounds shall be in accordance with relevant legislation and best practice. In particular:
  - Fuel tanks, drums, and mobile bowsers (and any other equipment that contains oil and other fuels) will be housed within a bund of at least 110% capacity of the fuel tank itself or at least 25% of the total volume of the containers, whichever is greatest. The fuel tank will be double skinned. There will be no passive drainage from the bund; any water collected within it will be pumped out and removed off site for disposal; and
  - Any designated area or areas for oils, fuel, chemicals, hydraulic fluids, etc. storage and refuelling will be set up at least 10m from any surface water drains or watercourses (as per CIRIA guidance listed in and the storage location within the Construction Compounds shall be organised so as to be as far away from surface water drains or watercourses as is practicable to minimise risks from leaks and spills.
- Storage areas will be covered, wherever possible, to prevent rainwater filling the bunded areas.
- Fuel fill pipes will not extend beyond the bund wall and will have a lockable cap secured with a chain.
- Where fuel is delivered through a pipe permanently attached to a tank or bowser:
  - The pipe will be fitted with a manually operated pump or a valve at the delivery end which closes automatically when not in use.
  - The pump or valve will be fitted with a lock.
  - The pipe will be fitted with a lockable valve at the end where it leaves the tank or bowser.
  - The pipework will pass over and not through bund walls.
  - Tanks and bunds will be protected from vehicle impact damage.
  - Tanks will be labelled with contents; capacity information and hazard warnings; and
  - All valves, pumps and trigger guns will be turned off and locked when not in use. All caps on fill pipes will be locked when not in use.

4.3.1.5 Storage of Materials and Waste

The Construction Compounds will operate a ‘Just In Time’ approach, where practicable, for material deliveries to minimise the amount required to be stored. Where material is required to be stored:

- Storage areas will be at least 10m from surface water drains or watercourses.
- Storage areas for solid materials, including waste soils (where applicable), will be designed and managed to prevent deterioration of the materials and their escape (via surface runoff or wind blow).

- Storage areas will be kept secure to prevent acts of vandalism that could result in leaks or spills; and
- All containers of any size will be correctly labelled indicating their contents and any hazard warning signs.

A register of all hazardous substances, which will either be used on-site or expected to be present (in the form of soil and / or groundwater contamination) will be established and maintained. This register will be available at all times and shall include as a minimum:

- Valid Material Safety Data Sheets (MSDS).
- Health and safety and environmental controls to be implemented when storing, handling, using and in the event of spillage of materials.
- Emergency response procedures / precautions for each material; and
- The Personal Protective Equipment (PPE) required when using the material.

Waste may be stored at the Construction Compounds for a limited amount of time to help to limit the number of vehicle movements to and from site, as far as possible, to minimise effects on the local roads. Where waste is required to be stored:

- It will be stored in secure designated areas, in enclosures or containers to prevent material being dispersed by the wind.
- Designated areas will be sited at least 10m away from surface water drains or watercourses to limit the risk of escape and contamination of watercourses.
- Waste storage containers will be labelled with their waste type and their List of Waste (LoW) code. Any labelling will be consistent with Industry Best Practice at the time construction commences and reviewed annually.
- Liquid wastes will be stored in containers within bunded zones with secondary containment of at least 110% capacity of the largest container or at least 25% of the total tank capacity inside the bunded zone (whichever is the greatest); and
- Incompatible or hazardous wastes will be stored and handled in accordance S.I. No. 324 of 2011 - European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011.

4.3.2 Control of Sediment

There are a number of sources of sediment or silt-laden water on a construction site, including silty ‘runoff’ from stripped soils, and the stockpiling of soils. Control measures for each of these will be provided.

4.3.2.1 Construction Sequencing – Installation of Drainage Features

In order to protect water bodies from potential impacts, such as increased volumes of runoff, silty water and accidental spills, temporary drainage control measures will be installed at the outset, prior to any site clearance works. This will include measures such as construction of cut-off ditches, silt fences erected and the set-up of settlement tanks.

4.3.2.2 Silty Water Runoff

- Clearing and stripping of topsoil or existing roads and footpaths exposing underlying granular layers at each phase of works will be delayed as long as possible, being carried out shortly before construction begins.
- Cut-off ditches, berms or diversion channels will be utilised around working area boundaries, where possible, to limit surface water entering the excavated areas and silty water running off the site into surface water drains or watercourses.

- Silt fences will be installed / erected along the boundary of the Construction Compounds and around surface water drains or watercourses to prevent any silt laden runoff from impermeable surfaces; and
- Weather conditions will be taken into account by the appointed Contractors when planning construction activities to minimise the risk of silty water runoff from the site.

4.3.2.3 Stockpiling Materials

- Clearing and stripping of topsoil or existing roads and footpaths exposing underlying granular layers at each phase of works will be delayed as long as possible, being carried out shortly before construction begins rather than stripping the whole site many months before construction.
- Where an excavation contains a combination of acceptable and non-acceptable material for reuse, the excavation will be conducted so that the acceptable material is excavated and stockpiled separately without contamination by the unacceptable material.
- Temporary stockpiles will be located away from surface water drains or watercourses at a minimum distance of 10m.
- The topsoil, and upper level of subsoil, will be stripped and stockpiled in identified locations.
- For watercourse crossings, stockpiles will not be located anywhere within the crossing working area.
- No stockpiles will be located within a European or National designated site or within a floodplain area.
- Management of stockpiles to prevent siltation of watercourse systems through runoff during rainstorms will be required with the final measures to be determined by the appointed Contractors. These will include the following measures or equivalent measures:
  - Allowing the establishment of vegetation on the exposed soil.
  - Providing silt fences or straw barriers at the toe of the stockpile to mitigate runoff during rain events.
  - Surrounding stockpiles with cut-off ditches to contain runoff.
  - Directing any runoff to the site drainage system or filter drains along the construction working width and to the settlement pond (or other) treatment systems; and
  - Providing bunds or another form of diversion to keep runoff from entering the stockpile area.

4.3.3 Use of Concrete

- The use and management of concrete in or close to watercourses will be carefully controlled to avoid spillage. Alternate construction methods are encouraged, for example, the use of pre-cast concrete or permanent formwork will reduce the amount of in-situ concreting required.
- Weather conditions will be taken into account when planning construction activities which require the use of wet concrete to minimise the risk of the runoff of concrete ‘washout’ from site.
- Where concrete batching is proposed by the appointed Contractors, this activity will be carried out at least 10m from surface water drains or watercourses. Washout from such mixing plant will be carried out only in a designated contained impermeable area.
- Batching and mixing activities and material storage areas will be located at least 10m (as per CIRIA guidance) away from surface water drains or watercourses.
- Chute washout will be carried out at designated locations only, at least 10m from surface water drains or watercourses. These locations will be signposted throughout the construction works areas. Chute washout locations will be provided with appropriate designated, contained impermeable areas and treatment facilities including adequately sized settlement tanks.
- The clear water from the settlement tanks shall be pH corrected prior to discharge to any surface water drains or watercourses.

- There will be no hosing of concrete, cement, grout, or similar material spills into surface water drains or watercourses. Such spills shall be contained immediately, and runoff prevented from entering the watercourse; and
- Discharge of washout water to wastewater (foul) sewer will only be carried out with the express permission of the sewerage undertaker and will be treated to the standard required, for example, because of its high pH (alkalinity), washout water may need treatment before disposal to the foul sewer.

4.3.4 Vehicles and Plant

- Vehicles and plant provided for use on the Proposed Development will be in good working order to ensure optimum fuel efficiency and will be regularly inspected to ensure they are free from leaks and are promptly repaired when not in good working order.
- Spill kits will be carried on all vehicles.
- Vehicles and plant will not park near or over surface water drains or watercourses.
- Refuelling of vehicles and plant will be carried out on hard standing surfaces, using drip trays to ensure no fuel can contaminate the ground outside of the bunded areas.
- For deliveries and dispensing activities, the appointed Contractors will ensure that:
  - Site-specific procedures are in place for bulk deliveries.
  - Delivery points and vehicle routes are clearly marked; and
  - Emergency procedures are displayed, and a suitably sized spill kit is available at all delivery points, and staff are trained in these procedures and the use of spill kits.
- The appointed Contractors will provide wheel washing facilities, and any other necessary measures to remove mud and organic material from vehicles, at the Construction Compounds, where necessary. These will be located at least 10m away from any surface water drains or watercourses.
- The cleaning of delivery trucks shall be carried out at the Construction Compounds and shall not be undertaken at the works areas.
- The surface runoff from vehicle washing areas will be directed to an on-site treatment system where possible. This will also increase the potential for reusing the water. Such a treatment system would typically include:
  - A settlement lagoon to remove suspended solids such as mud and silt; and
  - Catchpits or silt traps on drains, ensuring that they are in place during cleaning and that they are emptied at regular intervals.
- The use of detergents in the cleaning process will be minimised, where required. Biodegradable and phosphate-free detergents will be used.
- Where detergents are used in the washing process, the wash water will be contained in a containment tank prior to disposal off site using a suitable licensed waste disposal operator, or if a foul or combined sewer is nearby, the surface runoff could be directed to it, with the permission of the sewerage undertaker; and
- To further minimise water used for washing vehicles, trigger-operated spray guns will be used, with an automatic water supply cut-off.

4.4 Monitoring of Waterbodies

Refer to Section 1.8.6 for the water monitoring measures to be implemented during the Construction Phase of the Proposed Development.

5. Environmental Incident Response Plan

5.1 Introduction

This Environmental Incident Response Plan (EIRP) has been prepared to ensure that in the unlikely event of an incident, response efforts are prompt, efficient, and suitable for the particular circumstances. The EIRP details the procedures to be undertaken in the event of a significant release of sediment into a watercourse, or a significant spillage of chemical, fuel or other hazardous substances (e.g. concrete), non-compliance incident with any permit or license, or other such risks that could lead to a pollution incident, including flood risks. The EIRP will identify the on-site risks and appropriate responses. The focus of including the measures in this EIRP is on prevention of the incident arising in the first place.

The EIRP will be developed by the appointed Contractors and PSCS prior to the commencement of any on-site works for the Proposed Development. Construction works can disturb stands of Third Schedule non-native invasive plants and / or soils contaminated with non-native invasive plant material, as well as potentially lead to a new infestation.

The objectives of this EIRP are to:

- Ensure the health and safety of personnel and visitors along the Proposed Development;
- Minimise any impacts to the environment and ensure protection of water quality and the aquatic species dependent on it;
- Minimise any impacts on properties, services etc.; and
- Establish procedures that could enable personnel to respond to incidents with an integrated multi-departmental effort and in a manner that minimises the possibility of loss and reduces the potential for affecting health, property, and the environment.

5.2 Roles and Responsibilities

The EIRP will be reviewed and updated regularly so that it continues to apply to construction activities and is amended when applicable regulations are revised or when amendments are required by a regulatory authority. It will be the responsibility of the PSCS, or equivalent, as stipulated by the appointed Contractors to maintain and change the EIRP as required. The EIRP may also require amendments from the various stakeholders or suppliers as the Proposed Development progresses.

The appointed Contractors shall provide a full list, including the exact locations, of all pollution control plant and equipment. All such plant and equipment shall be maintained in place and in working order for the duration of the works.

As part of the development and management of the EIRP, the appointed Contractors will:

- Assess the pollution risks and develop emergency and spill response procedures for specific construction activities.
- Obtain details of key people that may need to be contacted for help in the event of an incident.
- Provide equipment for dealing with pollution incidents.
- Identify emergency access routes along the Proposed Development.
- Train personnel to follow procedures and use equipment correctly.
- Audit the EIRP; and
- Take action following an incident to ensure it does not occur again.

5.2.1 Contacts

The EIRP will detail the initial contact that should be made in case of an emergency incident as well as those responsible for following up once an emergency event is declared.

Contact details will include the organisation, position title, name, mobile phone number and email address of the relevant personnel. Numbers will be obtained for contacts, including the following:

- Radio / mobile contacts for management staff and trained personnel.
- Out-of-hours contacts
- SDCC
- Fire Services
- Uisce Eireann
- EPA; and
- Spill response and clean-up contractors.

5.2.2 Training and Testing

Personnel will be trained on the implementation of the EIRP and how to use the necessary equipment such as spill kits. Emergency arrangements will need to be reviewed and tested periodically (and always after an incident) to ensure that measures are effective, and that the workforce is aware of what to do in the event of an incident. Emergency drills will be recorded, and improvements noted and actioned accordingly.

5.3 Environmental Emergency Response Procedures

5.3.1 Fuel and Chemical Spillages

For pollution prevention measures, refer to the SWMP in Section 4. Emergency procedures will be further developed; either Proposed Development specific, works area specific or activity specific, and all personnel will be required to know these procedures.

An effective pollution EIRP relies on the following elements, with regards to fuel, and chemical spillages:

- Identification of receptors / pathways (e.g. surface water drains and / or watercourses).
- Identification and clear marking of surface water drain locations within the Construction Compounds.
- Identification of all possible emergency scenarios.
- Effective planning (e.g. availability of booms, spills kits at appropriate locations along the Proposed Development).
- Identification and dissemination of contact numbers
- Definition of personnel responsibilities
- Assurance that all appropriate personnel are aware of the emergency procedure(s) (e.g. spillage, leakage, fire, explosion, and flooding), that drain covers and spill kits are available, and personnel know how to use them.
- Knowledge of incident scenarios, such as spill drills; and
- Implementation of lessons learnt from previous incidents.

In terms of pollution spill response procedures, these will vary depending on the sensitive receptor and nature of construction activities. However, the following information will be included as a minimum and displayed at appropriate locations along the Proposed Development, at river crossings, near outfalls, refuelling locations, fuel storage areas etc.:

- Instructions on how to stop work and switch off sources of ignition.
- Instructions on how to contain the spill.
- Location of spill clean-up material.
- Name and contact details of responsible personnel (these personnel should assess the scale of the incident to determine whether the environmental regulator needs to be called); and
- Measures particular to that location or activity (for example, close to a settlement pond).

More detailed plans may be location-specific, or specific to a particular activity depending on the nature of the work. They will identify the potential sources of pollution and pathways to receptors so that containment measures can be put in place at these locations. Suitable equipment, such as spill kits, oil booms and absorbent material, will be held at appropriate locations along the Proposed Development and personnel will be trained in the use of the equipment.

Emergency equipment will be obtained from a reputable supplier, and personnel will be trained in its correct use. Material Safety Data Sheets (MSDS) and best practice assessments will be used for advice on appropriate spill measures. The type of equipment required will depend on the activity taking place.

Every effort will be made to prevent an environmental incident during the Construction Phase of the Proposed Development. The objective of the measures in the EIRP and the SWMP is to prevent an incident arising in the first place. Oil / fuel spillages are one of the main environmental risks that will exist during the Construction Phase of the Proposed Development which will require an emergency response procedure. An example of the steps that could be followed in the event of a spillage to ensure that the environmental risk is reduced to as low as is reasonably practical is provided in this Section. This procedure can be tailored to be location / activity specific as required:

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
- Notify the EHS Manager immediately giving information on the location, type, and extent of the spill so that they can take appropriate action.
- If necessary, the EHS Manager will inform the appropriate regulatory authority, including the Fire Services, depending on the size and nature of the spill. The appropriate regulatory authority will vary depending on the nature of the incident.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident.
- Contain the spill using the spill control materials, track mats or other material as required. Do not use detergent or hoses to disperse spilled fuel.
- If possible, cover or bund off any vulnerable areas where appropriate such as drains, watercourses 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 the appropriate permits so that further contamination is limited.
- The details of the incident will be recorded on an Environmental Incident Form which will provide information such as the cause, extent, actions, and remedial measures used following the incident. The form will also include any recommendations made to avoid reoccurrence of the incident. This form will be appended to the EIRP.
- A record of all environmental incidents will be kept on file by the EHS Manager and the appointed Contractors. These records will be made available to the relevant authorities if required; and

- The EHS Manager /PSCS will be responsible for any corrective actions required as a result of the incident (e.g. an investigative report, formulation of alternative construction methods or environmental sampling), and will advise the appointed Contractors as appropriate.

By carrying out the above steps, a proper system will be in place to investigate, record and report any potential fuel or chemical spillages.

5.3.2 Other Environmental Incidents

Environmental incidents are not limited to just fuel spillages. For example, other environmental incidents could include:

- Accidental stripping of a protected habitat
- Accidental excavation of protected archaeological structure (without archaeologist present).
- Accidental release from settlement pond / tank etc.; and
- Unplanned utility strikes, resulting in foul water releases, temporary loss of services etc.

Therefore, any environmental incident will be investigated in accordance with the following steps:

- Immediately notify the PSCS giving information on the location, type, and extent of the incident so that they can take appropriate action.
- In the very unlikely event of an incident occurring which may impact on a sensitive receptor, the PSCS will inform the appropriate persons / regulatory authority. The appropriate persons / regulatory authority will vary depending on the nature of the incident.
- The details of the incident will be recorded on an Environmental Incident Form which will provide information such as the cause, extent, actions, and remedial measures used following the incident. The form will also include any recommendations made to avoid reoccurrence of the incident. This form will be appended to the EIRP.
- A record of all environmental incidents will be kept on file by the PSCS and the appointed Contractors. These records will be made available to the relevant authorities if required; and
- The PSCS will be responsible for any corrective actions required as a result of the incident (e.g. an investigative report, formulation of alternative construction methods or environmental sampling), and will advise the appointed Contractors as appropriate. By carrying out the above steps, a proper system will be in place to investigate, record and report any potential accidents or incidents.

5.3.3 Fire Control

Every effort will be made to prevent the outbreak of a fire during the Construction Phase of the Proposed Development. Fire extinguishers and first aid supplies will be available in the work area. In the event of such an incident, the health and safety of all personnel will be a priority. All relevant legislation and guidance on health and safety of people and in particular fire safety will be complied with.

5.3.4 Flood Risk Control

Where temporary stockpiles of invasive species infected material cannot, for practical limitations, be situated away from a potential flood risk area, the appointed Contractors will be required to include a flood response plan within the EIRP, to ensure that any inundation of the Construction Compounds does not result in a pollution event to nearby water bodies.

5.4 Corrective Action

When an incident happens, it is important to learn from it and ensure that such an incident does not occur again. This may involve changing the method of work for a particular activity, providing containment or treatment materials, or simply training personnel so they are aware of the correct method of work.

Similarly, if an audit of planned arrangements indicates that measures are not in place, or those in place need to be improved, action will be taken immediately.

A record of corrective actions and lessons learned will be kept and communicated to all relevant persons, teams, sub-contractors etc. across the Proposed Development.

5.4.1 Emergency Procedures During Construction

The appointed construction Contractors shall ensure that unobstructed access is provided to all emergency vehicles along all routes and accesses. The appointed construction Contractors shall provide to the local authorities and emergency services, contact details of the appointed construction Contractors personnel responsible for construction traffic management. In the case of a construction traffic related emergency, the following procedure shall be followed:

- Emergency Services will be contacted immediately by dialling 112.
- Exact details of the emergency / incident will be given by the caller to the emergency line operator to allow them to assess the situation and respond in an adequate manner.
- The emergency will then be reported to the appointed construction Contractors and security.
- All construction management shall be notified of the incident.
- Where required, appointed first aiders will attend the emergency immediately; and
- The appointed construction Contractors will ensure that the emergency services are directed to and arrive at the emergency location.

6. Construction and Demolition Resource and Waste Management Plan

6.1 Introduction

6.1.1 Overview

This report sets out the Construction and Demolition Resource and Waste Management Plan (CDRWMP) prepared by Arup as part of the Planning Application for the development of the Data Centre DC3 for GIL. Note, no demolition is required to be implemented as part of the Proposed Development.

The content presented in this CDRWMP has regards to the guidance outlined in the following documents:

- Environmental Protection Agency Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects – (EPA, 2021) (Tier 2 development guidance applied); and
- The EU Construction & Demolition Waste Management Protocol (European Commission, 2016).

Following appointment, the PSCS and appointed Contractors will be responsible for detailing and maintaining this report and updating it as appropriate. The responsibilities as set out in the EPA Guidelines are included in Appendix A. This report will be updated by the PSCS, and appointed Contractors and the content agreed with the client on appointment of the PSCS and appointed Contractors.

6.1.2 Waste Management Objectives

The principal objective of sustainable resource and waste management is to use material resources more efficiently, to re-use, recycle and recover material and to reduce the amount of waste requiring final disposal.

The value of products, material and resources should be maintained in the economy for as long as possible such that the generation of waste is minimised.

To achieve resource efficiency there is a need to move from a traditional linear economy to a circular economy (refer to Figure 6.1).

A Waste Action Plan for a Circular Economy – Ireland's National Waste Policy 2020 – 2025 (Department of Environment, Climate and Communications (DECC), 2020) notes that:

> *"In a circular economy the value of products and materials is maintained for as long as possible; waste and resource use are minimised, and resources are kept within the economy when a product has reached the end of its life, to be used again and again to create further value."*

The EU Circular Economy Action Plan (European Commission, 2020) notes that:

> *"the EU needs to accelerate the transition towards a regenerative growth model that gives back to the planet more than it takes, advance towards keeping its resource consumption within planetary boundaries, and therefore strive to reduce its consumption footprint and double its circular material use rate in the coming decade."*

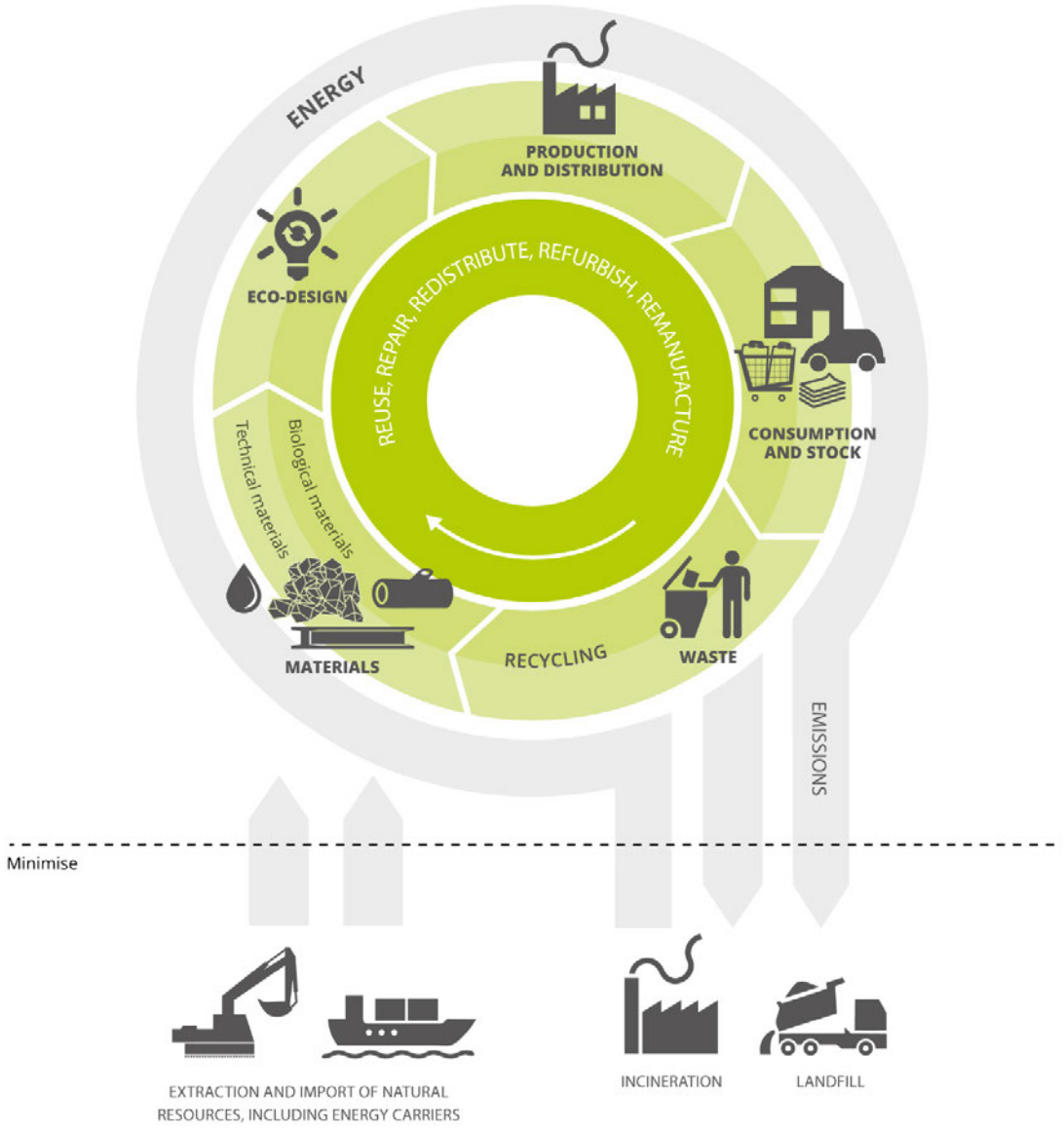

Figure 6.1: A simplified model of the circular economy for materials and energy. Source: European Environment Agency, 2016.

However, where residual waste is generated, it should be dealt with in a way that follows the waste hierarchy (refer to Figure 6.2) and set out in the European Communities (Waste Directive) Regulations 2011 (S.I. No. 126/2011). It is the intention that this would actively contribute to the economic, social and environmental goals of sustainable development.

The European Commission has adopted a new Circular Economy Action Plan (EC, 2020) - one of the main blocks of the European Green Deal, Europe's new agenda for sustainable growth. The Circular Economy Action Plan identifies buildings and construction as a key area where there are opportunities for resource efficiency and circularity.

The Department of the Environment, Climate and Communications published the Irish Waste Action Plan for a Circular Economy in September 2020 (DECC, 2020). The Plan outlines the commitment in the new Programme for Government to implement a new National Waste Action Plan providing new waste policy and giving direction to waste planning and management in Ireland.

The policy document contains over 200 measures across various waste areas including Circular Economy, Municipal Waste, Consumer Protection and Citizen Engagement, Plastics and Packaging, Construction and Demolition, Textiles, Green Public Procurement and Waste Enforcement.

The Plan includes the target of preparing for reuse, recycling and other material recovery (including beneficial backfilling operations using waste as a substitute) of 70% by weight of Construction and Demolition non-hazardous waste (excluding natural soils & stone).

Figure 6.2: Waste hierarchy. Source: European Commission.

The Department of Environment, Climate and Communications published the 'Whole-of-Government Circular Economy Strategy 2022-2023' (DECC, 2021a) in December 2021. The Strategy aims to support and implement measures that significantly reduce Ireland's circularity gap, so that Ireland's rate is above the EU average by 2030.

In July 2022, the Circular Economy and Miscellaneous Provisions Act 2022 was signed into law (Government of Ireland, 2022). This Act aims to place the Strategy, and the commitment to a circular economy, on a clear statutory footing.

It also aims to streamline the statutory mechanisms for construction and demolition material reuse which are known as 'Regulation 27' and 'Regulation 28'.

The objectives of this CDRWMP will facilitate reuse and recycling and divert waste from landfill. The content and headings used in this CDRWMP comply with the EPA Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects (EPA, 2021).

Following appointment, the Contractors will be responsible for detailing and maintaining this CDRWMP and updating it as appropriate.

6.1.3 Waste Management Legislation, Policy and Guidance

Resource and waste management takes place in a legislative and policy framework. Applicable legislation, policy and best practice guidance was reviewed during preparation of this CDRWMP.

The key components of EU, national and local policy, legislation, and guidance relevant to proposed demolition and construction are summarised as follows:

- Prevention and minimisation of waste is the preferred option.
- Where construction and demolition waste is generated, it should be source separated to facilitate reuse and recycling and to maximise diversion of waste from landfill.
- Where waste may not be prevented or recycled it should be transported and disposed of in accordance with applicable legislation and without causing environmental pollution; and
- Waste may only be transferred by a waste collection permit holder and delivered to an authorised waste facility.

A summary of key documents regarding legislation, policy and best practice guidance related to waste management is provided below.

6.1.3.1 European Commission (2016) EU Construction & Demolition Waste Management Protocol

This protocol was published by the European Commission in September 2016 (European Commission, 2016). The overall aim of the protocol is to increase confidence in the Construction and Demolition (C&D) waste management process and the trust in the quality of C&D recycled materials. This will be achieved by:

- Improved waste identification, source separation and collection;
- Improved waste logistics;
- Improved waste processing;
- Quality management; and
- Appropriate policy and framework conditions.

6.1.3.2 Waste Action Plan for a Circular Economy (Government of Ireland, 2021)

This action plan has been developed for waste planning and management in Ireland. The focus shifts away from waste disposal and highlights the importance of preserving resources through circular economy.

The overarching objectives of this action plan are to:

- Shift the focus away from waste disposal and treatment to ensure that materials and products remain in productive use for longer thereby preventing waste and supporting reuse through a policy framework that discourages the wasting of resources and rewards circularity.
- Make producers who manufacture and sell disposable goods for profit environmentally accountable for the products they place on the market; ensure that measures support sustainable economic models (for example by supporting the use of recycled over virgin materials).
- Harness the reach and influence of all sectors including the voluntary sector, R&D, producers / manufacturers, regulatory bodies, civic society; and
- Support clear and robust institutional arrangements for the waste sector, including through a strengthened role for Local Authorities (LAs).

6.1.3.3 *Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects (EPA, 2021)*

These guidelines were published in 2021 (EPA, 2021) and supersede the guidelines published by the Government in 2006 (DoEHLG, 2006).

The replacement guidelines reflect current waste legislation and policy including 'A Waste Action Plan for a Circular Economy Ireland's National Waste Policy 2020-2025' (DECC, 2020). Since the publication of the 2006 guidelines, waste management legislation and policy have evolved towards prioritising waste prevention and life cycle thinking through an increased emphasis on waste prevention and the promotion of ore circular design and construction principles in line with the EU Circular Economy Action Plan under the EU Green Deal.

The guidelines address the best practice approach for the following phases of a project:

- Prior to Construction – including the stages of design, planning and procurement in advance of works on site; and
- During Construction – relating to the effective management of resources and wastes during construction or demolition operations.

6.1.3.4 *South Dublin County Council Development Plan 2022-2028*

The South Dublin County Development Plan 2022-2028 sets out the land use framework to guide future development within the County with a focus on households, workplaces and how the population interacts and moves between these places while protecting the environment. The Plan outlines South Dublin County Council's approach to waste management to ensure adherence to the EU Waste Hierarchy and the circular economy.

The policies and objectives listed within the Plan were prepared in line with the Eastern Midlands Region Waste Management Plan and the National Waste Management Plan for a Circular Economy preparing the policies and objectives within the Plan.

6.1.3.5 *Construction and Demolition Waste Soil and Stone Recovery / Disposal Capacity Update Report 2020*

The Regional Waste Management Planning Offices (RWMPOs) quantified and analysed national capacity within the market for the management of soil and stone waste arisings, including hazardous, based on 2018 data and published this in 2020. This report (RWMPOs, 2020) updates the most recent previous Soil and Stone Recovery / Disposal Capacity report published in 2016.

The report shows that the Covid-19 crisis has significantly impacted development and construction. The forecast for 2022 predicted a continued gradual return to normal economic activity (although this is a fluid situation with an uncertain outlook). By the end of 2029 it is forecast that C&D waste will grow to a total of 10.1m tonnes per annum. The corresponding forecast data for soil and stone waste is 8.7m tonnes by end of 2029. The report indicates that there is sufficient capacity at licenced facilities. There are 15 soil recovery facilities in the EPA licensing system for the EMR. The annual active licenced capacity for the EMR, at end2018, is 2,411,400 tonnes, whilst the annual authorised capacity is 3,951,400 tonnes. The authorised capacity includes the capacity of active and site which have not yet commenced waste acceptance.

6.2 Description of the Proposed Development

The Proposed Development will form part of the existing GIL Campus, which is located in Grange Castle Business Park South, Dublin 22, between the N7 and N4 motorways (Irish Grid Reference: O 03546 30294). Refer to Section 1.2 for further information.

6.3 Receiving Environment

In 2021, the latest year for which there are published statistics available, 9 million tonnes of Construction and Demolition (C&D) waste was generated, an increase of 0.8 million tonnes from 2020 (EPA, 2023).

The EPA reports that Ireland achieved 85% material recovery of construction and demolition waste (EPA, 2023). Under the Waste Framework Directive (2008/98/EC) Member States must achieve 70% of material recovery of non-hazardous, non-soil-and-stone C&D waste, by 2020.

A breakdown of the composition of C&D waste in Ireland in 2021 is set out in Table 6.1. These figures should be considered as a guide only as C&D waste can vary significantly from one project to another, depending on the nature of the development and the waste management practices employed on-site.

Approximately 7.7 million tonnes of this C&D waste was comprised of soil, stones and dredging spoil, making up approximately 85% of the material waste stream. Table 6.1 shows the quantity (tonnes) of waste materials collected by authorised waste collectors.

Table 6.1: Composition of C&D waste material collected in Ireland. Source: EPA, 2023.

Waste Materials from C&D Sources	Quantity (tonnes)	Proportion of Material Stream (%)
Soil and stone	7,696,287	85.1
Concrete, bricks, tiles, and gypsum	608,235	6.7
Mixed C&D waste	362,380	4.0
Metals	257,558	2.8
Bituminous mixtures	87,343	1.0
Segregated wood, glass, and plastic	31,946	0.4
Total	**9,043,749**	

Data issued by the EPA demonstrates that final treatment operations (backfilling, recycling, energy recovery, disposal) of C&D waste materials varied greatly between material streams. By far the largest quantity of C&D waste was used for backfilling (a recovery operation), which mainly reflects the dominance of soil and stones in the overall composition mix.

The EPA reports that a total of 389,908 tonnes of hazardous waste was generated in Ireland in 2022, representing a decrease of over 77,000 tonnes since 2021 (EPA, 2024). Hazardous waste types include wastes from dredging spoil, contaminated soils, waste treatment, solvents and hazardous elements of waste electrical and electronic equipment. 57% of hazardous waste was exported for treatment in 2022 (compared with 59% in 2020).

6.4 Role and Responsibilities

Copies of the CDRWMP will be made available to all relevant personnel on site. All site personnel and subcontractors will be instructed about the objectives of the CDRWMP and informed of their responsibilities.

The PCSC nominated by the Contractors will be responsible for implementation of this CDRWMP will be identified prior to construction commencement. The PCSC will be responsible for informing Contractor staff and subcontractors of content of the CDRWMP and for maintaining and keeping the Records. In the event of the PCSC leaving the project team the Contractors will nominate a suitable replacement.

The PCSC will be responsible for conducting ongoing resource audits at the site during construction. The RM shall ensure that where training is required regarding the handling and management of wastes on site that this is provided to staff as required.

6.5 Key Materials, Quantities and Costs

6.5.1 Introduction

Construction and Demolition (C&D) waste is defined as waste which arises from construction, renovation and demolition activities.

Also included within the definition are surplus and damaged products and materials arising in the course of construction work or used temporarily during the course of on-site activities.

Typical construction and demolition waste types which are likely to arise during the proposed demolition and construction works are set out Appendix B, including EPA List of Wastes (LOW) codes.

The Contractors will ensure that waste generation on site is minimised, and that waste removed from site for recovery or disposal is reduced where feasible.

6.5.2 Site Clearance and Demolition

The Proposed Development will not require any site clearance or demolition; therefore no demolition waste will be generated.

6.5.3 Excavation Waste Arisings

The Proposed Development requires the construction of foundations and trenches, there works will require the excavation of materials.

Excavated material generated as part of the construction works for the Proposed Development will generally consist of:

- Topsoil and subsoil;
- Dublin Boulder Clay; and
- Rock

A summary of the excavated materials requiring offsite treatment or disposal associated with the construction of the Proposed Development is provided in Table 6.2. Table 6.2 contains the quantities of excavated material which will be require offsite treatment or disposal. In total, it is estimated that approximately 532,860 tonnes of material will be excavated to facilitate construction of the Proposed Development which will be exported from the Proposed Development site for offsite treatment and/or management. All earthwork quantities are for permanent works with an assumed allowance for temporary works. The quantities presented in Table 6.2 are rounded to the nearest 10.

Table 6.2: Excavation materials and quantities requiring offsite treatment or disposal.

Material	Total Quantity (tonnes)
Topsoil and Subsoil	214,700
Dublin boulder clay	184,300
Rock	133,860

Possibilities for the re-use of clean, non-hazardous or inert excavation material in construction works, as fill or in landscaping works on site has been considered following appropriate testing to ensure the material is suitable for its proposed end use.

Where excavated material are proposed to be used on-site, quantities of reused excavated material has been excluded from Table 6.2 as it is exempt from waste regulations.Where clean, non-hazardous or inert excavation material may not be re-used within the proposed works the Contractors will endeavour to send the material to authorised facilities for beneficial re-use, recovery or recycling so far as is reasonably practicable.

Any hazardous excavation material that arises during the excavation works will be removed from site by specialist Contractors and holders of the appropriate waste collection permit and delivered to an appropriately licenced hazardous waste treatment, recovery, or disposal facility.

Further details on the management of excavation waste are provided in Section 6.6.1.

6.5.4 Construction Waste Arisings

A description of typical wastes from construction projects including their respective LoW Codes are outlined in Table 6.3. Industry benchmarks from the Building Research Establishment (BRE) were used for forecasting construction waste types and quantities (BRE, 2022).

Using the BRE benchmark for waste generation, a tonnage of waste per square metre has been assumed in the calculation of the total proposed waste arising from the Construction Phase of the Proposed Development. It was found that the total estimated waste from the new build element of the Proposed Development is approximately 72 tonnes.

Table 6.3: Breakdown of construction waste arising. Source: Building Research Establishment, 2022.

Waste Type	LoW Code	Quantity (tonnes)
Bricks	17 01*	43
Tiles and Ceramics	17 01*	1
Concrete	17 01*	426
Inert		339
Insulation materials	17 06*	3
Mixed metals	17 04*	54
Packaging Materials	15 01*	25
Plasterboard / Gypsum	17 08*	21
Binders	10 09*	3
Plastic (excluding packaging waste)	17 02*	15
Timber	17 02*	142
Canteen/Office/Adhoc waste	20 01 08	-
Liquids		-
Oils (fuel oil and diesel)	13 07 01*	-
Bituminous mixtures	17 03*	1
Other construction and demolition wastes containing hazardous substances	17 09*	42
Other waste	17 09*	3
Mixed construction and/or demolition waste	17 09*	2
Total		72

*May include hazardous wastes

The Contractors will ensure that waste generation on site is minimised, and that waste removed from site for recovery or disposal is reduced where feasible.

6.5.5 Costs of Resource Management

As required by the Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects (EPA, 2021), this section addresses costs of resource management.

While landfill disposal has been the most commonly used method for waste management in Ireland in the past, waste to energy incinerators are also now in operation at Poolbeg, Dublin 4 and in Carranstown, County Meath.

Typically, the current cost of disposal of waste to landfill in Ireland exceeds €170 per tonne. In accordance with the Waste Management (Landfill Levy) Regulations 2023, the 'landfill levy' is €85 per tonne for waste disposed to landfill. Disposal of hazardous waste can cost from €350 upwards.

In addition to landfill operator fees and landfill levies there are additional costs included in the 'true cost of resource management' including:

- The purchase cost of waste materials (including imported soil)
- Handling costs
- Storage and transportation costs; and
- Revenue generated from sales.

Therefore, in order to reduce costs associated with resource management, surplus materials should be reused and recycled where possible and materials should be carefully stored and handled to minimise risk of damage.

6.6 Site Management

The appointed Contractors and PSCS will ultimately be responsible for the management of resources on a project and agreeing and revising as necessary any commitments or targets included in the CDRWMP developed at design/planning with the Client for acceptance and adoption in the CDRWMP for construction.

The appointed Contractors and PSCS will allocate responsibility for resource management to one or more individuals of sufficient seniority to put the relevant procedures into practice.

The nominated RM responsible for implementation of this CDRWMP will be identified prior to construction commencement.

Copies of the CDRWMP will be made available to all relevant personnel on site.

All site personnel and sub-contractors will be provided with a copy of the CDRWMP and will be informed of the objectives of the CDRWMP and their responsibilities in relation to compliance with the CDRWMP.

The RM shall ensure that where training is required regarding the handling and management of wastes on site that this is provided to staff as required and that the CDRWMP is included in site induction training.

The RM will be responsible for informing Contractor staff and sub-contractors of content of the CDRWMP and for maintaining and keeping the Records set out below.

In the event of the RM leaving the project team the Contractors will nominate a suitable replacement.

6.6.1 Excavation Waste Management

Possibilities for re-use of clean, non-hazardous excavation material in construction works, as fill or in landscaping works on site will be considered following appropriate testing to ensure the material is suitable for its proposed end use.

Excavated material, which is not suitable for reuse on site, or surplus to requirements, will be stockpiled, tested and classified. Where feasible classification for reuse on other construction site(s), for example as a "by product" under Regulation 27, will be considered.

Where the material is not suitable for reuse it will be categorised in accordance with the EPA List of Waste and Determining if Waste is Hazardous or Non-hazardous (EPA, 2018).

Waste may only be transferred from site by a waste collection permit holder and delivered to an authorised waste facility (i.e. a facility which holds a Certificate of Registration, Waste Facility Permit or Waste Licence) for the specific waste types it receives.

Where removal from site of construction by-products for further use is proposed, this will take place in compliance with Regulation 27 of the European Communities (Waste Directive) Regulations, 2011, where appropriate.

The Contractors will be responsible for ensuring compliance with this regulation where appropriate. Excavated material that is deemed hazardous will be treated at an authorised facility either in Ireland or abroad. Export of hazardous waste from the Proposed Development outside of the State is subject to a

Europe-wide control system founded on EU Regulation 1013/2006 on the Shipments of Waste (known as the Transfrontier Shipment Regulations), as amended. This legislation is supplemented by the Waste Management (Shipments of Waste) Regulations 2007, as amended, which makes Dublin City Council responsible for the enforcement of this regulatory system throughout Ireland. In 2022 in Ireland, 389,908 tonnes of hazardous waste was generated and of this 57% was exported for treatment. The above procedures will be applied to any hazardous waste generated during the Construction Phase. Export of hazardous waste from site outside the state will comply with the procedures set out in this legislation.

As noted in Section 6.1, following appointment, the PSCS and appointed Contractors will be responsible for detailing and updating this CDRWMP. The detailed CDRWMP will include a description of how excavation material from the Proposed Development will be managed. A full list of all facilities to which uncontaminated excavation material will be sent will be provided in the detailed CDRWMP.

6.6.1.1 Regulation 27

Surplus excavation material may be declared a by-product under (under Regulation 27 of the EC Waste Directive Regulations, 2011-2020) for reuse in one or more known construction projects.

By-product notifications to the EPA provide an opportunity for reuse of surplus clean soil and stone material arising from construction activity. This can apply to locations other than authorised recovery facilities e.g. quarries operating under planning permission, parks or other developments requiring earthworks and importation of clean soil and stone. This option can bring significant economic benefits while facilitating beneficial re-use of by-products. This plays a role in Ireland's implementation of Circular Economy principles.

A Regulation 27 notification to the EPA under Regulation 27 (S.I. No. 323/2020) European Union (Waste Directive) Regulations 2020 is required to achieve by-product status for soil and stones. It is noted that the use of Regulation 27 is limited to clean soil and stone, and it must be demonstrated to the EPA that the following four conditions are met:

- Further use of the soil and stone is certain.
- The soil and stone can be used directly without any further processing other than normal industrial practice.
- The soil and stone is produced as an integral part of a production process; and
- Further use is lawful in that the soil and stone fulfil all relevant requirements for the specific use and will not lead to overall adverse environmental or human health impacts.

Where it is proposed to use a Regulation 27 EPA notification in relation to excavation material from the Proposed Development, the Contractors will be responsible ensuring the necessary authorisations are in place relating to handover of control and transport of the material. Where it is proposed to use soil from off-site with a Regulation 27 notification, the Contractors are responsible for carrying out any necessary due diligence regarding the material and ensuring that all EPA guidelines relating to that Regulation 27 notification have been complied with before the soil is imported into the site.

Where feasible, appropriate, and available Regulation 27 materials arising from other sites will be used in the development of this site. The Contractors are responsible for ensuring all applicable regulatory requirements under waste, planning and other laws are complied with prior to movement of excavation material.

It should be noted that at the time of writing of this CDRWMP, the EPA had recently completed consultations on Regulation 27 notifications. These are currently available for review on the EPA website.

6.6.1.2 Soil Recovery at Sites Holding Waste Facility Permits or EPA Licences

Where removal of wastes from the Proposed Development is unavoidable it will be delivered by the Contractors only to facilities which are authorised under the Waste Management Act, 1996 as amended and which hold the appropriate certificate of registration, waste facility permit or EPA licence.

The Waste Management (Facility Permit and Registration) Regulations 2007, as amended sets out the classes of waste activity requiring waste facility permits and certificate of registration. The most relevant class of activity in relation to soil recovery facilities is:

Class 5 (Third Schedule, Part 1 of the Regulations) for the *"Recovery of excavation or dredge spoil, comprising natural materials of clay, silt, sand, gravel or stone and which comes within the meaning of inert waste, through deposition for the purposes of the improvement or development of land, where the total quantity of waste recovered at the facility is less than 100,000 tonnes."*

For waste facility permits and certificate of registration the capacity is typically a lifetime capacity, and when reached, the facility typically closes. Waste facility permits and certificates of registration are granted to private operators by local authorities.

EPA licensed waste activities authorised to accept soil and stones for recovery and disposal include soil recovery sites, landfills, transfer stations and materials recovery facilities. These typically handle a larger tonnage of wastes than facilities holding certificates of registration of waste facility permits.

EPA licences typically include an annual maximum intake capacity and a maximum lifetime capacity for the licenced facility.

Where the Contractors propose to deliver excavated materials from the Proposed Development to facilities holding a certificate of registration, waste facility permit or EPA waste licence the Contractors are responsible for ensuring the authorisation is valid and allows acceptance of the relevant List of Waste Code.

A copy of the authorisation will be included in the CDRWMP, and evidence will be provided that the proposed facility will have capacity to accept the required quantity of waste from the Proposed Development.

6.6.2 Construction Waste Management

The PSCS and appointed Contractors shall take the following measures to prevent waste, facilitate recycling and minimise waste disposal during the Construction Phase:

- Source Segregation: Where possible, metal, timber, glass, and other recyclable material will be segregated and removed off site to a permitted/licensed facility for recycling. Waste stream colour coding and photographs will be used to facilitate segregation.
- Where feasible, purchase and specify components and materials within the works which incorporate recycled and reused content within the component. Ensure that all necessary regulatory processes including those in relation to Regulation 27 and Regulation 28 of the European Union (Waste Directive) Regulations 2020 are complied with.
- Office and food waste arising on site will be source separated at least into dry mixed recyclables, residual waste, organic waste, and glass.
- Waste bins, containers, skip containers and storage areas will be clearly labelled with waste types which they should contain, including photographs as appropriate.
- The site will be maintained to prevent litter and regular litter picking will take place throughout the site.
- Excessive temporary works will be avoided, existing facilities will be reused as appropriate.
- Material Management: 'Just in time' delivery will be used in so far as is reasonably practicable to minimise material wastage.
- Waste Auditing: The Contractors will record the quantity in tonnes and types of waste and materials leaving the site during construction. The name, address and authorisation details of all facilities and locations to which waste and materials are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility. Records will show material which is recovered and disposed of.
- Paints, sealants, and hazardous chemicals etc. will be stored in secure, bunded locations.

- All hazardous waste will be separately stored in appropriate lockable containers prior to removal from site by an appropriate waste collection holder.
- Waste generated on site will be removed as soon as practicable following generation for delivery to an authorised waste facility; and
- The Contractors will ensure that any off-site interim storage facilities for excavated material have the appropriate waste licences or waste facility permits in place.

The PSCS and appointed Contractors will be required to produce a detailed CDRWMP prior to commencement of the proposed works. This will include the names, addresses and authorisation details of the facilities to which waste from the Proposed Development will be delivered. Appendix C provides further details of the information which shall be contained in the detailed CDRWMP.

6.6.3 Waste Collection

Waste from construction will be transported by authorised waste collectors in accordance with the Waste Management (Collection Permit) Regulations, 2007 as amended.

A list of currently authorised waste collectors is available on the following website: https://www.nwcpo.ie/permitsearch.aspx.

An up-to-date list of all waste collectors used to transport waste from site during the Proposed Development will be maintained on site and updated by the PSCS and appointed Contractors. Copies of valid appropriate waste collection permits will be held on site by the PSCS and appointed Contractors.

6.6.4 Waste Recovery and Disposal Offsite

Waste from construction will be delivered to authorised waste facilities in accordance with the Waste Management Acts 1996 to 2011 as amended.

The following authorisations are applicable:

- Certificates of Registration (CoR) from the Local Authority (issued to private sector)
- Certificates of Registration (CoR from the EPA (issued to Local Authority)
- Waste Facility Permit (WFP) from the Local Authority; and
- Waste or Industrial Emissions Licence from the EPA.

A list of currently authorised (CoR or WFP) waste sites in each Local Authority is available on the following website: http://facilityregister.nwcpo.ie/. Lists of sites currently licensed by the EPA (Industrial Emissions or Waste Licence) are available on the following websites:

- http://www.epa.ie/terminalfour/waste/ (for Waste Licensed sites); and
- http://www.epa.ie/terminalfour/ippc/ (for Industrial Emission Licensed waste facilities).

An up-to-date list of all waste facilities to which waste from the site will be delivered will be maintained on site and updated by the PSCS and appointed Contractors. Copies of valid facility Certificates of Registration, Waste Facility Permits, and Waste Licences will be held on site by the PSCS and appointed Contractors.

6.6.5 Record Keeping and Auditing

A pre-development audit will be completed on the Proposed Development prior to any works commencing. This audit will identify and quantify the key materials associated with the Proposed Development, outline potential reuse and recycling applications for these materials, identify reuse, recycling and landfill diversion targets for these materials and identify potential local recovery and recycling facilities to which these materials may be delivered.

The PSCS and appointed Contractors will record the quantity in tonnes and types of waste and materials leaving the development site during excavation and construction of the Proposed Development. Quantities will be regularly reviewed and compared with targets set during the pre-development audit.

The name, address and authorisation details of all facilities and locations to which waste and materials from the Proposed Development are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility and the date of the waste movement. Records will show material which is recovered and disposed of.

The waste manager will arrange for a waste audit of the project once excavation has fully commenced on site and of any facilities to which excavation waste from the project is delivered as required. The waste manager will also arrange for a waste audit of the project once construction has fully commenced on site and of any facilities to which construction waste from the project is delivered as required.

A sample resource and waste inventory as included in the EPA Guidance is included in Appendix D.

6.7 Site Infrastructure

The following infrastructure requirements must be adopted by the PSCS and appointed Contractors at construction stage:

- While earthworks are underway, sufficient space will be made available for wastes, by-products and material storage, as necessary. It will be the responsibility of the PSCS and appointed Contractors to ensure all necessary relevant waste authorisations are in place for any such storage in accordance with the Waste Management Act, 1996 as amended.
- In relation to resource storage, the Waste Management Act 1996, as amended, allows for the temporary storage of resources defined as ‘waste’ at the site where it was produced. The Act defines the phrase ‘the temporary storage of waste’ limiting it to having a six-month duration. As such, it is acceptable to store waste on the site of generation for up to six months without the need for any further waste permit/licence.
- Waste storage areas may include stockpiles (for soil and stone, aggregates, etc.), skips (for metals, wood, glass, etc.) or secure containers for hazardous materials. All waste storage areas should be assessed as fit for purpose and should be suitably contained, bunded or defined as required.
- The waste storage areas should be set out to reduce any potential for impact on sensitive human (e.g. residential) or natural (e.g. water courses) receptors and a suitable buffer should be applied to mitigate any impact.
- Labelling and signage shall be used on site to inform personnel of key waste storage area requirements and restrictions with clear signage provided; and
- Signage is also required to provide information to assist good resource practice across the site.

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Appendix A

Responsibilities as set out in the EPA Guidelines

The PSCS and appointed Contractors procured by the Client to undertaker the construction operations is responsible for the following:

- Preparing, implementing and reviewing the CDRWMP through construction (including the management of all suppliers and sub-contractors) as per the requirements of these guidelines;
- Identifying a designated and suitably qualified Resource Manager (RM) who will be responsible for implementing the CDRWMP;
- Identifying all hauliers to be engaged to transport each of the resources / wastes off-site. Note that any resource that is legally a 'waste' must only be transported by a haulier with a valid Waste Collection Permit (refer to Appendix F of the Guidelines for a resource to find a suitably permitted local haulier);
- Identifying all destinations for resources taken off site. As above, any resource that is legally a 'waste' must only be transported to a facility a valid Cert of Registration, Waste Permit or Waste/Industrial Licence (refer to Appendix F of the Guidelines for a resource to find a suitably authorised facility);
- Maintaining full records of all resources (both wastes and other resources) should be maintained for the duration of the project; and
- Preparing a CDRWMP Implementation Review Report at project handover.

Appendix B

EPA – List of Waste Codes for Construction and Demolition Wastes

03 02	wastes from wood preservation
03 02 01*	non-halogenated organic wood preservatives
03 02 02*	organochlorinated wood preservatives
03 02 03*	organometallic wood preservatives
03 02 04*	inorganic wood preservatives
03 02 05*	other wood preservatives containing hazardous substances
03 02 99	wood preservatives not otherwise specified

13 07	wastes of liquid fuels
13 07 01*	fuel oil and diesel
13 07 02*	petrol
13 07 03*	other fuels (including mixtures)

16 02	wastes from electrical and electronic equipment
16 02 09*	transformers and capacitors containing PCBs
16 02 10*	discarded equipment containing or contaminated by PCBs other than those mentioned in 16 02 09
16 02 11*	discarded equipment containing chlorofluorocarbons, HCFC, HFC
16 02 12*	discarded equipment containing free asbestos
16 02 13*	discarded equipment containing hazardous components[1] other than those mentioned in 16 02 09 to 16 02 12
16 02 14	discarded equipment other than those mentioned in 16 02 09 to 16 02 13
16 02 15*	hazardous components removed from discarded equipment
16 02 16	components removed from discarded equipment other than those mentioned in 16 02 15

16 06	batteries and accumulators
16 06 01*	lead batteries
16 06 02*	Ni-Cd batteries
16 06 03*	mercury-containing batteries
16 06 04	alkaline batteries (except 16 06 03)
16 06 05	other batteries and accumulators
16 06 06*	separately collected electrolyte from batteries and accumulators

17	CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)
17 01	**concrete, bricks, tiles and ceramics**
17 01 01	concrete
17 01 02	bricks
17 01 03	tiles and ceramics
17 01 06*	mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing hazardous substances
17 01 07	mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06
17 02	**wood, glass and plastic**
17 02 01	wood
17 02 02	glass
17 02 03	plastic
17 02 04*	glass, plastic and wood containing or contaminated with hazardous substances
17 03	**bituminous mixtures, coal tar and tarred products**
17 03 01*	bituminous mixtures containing coal tar
17 03 02	bituminous mixtures other than those mentioned in 17 03 01
17 03 03*	coal tar and tarred products
17 04	**metals (including their alloys)**
17 04 01	copper, bronze, brass
17 04 02	aluminium
17 04 03	lead
17 04 04	zinc
17 04 05	iron and steel
17 04 06	tin
17 04 07	mixed metals
17 04 09*	metal waste contaminated with hazardous substances
17 04 10*	cables containing oil, coal tar and other hazardous substances
17 04 11	cables other than those mentioned in 17 04 10

17 05	**soil (including excavated soil from contaminated sites), stones and dredging spoil**
17 05 03*	soil and stones containing hazardous substances
17 05 04	soil and stones other than those mentioned in 17 05 03
17 05 05*	dredging spoil containing hazardous substances
17 05 06	dredging spoil other than those mentioned in 17 05 05
17 05 07*	track ballast containing hazardous substances
17 05 08	track ballast other than those mentioned in 17 05 07
17 06	**insulation materials and asbestos-containing construction materials**
17 06 01*	insulation materials containing asbestos
17 06 03*	other insulation materials consisting of or containing hazardous substances
17 06 04	insulation materials other than those mentioned in 17 06 01 and 17 06 03
17 06 05*	construction materials containing asbestos
17 08	**gypsum-based construction material**
17 08 01*	gypsum-based construction materials contaminated with hazardous substances
17 08 02	gypsum-based construction materials other than those mentioned in 17 08 01
17 09	**other construction and demolition wastes**
17 09 01*	construction and demolition wastes containing mercury
17 09 02*	construction and demolition wastes containing PCB (for example PCB-containing sealants, PCB-containing resin-based floorings, PCB-containing sealed glazing units, PCB-containing capacitors)
17 09 03*	other construction and demolition wastes (including mixed wastes) containing hazardous substances
17 09 04	mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03

Appendix C

Typical Content – Detailed Construction and Demolition Resource and Waste Management Plan

The detailed CDRWMP and the requirements to be adopted by the PSCS and the appointed Contractors will include the following:

- A named Resource Manager (RM) of the CDRWMP with responsibility for implementation at Construction Phase must be identified by the Contractors;
- The CDRWMP must be included in the site induction training;
- Tool box talks and all other training on the CDRWMP must be provided in line with EPA Guidance Section 5.4;
- There must be appropriate procedures for identifying suitably permitted waste collection operators and waste destination sites implemented – a resource for this task is included in Appendix F of the EPA Guidance;
- Resource efficient supply chains should be implemented as appropriate in line with EPA Guidance Section 5.5;
- There must be appropriate procedures for record keeping and reporting of all off site export of resources implemented;
- There must be procedures for record keeping and reporting of all on site resource uses – this may include measures such as the use of an on-site a mobile crusher for producing aggregate from suitable residual concrete (subject to the appropriate waste consent) – in line with EPA Guidance Section 5.7;
- There must be appropriate procedures for audits and inspections of resource management practices in line with EPA Guidance Section 5.6;
- There must be appropriate procedures for engagement with the Local authority and other stakeholders in line with EPA Guidance Section 5.8;
- There must be a final report prepared summarising the outcomes of resource management processes adopted and the final inventory and cost for the project in line with EPA Guidance Section 5.8;
- Procedures for audits and inspections of resource management practices;
- There should be appropriate site signage on resource management put in place;
- There should be appropriate resource storage implemented on site (i.e. dedicated skips, hazardous materials storage, stockpile management, etc.). Note there are specific requirements on stockpiling more than 50kg of certain persistent organic pollutants (from a construction perspective these may include some chlorinated hydrocarbon contaminants in ground contamination, EPS/XPS insulation building material containing brominated flame retardant (HBCDD) or polychlorinated biphenyls from removal of electrical equipment) under Article 5 of EU Regulation (EU) 2019/1021; and
- There must be appropriate procedures for handling and export of resources in line with EPA Guidance Section 5.3.

Appendix D

Resource and Waste Inventory Template

LoW Code	Description
17 01 01	Concrete
17 01 02	Bricks
17 01 03	Tiles and Ceramics
17 02 01	Wood
17 02 02	Glass
17 02 03	Plastics
17 03 02	Bituminous material
17 04 01	Copper, Bronze, Brass
17 04 02	Aluminium
17 04 03	Lead
17 04 04	Zinc
17 04 05	Iron and Steel
17 04 06	Tin
17 04 07	Mixed Metals
17 04 11	Cables
17 05 04	Soil and Stone
17 06 04	Insulation Material
17 08 02	Gypsum
17 09 04	Mixed C&D Waste
17 01 06*	Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing hazardous substances

LoW Code	Description
17 01 01	Concrete
17 01 02	Bricks
17 01 03	Tiles and Ceramics
17 02 01	Wood
17 02 04*	Glass, plastic and wood containing or contaminated with hazardous substances
17 03 01*	Bituminous mixtures containing coal tar
17 04 09*	Metal waste contaminated with hazardous substances
17 05 03*	Soil and stones containing hazardous substances

LoW Code	Description
17 06 05*	Construction materials containing asbestos
	Other resources (non-waste materials) (specify as needed)
	Other wastes (specify as needed)

Appendix 6.1: Mobility Management Plan

1. Introduction

Arup has been appointed by Google Ireland Limited (GIL) to undertake a Mobility Management Plan (MMP) for the proposed Data Centre Development (DC3) in Grange Castle Business Park South, Co. South Dublin. The aim of this Plan is to encourage the use of more sustainable transport modes among employees and visitors of the campus through continued promotion of public transport and active travel, providing alternatives to the use of private cars.

Creating awareness of alternative transport options and providing incentives for mode shift, the Plan aims to optimise the use of the existing transport infrastructure, reducing car-dependency and single-occupancy car trips, minimising the impact of staff movements on the surrounding road network.

2. Transport Planning Context

This section outlines the transportation policy and guidelines context for the development of the MMP from a national, regional and local perspective. The overall theme of the policy and guideline documentation is for a path towards sustainable transportation with the aim of reducing the potential for carbon emissions of transport.

2.1 National Investment Framework for Transport in Ireland (NIFTI)

The National Investment Framework for Transport in Ireland (NIFTI) is part of the Irish Government's overarching Project Ireland 2040 vision for the sustainable development in the coming decades. NIFTI provides a strategic framework to guide transport investment in the years ahead to enable the National Planning Framework, support the Climate Action Plan, and promote positive social, environmental and economic outcomes throughout Ireland.

To support sustainable population growth and the delivery of the national climate change targets, NIFTI prioritises decarbonisation of the transport sector, the protection and renewal of existing infrastructure to secure the value of past investment, urban mobility, and regional and rural connectivity. In delivering future investment, NIFTI also establishes intervention and modal hierarchies, which will seek to ensure the most appropriate solution is deployed for a given transport issue or opportunity. Sustainable modes, starting with active travel (walking, wheeling and cycling) and then public transport, will be encouraged over less sustainable modes such as the private car. Encouraging a shift from private transport to these modes would mean fewer vehicles on the road per traveller and therefore environmental benefits and reduced congestion.

2.2 National Sustainable Mobility Policy

In parallel with NIFTI, the Department of Transport has also published in 2022 a new Sustainable Mobility Policy. This sets out the policy framework for walking, cycling and public transport to support Ireland's overall requirement to achieve a 51% reduction in greenhouse gas emissions by 2030. The new policy primarily focuses on measures to promote and facilitate active travel and public transport for all and, in doing so, encourage less private car usage nationally to support climate commitment.

It sets out a comprehensive set of actions to increase active travel infrastructure provision and improve public transport capacity and services across the country. These will be supported by behavioural change and demand management measures to make sustainable modes the preferred choice for as many people as possible. The Climate Action Plan sets out additional measures to promote other complementary transport mitigation measures such as the switch over to electric car usage and greater use of renewable fuels for transport.

2.3 Climate Action Plan 2024

The Climate Action Plan 2024 (CAP24) sets out the ongoing urgent response to the climate crisis. It is integral to the National Development Plan 2021 to 2030 by putting climate solutions centrally to the social and economic development of Ireland. CAP24 has a greater focus on system change.

The plan has identified six vital high impact sectors. One of these sectors is 'Transforming the way we travel'. A target of 50% reduction in emissions is set for 2030. The strategy to reach this goal is by reducing transport emissions by improving towns, cities and rural planning and by adopting the Avoid-Shift-Improve approach. This approach involves reducing or avoiding the need for travel, shifting to public transport, walking and cycling, and improving the energy efficiency of vehicles.

2.4 South Dublin County Development Plan 2022 - 2028

The plan recognizes the critical role of movement in daily life, encompassing commuting, school travel, social outings, and the supply of goods and services. However, existing urban layouts in South Dublin have led to car dominance, resulting in long distances between essential services and a heavy reliance on private vehicles. To address this, the plan sets out a shift toward active travel modes (walking and cycling) and public transport. Measures include designing new development areas around these modes, enhancing pedestrian facilities, and creating safer cycle lanes.

The plan acknowledges the adverse environmental and social impacts of car-based transport, including traffic accidents, congestion, noise, and emissions. By promoting sustainable movement, the plan aims to improve air quality, public health, and overall quality of life. It also aligns with climate action goals by reducing carbon emissions associated with private car use.

3. Receiving Environment

3.1 Site Location & Proposed Development

The Proposed Development to be located in the south-western region of County Dublin and is under the jurisdiction of South Dublin County Council. The Proposed Development site is situated within the Grange Castle Business Park, as shown below in Figure 3.1. The Proposed Development is an extension of the existing GIL Campus and will provide a new data centre building and associated infrastructure.

Grange Castle Business Park is a large partially developed, industrial area. According to the South Dublin County Council Development Plan, the majority of the Proposed Development site is zoned for Enterprise and Employment (EE) with the objective "To provide for enterprise and employment related uses" with a small quadrant within the southeastern boundary of the GIL Campus zoned for "Rural (RU) to protect and improve rural amenity and to provide for the development of agriculture" (SDCC, 2022). The Proposed Development is an extension of the existing data centre campus and will provide a new data centre facility, DC3.

Figure 3.1: Locations of DC1, DC2, and DC3. Source: Google Earth

The surrounding land uses to the north is industrial in nature and the Grange Castle Golf club segregates the business park from the residential areas towards the east. Towards the south and west lies the Casement Aerodrome.

There are currently two data centres on the site. The existing data centres, DC1 and DC2, were granted planning in 2011, 2014 and 2015 from SDCC (planning reference numbers: SD11A/0121, SD14A/0023 & SD14A/0284). The Proposed Development, DC3, is proposed to be located to the south/east of the existing data centres.

3.2 Local Road Network

The Proposed Development site is located in Grange Castle Business Park South which is situated east of Clondalkin. The Proposed Development site is located within a comprehensive network of local and regional roads which are identified in Figure 3.2 and described below. Vehicles, cyclists and pedestrians all access the existing GIL Campus site via the R134 New Nangor Road, travelling along Baldonnel Road and Grange Castle Business Park to the entrance.

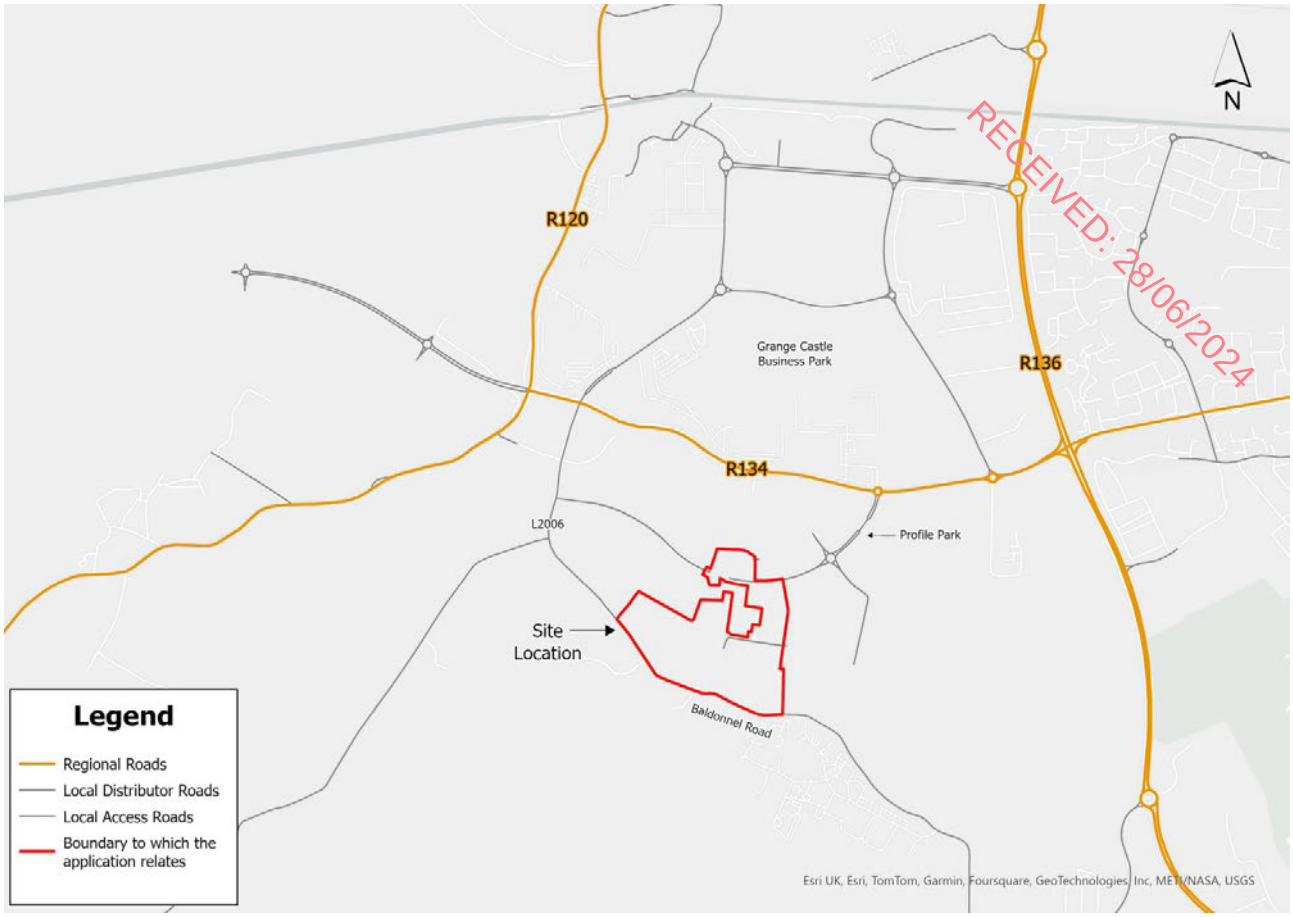

Figure 3.2: Local road network

3.2.1.1 R134 Nangor Road

The R134 Nangor Road is a two-way single carriageway road connecting Grange Castle Business Park in the west to the R110 Naas Road in the east. This regional road acts as a bypass for Clondalkin Town Centre. There are footways on the northern side of the road, with a two-way cycle lane for majority of road sections.

3.2.1.2 R136 Grange Castle Road

The R136 Grange Castle Road is a two-way dual carriageway road running north-south between Lucan and Tallaght. There are footways on both sides of the road along its duration, with cycle lanes segregated from the roadway adjacent to it. This road intersects with the R134 Nangor Road approximately 1.5 km from the location of the Proposed Development.

3.2.1.3 L2006 Baldonnel Road

Baldonnel Road is a two-way single carriageway road connecting the R134 Nangor Road to The N7. There is a shared active travel facility on both sides of the road accommodating pedestrians and cyclists for the first 500m from the north. There is no walking or cycle infrastructure along the rest of this road.

3.2.1.4 Grange Castle Business Park

Grange Castle Business Park road is a two-way single carriageway road that links to L2006 Baldonnel Road and also provides access to the GIL Campus security access point. There is a shared active travel facility on both sides of the road accommodating pedestrians and cyclists throughout the business park.

3.2.1.5 Profile Park Road

Profile Park is the road is located to the east of the Proposed Development. The road connects with the R134 Nangor Road at its northern end. There are footways and segregated cycle lanes on both sides of the road.

3.2.1.6 Existing Internal Road Network

There is already a well-established road network within the GIL Campus to serve DC1 and DC2 as shown in Figure 3.3. The network provides connections to internal car parks associated with the existing data centres and perimeter roads around the buildings provides access for delivery and servicing.

There is also an established pedestrian network within the GIL Campus connecting the security check point to the existing buildings on the GIL Campus. Connections between and around buildings are also available following the road network.

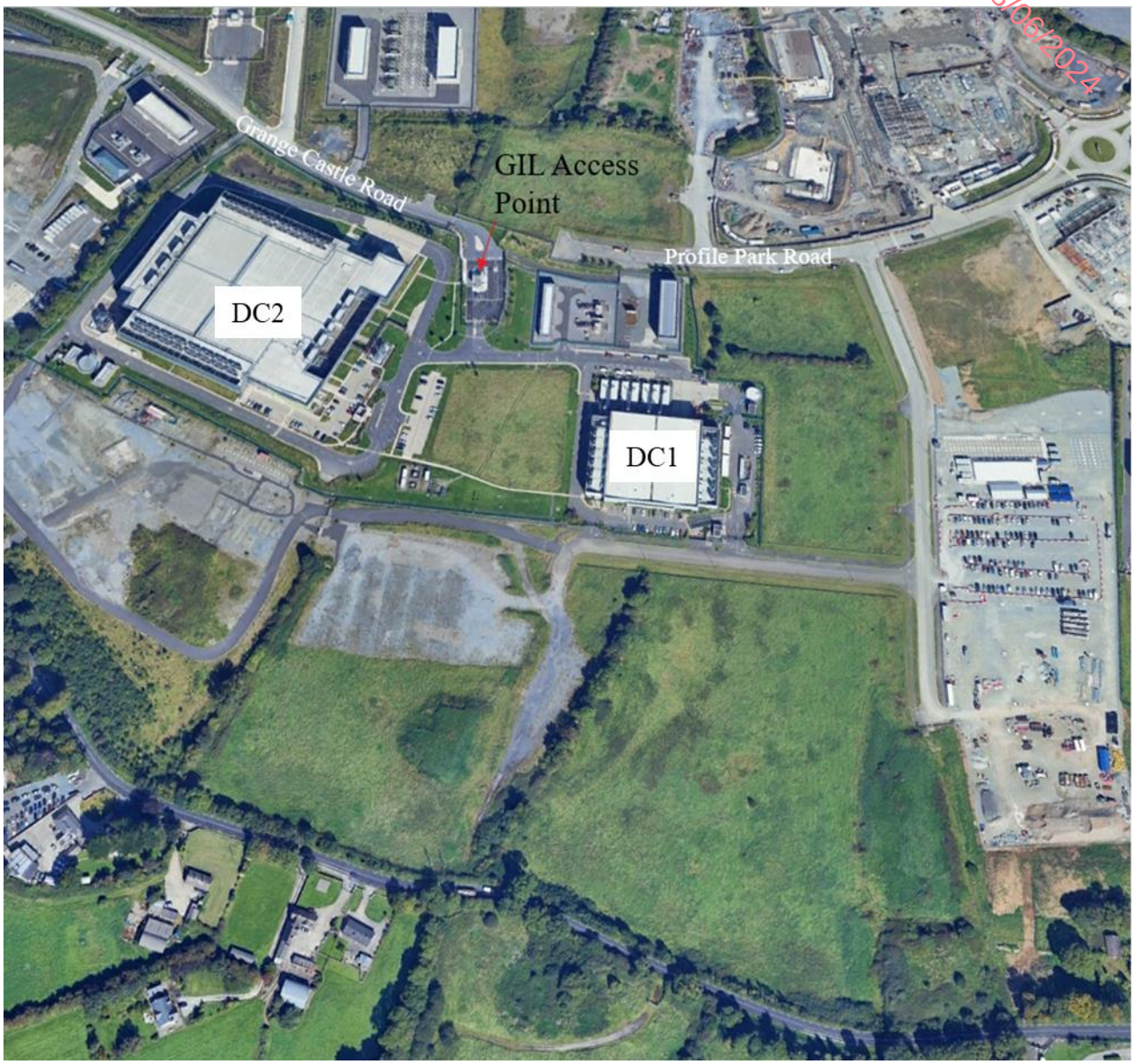

Figure 3.3: Existing GIL Campus internal road network

3.3 Walking & Cycling Network

The pedestrian and cycling infrastructure in the surrounding environment of the Proposed Development are extensive and is available along all of the roads within the vicinity, consisting generally of segregated 2.0m wide footpaths and cycle ways on both sides of the road. These facilities are available along the Grange Castle Business Park, Profile Park Road, Baldonnel Road, R134 New Nangor Road and R136 Grange Castle Road on one or both sides of the route. The extent of the existing cycling network is illustrated in Figure 3.4.

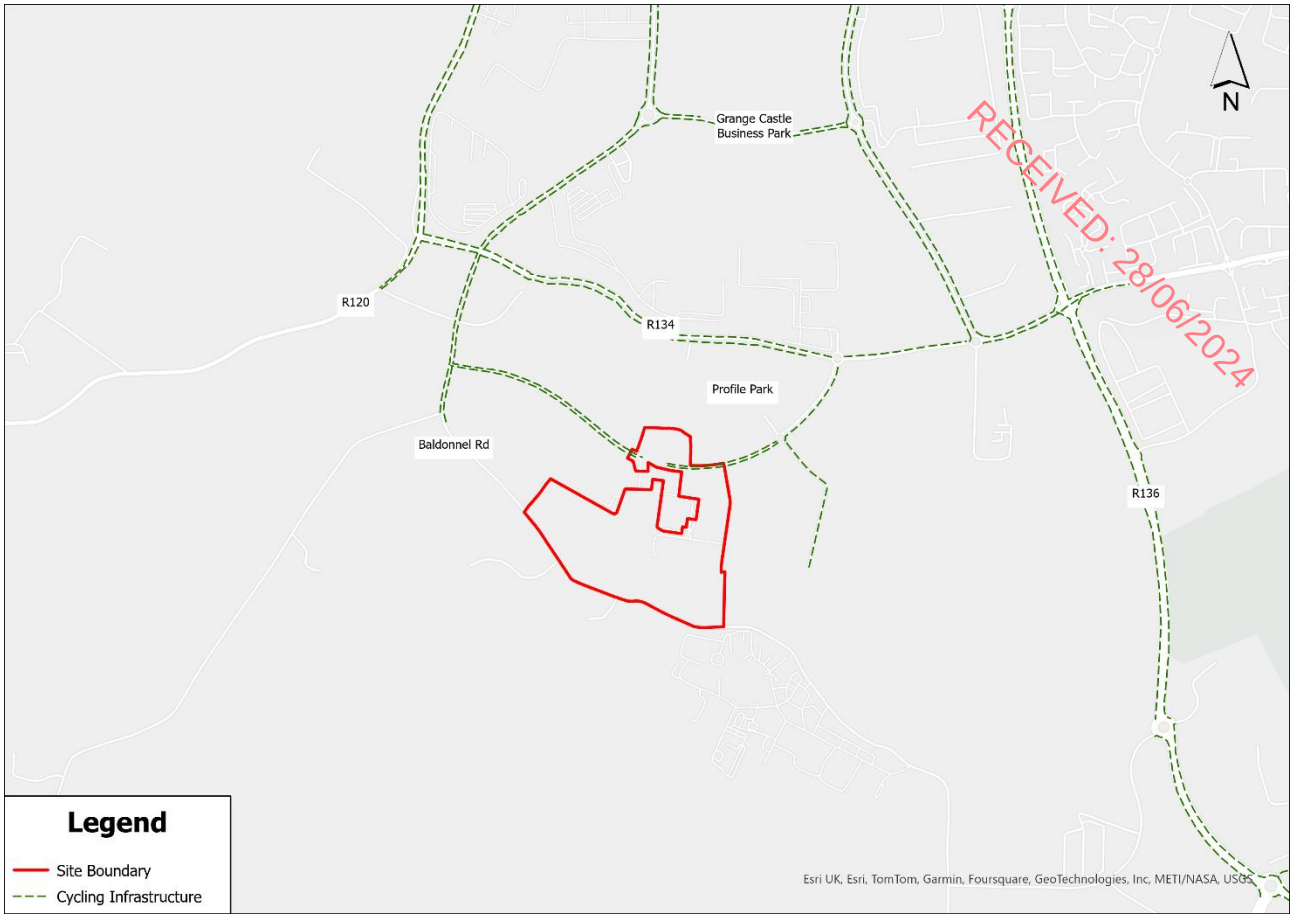

Figure 3.4: Cycle infrastructure in the vicinity of the Proposed Development site

3.4 Public Transport

3.4.1 Existing Public Transport

The closest bus stop to the Proposed Development site is approximately 650m walking distance to the west of the GIL Campus and is located on the Baldonnel Road. This route is the 68 Bus from Newcastle/Greenogue Business Park towards Hawkins Street which provides an east-west connection to and from Dublin City Centre to the Proposed Development. There are also multiple bus stop locations along the R134 New Nangor Road for the 13 Bus from Harristown to Grange Castle, and the route 69n Aston Quay to Saggart. Figure 3.5 shows the bus stop locations and lists the routes they serve.

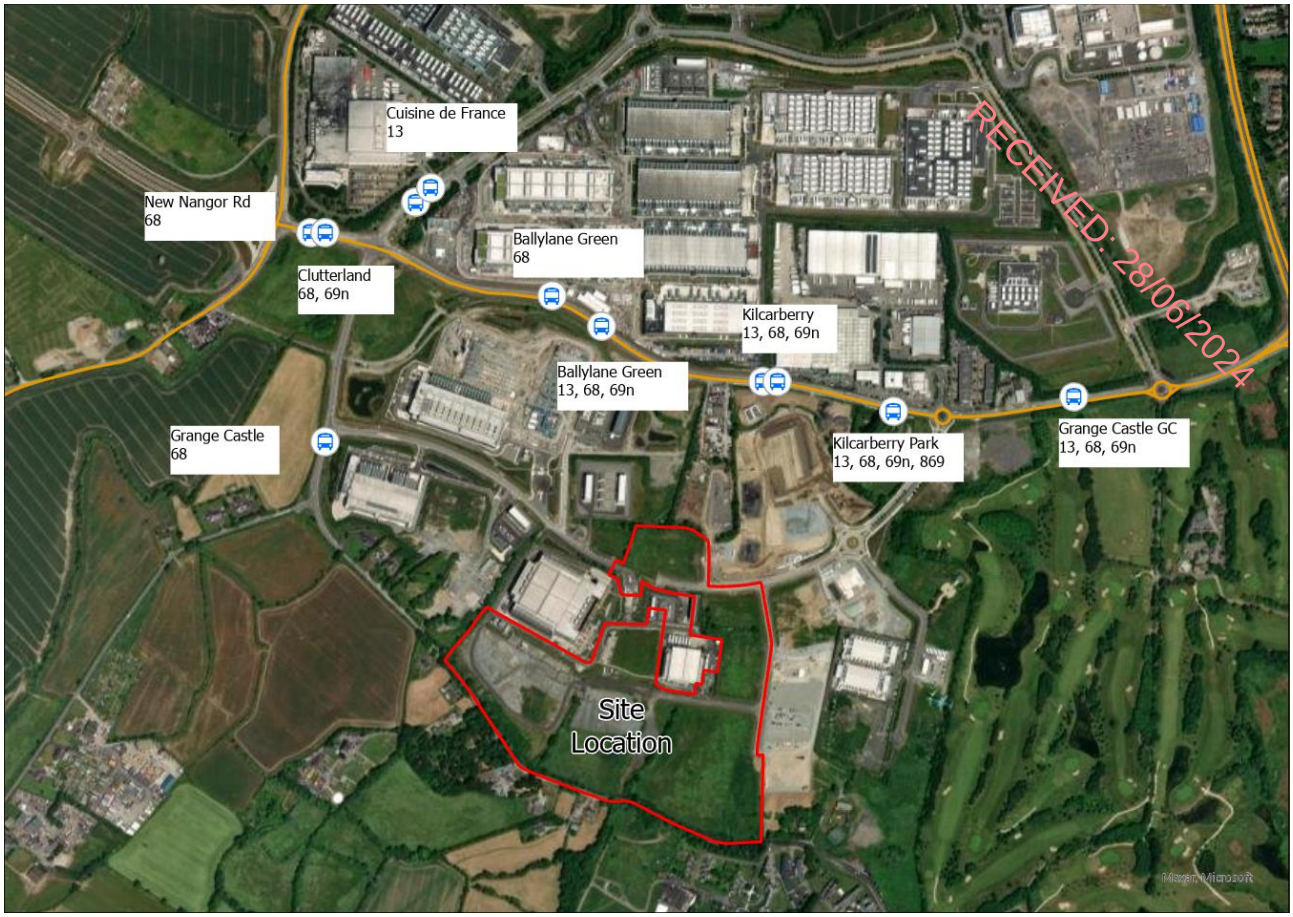

Figure 3.5: Bus stop locations and bus routes in the surrounding area

3.4.2 Future Public Transport Provision

3.4.2.1 BusConnects

Bus services in Dublin are expected to improve significantly due to planned infrastructure upgrades and the introduction of new services. The BusConnects network redesign is expected to enhance bus services by introducing an increase in capacity and frequency for users. New BusConnects routes are expected to benefit the Grange Castle Business Park and Profile Park Business Park.

The local BusConnects routes are presented in Figure 3.6. A range of new bus services will be introduced to the larger Clondalkin area, providing more public transport options to the local population. Closest to the Proposed Development site is the introduction of the L56 and X56 along the R134 Nangor Road. The L56 will operate between Newcastle and Red Cow at a frequency of once per hour in each direction. The X56 will run once in the AM and PM peak traffic period in each direction.

Figure 3.6: Proposed BusConnects routes in the surrounding area

3.4.2.2 South Dublin County Development Plan 2022-2028

The South Dublin County Development Plan outlines that the implementation of the DART expansion programme will provide DART+ services as far as Hazelhatch on the Kildare line, which will serve the developing Adamstown SDZ lands, the Grange Castle Business Park, the established areas of Clondalkin and the Strategic Development Zone (SDZ) lands at Clonburris where a 23,000 person community is planned.

4. Mobility Management Commitments

4.1 General

The following sections details the various measures which the GIL management will consider to increase the modal share of sustainable modes for trips to/from the Data Centre campus and reduce the impact on the transport environment in the vicinity of the site.

While recognising the existing reliance on the private car due to the dispersed nature of the origins of trips to the hospital and the limited availability of alternative transport modes, this MMP focuses on incentivising staff to increase their use of more sustainable options where possible.

The following commitments will be progressed through to implementation during the next 12 months, with some to be implemented prior to the construction of the Data Centre, and others implemented at a later stage. The feasibility of many of these measures needs to be assessed based on staff and visitor travel behaviour to be surveyed within the immediate future.

4.2 Workplace Mobility Manager

A Mobility Manager will be appointed to coordinate the Action Plan Work Group for the implementation of mobility management measures, setting targets with respect to sustainable transport, and ensuring that the targets are achieved and monitored. Travel to Work surveys will be carried out regularly to monitor the success of the MMP.

The plan will be updated/revised every two years as a minimum, or as and when required to suit the evolving nature of travelling to work. The Action Plan Work Group will develop a Policy on Sustainable Travel Methods aimed at minimising single car occupancy staff trips where possible, as well as promoting the MMP to all staff including the promotion of same to all new staff at induction.

4.3 'Working from Home' Policy

Implementation of a 'Working from Home' policy which can enable staff to work from home for part of their week is expected to reduce car trips to/from the Data Centre campus as well as reduce staff parking requirements in the campus and the surrounding area. However, it is noted that working from home may not be suitable for some staff due to the nature of their work.

4.4 Web-Based Commuter Information Site

The GIL will look at implementing a technology-based commuter information point, e.g. an intranet webpage, a stand-alone website, or an app for desktop and/or mobile use. The information point will be available to all staff and will function as a "one stop shop" for dissemination of travel information and promotion of alternative modes of transport.

This could assist staff members who wish to participate in carpooling to find like-minded people with whom they can share their commute. It can also provide information on bus and train timetables, Tax Saver public transport tickets, the Bike to Work scheme, and all other relevant travel-related promotions, incentives and information.

Information for different parking areas and facilities can also be provided through this site. These may include bicycle parking, motorcycle parking, preferential parking for car-pooling vehicles, disabled parking, public and staff parking areas, electric vehicle charging points, and showers and lockers for those who travel by bicycle or motorcycle.

4.5 Public Transport

The Travel to Work survey will inform the Mobility Manager and GIL as to the current percentage of employees using public transport to travel to work, as well as the current awareness of TaxSaver tickets.

The Mobility Manager will publicise information such as how to avail of the TaxSaver tickets, frequency and location of services, and the NTA Journey Planner app.

4.6 Cycling

The Travel to Work survey will provide information on what further measures would be preferred by staff to facilitate and encourage cycling to work. Typical measures would include provision or improvement of secure bicycle parking and storage, lockers for cycling and wet gear, showers and the promotion of the Cycle to Work scheme.

To address the challenge of long and indirect walking and cycling distance from neighbourhoods to the Campus, the client proposes the provision of a new pedestrian and cycle link that would connect Profile Park Road to Grange Castle Business Park Road. This proposed pedestrian and cycle link between Profile Park Road and Grange Castle Business Park Road is expected also to provide shorter walking and cycling distances (approximately 1.4km) from local bus stops to the main entrance of GIL Campus.

Furthermore an additional new pedestrian and cycle access along the eastern boundary of the site from the main public transport thoroughfare on Profile Park Road, will facilitate a direct route to the proposed DC3 development. This new access has a very positive impact as it is expected to reduce the walking and cycling distance from Nangor Road (the major connector within west Clondalkin) to 0.9km.

In order to facilitate cycling for staff, it is proposed to improve cycling facilities in the campus providing more and higher quality bike parking. It is proposed to increase the overall number of bike parking spaces to 64 no. spaces, by providing an additional 16 no. spaces as part of the new development, with bike stands being located at convenient locations to facilitate access to the buildings and changing facilities.

There are currently 48 cycle parking spaces available on the GIL Campus, serving DC1 and DC2. These spaces are located close the entrances to the buildings.

The Cycle to Work scheme, a government scheme designed to incentivise people to cycle to work by providing a tax exemption on the purchase of a bicycle and cycling-related equipment to a maximum value of €1,250 – €3,000 (depending on the type of bike), will also be promoted among staff members to increase awareness.

4.7 Walking

The Travel to Work survey will inform the Mobility Manager on the percentage of staff currently walking to work and any factors which are currently dissuading staff from walking.

GIL will investigate the opening of a pedestrian access from Baldonnel Road and R134 Nangor Road for regular use in order to improve the permeability of the site. This would be a staff only access.

Other potential improvements around the campus such as lighting, crossing and the quality of footpaths will also be examined.

4.8 EV Charging Provision

GIL plans to provide EV charging points within the campus to facilitate staff using electric vehicles with the charging of their vehicle during working hours. The existing GIL Campus has a total of 107 car parking spaces presently, with 29 spaces allocated to DC1, and 78 allocated for DC2. Of the total 107 existing carparking spaces on the GIL Campus, 5 are designated accessible parking spaces and 7 spaces are Electric Vehicle charging spaces.

4.9 Carpooling

GIL will investigate the demand for carpooling and monitor the needs of staff allowing for changes to be made according to the demand. Provided an adequate demand for carpooling is created among the staff, dedicated carpooling spaces could be provided to facilitate and enhance the use of the scheme. The staff travel survey results will inform the actions to be taken in this aspect.

GIL will also consider the concept of an “emergency ride home” service for those users who have signed up to the carpooling scheme, but who may occasionally experience the need for alternative transport due to an unexpected event.

4.10 Modal Shift Targets

Modal shift targets will be set based on the observed modal splits resulting from the Travel to Work survey in order to ensure that targets are realistic and achievable in the short, medium and long term. This MMP will be revised to include these figures and further measures following the results and discussion by the Action Plan Work Group to form a plan for the coming 12 months.

5. Implementation and Monitoring

5.1 Implementation Strategy

The above measures will be implemented on a phased basis and will be progressed and monitored by the Mobility Manager.

A Travel to Work survey will be carried out issuing questionnaires to all staff within 12 months. This survey will be promoted to all departments in order to ensure a representative sample of responses from staff. This MMP will then be updated with modal shift targets and concrete proposed measures to reflect the feedback from this survey and enable the targets to be achieved.

All of the MMP measures will be emphasised and promoted to all existing staff and any potential new staff on induction, including information on cycling parking, TaxSaver tickets and the Cycle to Work scheme.

Over the medium to long term, it shall be the responsibility of the Mobility Manager to continue to develop and promote walking and cycling initiatives on site. These measures will therefore be developed internally, agreed with GIL management, and rolled out on an ongoing basis. This would typically include periodic events such as cycle maintenance classes, supporting promotional walking events and engaging with staff regarding the need for additional facilities across the site.

The Mobility Manager will assist staff in applying for public transport Tax Saver tickets or the Bike to Work scheme. The Mobility Manager will also be responsible for liaison with South Dublin City Council to facilitate the evolution of the MMP over time.

5.2 Monitoring

In line with current guidance, within six months after occupation of the proposed new development, this Mobility Management Plan would be subject to an initial review. It will then be updated/reviewed every two years from that point onwards.

This will require an updated Travel to Work survey to be carried out on site by the Mobility Manager, to include new and existing staff, and an associated review of the targets set out in this inaugural MMP and the proposed measures and their success.