# 4. Description of the Proposed Development

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## 4.1 Introduction

In accordance with the EIA Directive (as amended), this Chapter sets out a description of the Proposed Development comprising information on the site, design, size and other relevant features of the Proposed Development.

Further detailed information on the Proposed Development can be found within the following application documents:

- Design and Access Statement;
- Planning Report;
- Architectural Drawings;
- Landscape Drawings;
- Green Infrastructure Plan;
- Drainage and Watermain planning Report;
- Energy Efficiency and Climate Change Adaptation Design Statement; and
- Engineering Drawings.

Refer to Appendix 1.1 for the competency of the author of this Chapter.

## 4.2 Site Location and Context

As an extension to the existing GIL DC campus, the Proposed Development is located within the environs of an existing business park, Grange Business Park South. The Proposed Development is, thus, in keeping with the building fabric of adjacent sites and surroundings.

The Proposed Development is positioned to the south and east of the existing GIL data centre facilities, DC1 and DC2 of areas of approximately 5,900sqm and 18,050sqm respectively.

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 for "*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 area designated as 'rural' at the southeast of the site has been maintained in accordance with the CDP. It includes biodiversity regeneration elements and will act as a green amenity for staff.

The Data Centre building is located to the southern edge of the site with the lower scale Facility Support Area (FSA) portion of the building facing the public realm along Baldonnel Road reducing the visual impact. Specific care has been given to the design of this element to ensure an appropriate level of aesthetic quality being sensitive to the neighbours to the south of the development.

The noisiest elements of the development, the mechanical yards (MYD) (both A and B), have been centralised within the campus so that the surrounding buildings act as a buffer. The connection of the MYD components to the Data Centre building are shortened to the minimum possible distance for technical efficiency, minimising the quantity of services materials.

The compact nature of the design maximizes the number of green spaces for landscaping and biodiversity increase while ensuring existing overhead lines can be maintained. The road layout has been simplified and optimised to reduce the impermeable surfaces within the landscape and ensure a further efficient use of materials.

## 4.3 Project Overview

The objective of the Proposed Development 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.

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

There are currently 70 employees working directly on the existing campus with an additional 40 employed indirectly. Approximately 50 additional employees (25 direct and 25 indirect) will be required on the campus once operational. The facility will be developed on a 20.4ha greenfield/brownfield 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 includes the following principal functional areas (refer to Figure 4.1):

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 EYD to the south of the site.

Data Storage Facility:

- Eight data halls with associated support areas;
- Office and staff facilities;
- 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 MYD facilities to the main Data Centre building; and

- EYD containing all generators, plants and equipment necessary to ensure continuous operativity of the data centre facility in case of failure of the main electrical network power supply.

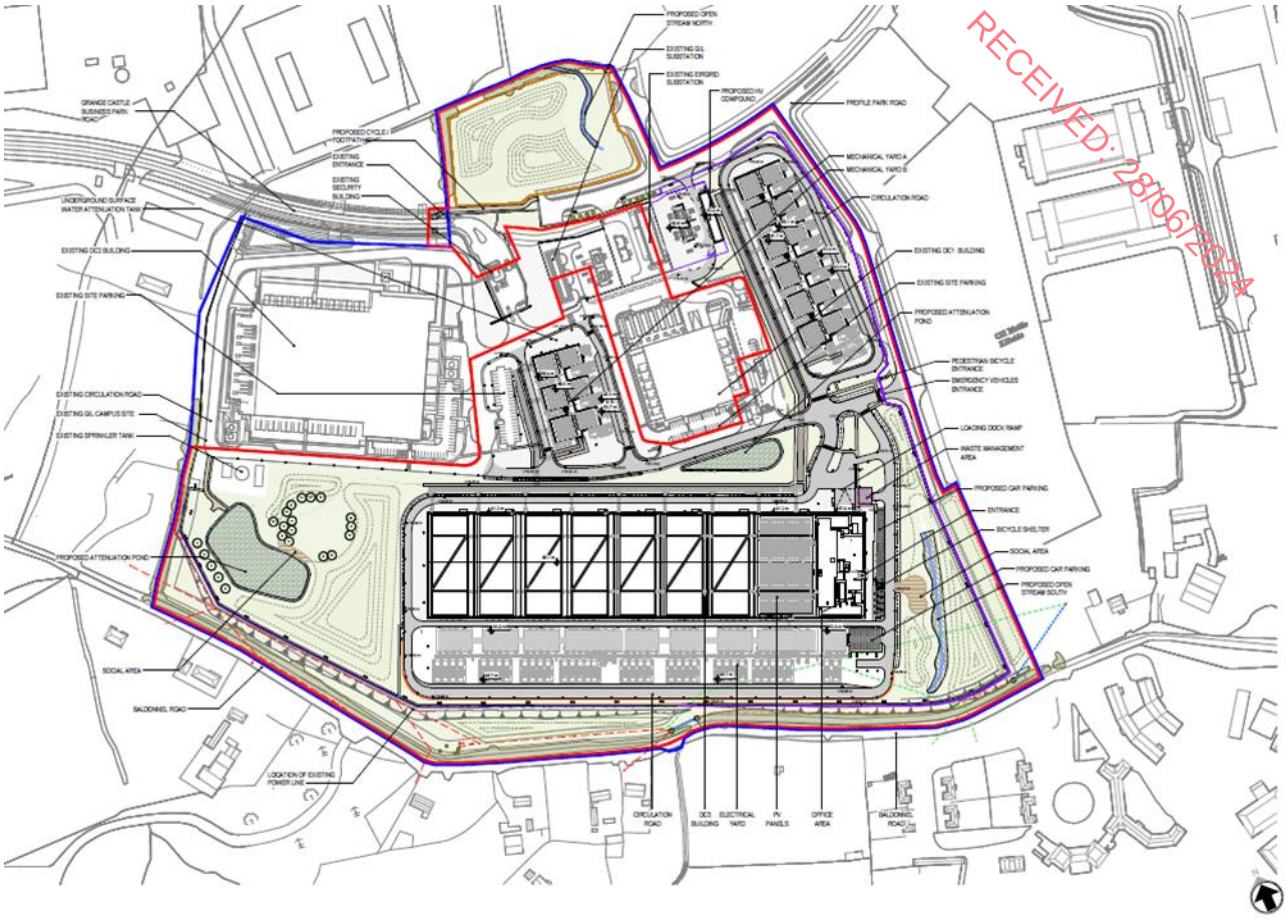


**Figure 4.1: Site layout.**

GIL also intends to make an application for approval under section 182A of the Planning and Development Act 2000 (as amended) for those elements of the Proposed Development comprising "transmission" under section 182A (9). GIL will engage in a pre-application consultation with An Bord Pleanála under section 182E immediately after its submission of this planning application to South Dublin County Council.

## 4.4 Description of the Proposed Development

### 4.4.1 Introduction

A data storage facility is a centralised computer server, information storage and management facility designed and operated for the purpose of storing, managing and distributing electronic information to individuals, businesses and organisations. The facility is used to house mission critical computer systems and networking equipment.

As the internet user base increases and the need for more information by existing users focuses on access through the internet, the number of services is increasing as is the amount of data being stored in the "cloud".

This facility will contain the servers needed to store the information, process the queries and deliver the content that the customer requests. The servers will be connected to the customers through fibre networks from the facility and spreading out from Ireland into Europe and globally.

This data storage facility is needed to host the servers required to handle the growth in internet use. It will provide many services to the millions of users of Google's service across the globe. The building of this facility in Ireland will provide a secure, cost-efficient solution for Google, Inc. while improving the services offered to their customers.

The breakdown of building areas is provided in Table 4.1.

**Table 4.1: Building gross floor areas.**

| Type | Description | Area ($m^2$) |
|---|---|---|
| Building (GFA) | DC3 data halls | 25,530 |
| | FSA | 3,210 |
| | HV compound | 300 |
| Equipment | MYD (A and B) | 2,175 |
| | EYD | 6,900 |
| Total gross floor area | | 38,115[1] |

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### 4.4.2 Site Utilities and Infrastructure

The Proposed Development will require a number of building services, utilities and infrastructure.

#### *4.4.2.1 Electricity*

It is proposed to construct an HV compound on the northern side of the development site, just north of the existing DC1 facility and east of the existing substation. Once operational, this new proposed HV compound will supply electricity to sections of the Proposed Development.

Emergency generators will provide electricity to the facility in the event of a power loss. These emergency generators are housed within individual enclosures.

In addition, it is proposed to provide photovoltaic (PV) panels on part of the roof of the DC building. This is expected to generate 20% of the energy need associated with that occupied building through the use of renewable power.

The Proposed Development has been designed to facilitate district heating where surplus heat is produced. This system has the potential to deliver heat for both space heating and water heating needs to buildings external to the site through a network of insulated underground pipelines. This will be realised once a suitable off taker is available, and the adequate critical load is achieved.

GIL intends to make an application for approval under section 182A of the Planning and Development Act 2000 (as amended) for those elements of the Proposed Development comprising “transmission” under section 182A (9).

#### *4.4.2.2 Potable Water Supply*

The proposed water main network has been designed in accordance with the Irish Water “Code of Practice for Water Infrastructure” and detailed in accordance with the Irish Water “Water Infrastructure Standard Details” documents. Given there are 2 No. existing Data Hall buildings in use on site, it is proposed to connect into the existing water main infrastructure of these facilities to cater for DC3, hence it is not proposed to require additional connections to the Irish Water Infrastructure.

The proposed potable water supply is primarily required to cater for welfare facilities within the administration/office area of the Data Hall building.

While potable water is not used to provide cooling as the facility utilises air cooled chillers within the facility there will be a requirement to provide a small quantity of water to undertake operational activities.

It is proposed to provide a dedicated firemain for the Proposed Development, which will be supplied with water from the existing DC2 firewater storage tank and associated pump house.

[1] Note the gross floor area amounts to 38,115m2. The total developed area including ancillary support areas comprises of 72,400$m^2$

#### *4.4.2.3 Surface Water Drainage*

The surface water drainage system has been designed in accordance with Part H of the Building Regulations, BS EN 752 Drain and Sewer Systems outside Buildings, the South Dublin County Council SuDS Explanatory Design & Evaluation Guide.

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Surface water from the Proposed Development will be collected in a system of swales, porous paving, conventional gullies and pipes and 2 No. attenuation ponds and 1 No. underground attenuation tank.

Surface water will be managed in accordance with SuDS where possible and the discharges from the Proposed Development will be restricted to pre-development rates in accordance with the Greater Dublin Strategic Drainage Study (GDSDS). Surface water discharges will be retained within the various SuDS systems up to and including the 1 in 100-year event. In order to cater for climate change the rainfall data used for the analysis has been increased by 40%.

The surface water drainage network collects run-off from the roofs of the proposed main building, ancillary buildings, roads and hard-standing areas throughout the site, which is then conveyed through a network of gravity surface water drainage and discharges to 2 No. surface water attenuation ponds and 1 No. surface water attenuation tank, which then discharge to the existing DC1 and DC2 networks.

Attenuation pond No.1 caters for surface water runoff for the Data Centre building, FSA and EYD and has a capacity of 6,032m$^3$ while attenuation pond No. 2 which caters for the MYD (B) and has a capacity of 1,200m$^3$. Both ponds are open lined ponds with a landscape base and sides to provide for an enhanced biodiversity and social area for staff, refer to Figure 4.2: Social areaFigure 4.2.

Attenuation tank No. 1 which caters for surface water runoff from the MYD (A) has a capacity of 473m$^3$ and is located immediately north of the MYD (A).

An existing watercourse crossing mid way through the DC3 development site will be re-routed to the east to allow cut and fill to create a consistent level for the DC3 building. Part of the watercourse will be routed below ground, while the part to the southeast of the site will be running in an open channel, refer to Chapter 12 (Water) for further information.

**Figure 4.2: Social area.**

#### *4.4.2.4 SuDS*

SuDS features will be implemented across the full extent of the site, with the intention of filtering and storing rainfall at source and reducing the size of conventional attenuation ponds at the bottom end of the catchment. This will be achieved through a range of techniques.

Sustainable drainage systems are designed to maximise the opportunities and benefits that can be secured from surface water management. SuDS can take many forms, both above and below ground, and they facilitate four main categories of benefits (water quantity, water quality, amenity and biodiversity).

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#### *4.4.2.5 Firewater Retention*

In addition to the above surface water attenuation, it is proposed to provide a firewater retention tank with a capacity of 3,236m$^3$. This tank has been sized in accordance with the requirements of the EPA Guidance on retention Requirements for Firewater Runoff.

#### *4.4.2.6 Fuel Oil*

The proposed fuel source for back-up generators will be diesel, which is stored in individual belly tanks located under each generator. Each belly tank has a capacity for 17.85m$^3$ and all tanks are double lined tanks with leak detection in accordance with EPA guidance.

#### *4.4.2.7 Telecommunications*

A comprehensive network of telecom infrastructure within the Proposed Development boundary will be required to connect the Proposed Development into the existing DC1 and DC2 buildings.

#### *4.4.2.8 Waste Management*

Waste from the Data Centre building uses a chute to be delivered in a compactor at the loading dock ramp. It is then collected in a dedicated gated waste management area north of the FSA.

#### *4.4.2.9 Fire Hydrant and Sprinkler Mains*

The fire hydrant, sprinkler and hose reel systems will be fed from an existing fire pump house and storage tank located on DC2. A new buried fire main shall be installed from the existing DC2 pump house to a ring main serving the Proposed Development.

The existing fire suppression system consists of a single pump serving hydrants, sprinklers and hose reels on DC2, and an 800m$^3$ external storage tank. The existing fire protection system shall be tested and commissioned to ensure it meets the new flow and pressure requirements for DC3.

This installation will be completed in line with all relevant NFPA standards.

#### *4.4.2.10 Closed Circuit Television (CCTV)*

Surveillance of the site will be provided by a CCTV installation. This will provide coverage of the perimeter as is currently installed for the existing site. Coverage of internal circulation routes will also be provided. The form and placement will be similar to the existing installation.

#### *4.4.2.11 Lighting*

External lighting is designed in accordance with IS EN-12464 Light and lighting - lighting of workplaces – Part 2 Outdoor workplaces, 2014, for average lux levels and uniformity. In terms of accessibility, *BS 8300-1:2018 Design of an accessible and inclusive built environment - External environment – code of practice* was applied in accordance with Technical Guidance Document Part-M (TGD-M, 2022). This was applied to the design of accessibility lighting.

I.S 3217 Emergency Lighting 2023 forms the basis of external emergency lighting.

Perimeter lighting along the security fence is proposed at 11 lux average and 3 lux minimal at ground. This lighting will be sensor controlled.

### 4.4.3 Buildings Description

#### *4.4.3.1 Facility Support Area*

The FSA houses the operational and support areas required for the operations. The electrical annex to the north of the FSA contains two primary distribution rooms and accompanying electrical/battery rooms that support the incoming services from the EYD. Circulation areas within the FSA are set out to be straightforward for ingress/egress, wayfinding and services distribution. The FSA central corridor is designed predominantly for personnel circulation and received goods on their transport route from the loading dock area into the operational spaces.

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#### *4.4.3.2 Server Hall*

The server hall is based on a standard layout that drives all the connections to the MYD and EYD so that the position and the relationship among the three buildings is fixed and defined.

#### *4.4.3.3 Data Centre Building*

The DC building houses eight data halls and the FSA.

The external walls of the DC building consist of a composite metal cladding system with a mineral wool insulation to provide thermal transmittance performance, fire integrity, insulation and radiant heat. External windows and curtain walling are to be double glazed aluminium framed windows.

The building is separated into two separate roof areas. The FSA area has a lower single pitch roof sloping west. The DC building roof is dual-pitched sloping to the eaves at the North and South walls. The ridge of the DC building roof is eccentric due to the Server Hall column placement. The roof system comprises a Sika membrane system laid on Eurobond steel twin skin composite insulated panels. The roof sandwich panel is laid on a vapour barrier adhered to the galvanised steel structural deck which in turn is fixed back to the primary steel frame.

The parapet height to the FSA lower roof is to maintain 12,00mm above ground finished capping height at the lowest point. The raised parapet at the western eaves will provide a visual and acoustic screening for the roof mounted plant on approach to the building. The DC building roof is stepped at 1,200mm above ground finished capping height at the midpoint of each slope to reduce the overall height at the eaves.

#### *4.4.3.4 Electrical Yard (EYD)*

The EYD generators are housed in individual enclosures and set out to align with the necessary electrical conveyances, interfaces with other prefabricated buildings within the Electrical Yard, and entry points into the DC building.

#### *4.4.3.5 Mechanical Yard (MYD)*

The MYD is in fact a steel gantry containing various equipment and plant. The upper floor of MYD contains the chillers and plants that regulate the temperature within the Data Centre building. The ground floor of the MYD contains all the plants necessary for the functioning of the cooling system, including generators. The generators are designed with individual diesel storage belly tanks and are refuelled individually via the fuel filling layby off the circulation roads. The MYD generators are housed in individual enclosures.

#### *4.4.3.6 HV Compound and Underground Cabling*

The new HV compound will be built to the eastern side of the existing ESB HV substation. It will include two transformers and a building containing the two medium voltage rooms and one low voltage room. The new HV compound is protected on four sides by a secure fence with a double gate to the south side and a removable fence panel to the north side to be used only during construction. The building containing the low voltage and medium voltage rooms is a single storey 7 m x 17 m long concrete structure clad with insulated panels (Eurobond or similar) in grey colour. A 1,100 mm high galvanised railing is provided at roof level to ensure fall protection when roof maintenance is required.

### 4.4.4 Roads, Site Access and Car Parking

#### *4.4.4.1 HV Compound and Underground Cabling*

To accommodate the Proposed Development, the existing road and pedestrian network within the Campus will be expanded to provide access to new buildings. The main entrance to DC3 will be via the existing entrance available off Grange Castle Road. Access into the campus is security controlled. Vehicles will make use of existing roads within the campus to access DC3. A new 8.0m wide, two directional circulation route expanding in an east west direction will be provided to the south of the DC1 and DC2 facilities. 5.0m wide service roads are provided off the circulation route to serve the mechanical and electrical yards supporting DC3.

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An existing entrance road from Profile Park will be retained as an emergency vehicular entrance.

#### *4.4.4.2 Pedestrian/ Cycle Access and Routes*

The footpath network will also be expanded to follow adjacent to the proposed circular road and footpaths continue up to new building entrances and connect to car parking provided. Footpaths on site are provided at 1.5m width.

The pedestrian and cycle accessibility to the GIL Campus site is currently indirect. It is proposed to provide a direct link between Profile Park Road and Grange Castle Business Park Road. It will connect existing pedestrian and cycle network infrastructure external to the GIL Campus to one another. It is also proposed to provide a pedestrian crossing with tactile paving to connect the footpath and cycleway north and south of Grange Castle Park Road. Security fences will be restructured to facilitate the provision of the footpath.

#### *4.4.4.3 Car Parking*

It is proposed to provide 42 car permanent parking spaces adjacent to the FSA building. Four of these spaces will be designated accessible parking spaces and 10 of the spaces will be EV charging spaces.

Standard car parking spaces are 2.5m by 5.0m in width and length while accessible spaces are 6.0m by 3.3m in width and length. In addition to the parking provision, it is proposed to provide 2 No. electric buggy carts to facilitate access throughout the site.

## 4.5 Sustainability and Climate Change

As outlined in  Environmental Report (2023) (gstatic.com), Google is working to accelerate the transition to a carbon-free future. The company has taken significant steps over the past two decades to minimise its own emissions. In 2021, Google set its most ambitious goal yet: to achieve net-zero emissions across all of its operations and value chain by 2030. To accomplish this, Google aims to reduce 50% of its combined Scope 1, Scope 2 (market-based), and Scope 3 absolute emissions (versus its 2019 baseline) before 2030, and plan to invest in nature-based and technology-based carbon removal solutions to neutralize remaining emissions. Google has formally committed to the Science Based Targets initiative (SBTi) to seek validation of the absolute emissions reduction target.

One of the key levers for reducing emissions from operations is transitioning to clean energy. Energy use contributes to a significant share of Google's carbon footprint due to the electricity needs of operations—in particular from data centres. That's why, in 2020, Google set a goal to operate all data centres and office campuses on 24/7 carbon-free energy on every grid where Google operate by 2030. The organisation has been working hard to transition operations and the electricity grids that serve data centres to cleaner sources of power, through a combination of clean energy procurement, technology innovation, and policy advocacy.

Refer to Chapter 8 (Climate) for more site-specific sustainability measures.

## 4.6 References

Environmental Protection Agency (EPA) (2019) *Guidance on retention Requirements for Firewater Runoff.*

Government of Ireland (2022) *Technical Guidance Document Part-M*

*Irish Standard for Emergency Lighting I.S 3217 2023*

Irish Water (2020) *Code of Practice for Water Infrastructure*

Irish Water (2020) *Water Infrastructure Standard Details*

National Fire Protection Agency (NFPA) (2018) *NFPA standards*

*National Fire Protection Association standards.*

South Dublin County Council (2022) *SuDS Explanatory Design & Evaluation Guide BS EN 752 Drain and Sewer Systems outside Buildings Part H of the Building Regulations*

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# 5. Construction

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## 5.1 Introduction

This Chapter of the Environmental Impact Assessment Report (EIAR) describes the construction activities associated with the Data Centre Development DC3, hereafter referred to as the "Proposed Development".

The design of the Proposed Development has evolved through comprehensive design iteration, with particular emphasis on minimising the potential for environmental effects during Construction, where practicable. In addition, feedback received from consultation undertaken throughout the alternatives assessment and design development process have been incorporated, where appropriate.

The aim of the Proposed Development when in operation is to offer expanded compute capacity to GIL's customers and products. The Proposed Development is described in detail in Chapter 4 (Description of the Proposed Development).

Google Ireland Limited (GIL) (the Employer for the construction works) shall set out the Employer's Requirements in the Construction Contract including all applicable mitigation measures identified in this EIAR, as well as additional measures required pursuant to conditions attached to any decision to grant approval. Procurement of the Contractors will involve the determination that the Project Supervisor Construction Stage (PSCS) and appointed Contractors are competent to carry out the works, including the effective implementation of the mitigation measures and requirements set out in the Construction Environmental Management Plan (CEMP) in Appendix 5.1. The PSCS and appointed Contractors will be required to plan and construct the Proposed Development in accordance with the Employer's Requirements. The CEMP will be updated by the PSCS and the appointed Contractors prior to the commencement of the Construction Phase, so as to include any additional measures required pursuant to conditions attached to any decision to grant approval. All of the measures set out in the CEMP appended to this EIAR will be implemented in full.

In order to allow an assessment of the effects of the Construction Phase associated with the Proposed Development, this Chapter describes the indicative construction phasing and programme as well as the construction activities necessary to undertake the works, including information on the Construction Compounds, construction plant and equipment.

Details of mitigation measures proposed to address potential effects arising from construction activities are described in in the CEMP (Appendix 5.1) and Chapter 6 to Chapter 19, as appropriate, and are summarised in Chapter 20 (Summary of Mitigation & Monitoring Measures) of this EIAR.

Refer to Appendix 1.1 for the competency of the author of this Chapter.

## 5.2 General Construction Strategy

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.

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The first stage of construction relates to site preparation and enabling works which includes the following:

- Site establishment (refer to Section 5.3.1.1);
- Site clearance (refer to Section 5.3.1.2); and
- Diversion/ removal of redundant utilities (Section 5.3.1.3).

The second stage is the main Construction Phase which involves the following:

- Sub Phase 1: Earthworks, excavated material, foundation & substructure works (Section 5.3.2.1);
- Sub Phase 2: Superstructure works (Section 5.3.2.2);
- Sub Phase 3: Façade & fit-out works (Section 5.3.2.3); and
- Sub Phase 4: Landscaping works (Section 5.3.2.4).

## 5.3 Detailed Construction Works

### 5.3.1 Site Preparation and Enabling Works Phase

#### *5.3.1.1 Site Establishment*

Following the successful grant of planning permission, and receipt of other required statutory permissions, on-site works will commence with the following enabling works:

- Preparation and mobilisation of a pre-qualified specialist Contractors;
- 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;
- Diversion, capping, and/or isolation of existing services running through or in close proximity to the Proposed Development;
- The watercourse realignment works will be completed as early as possible in the site establishment stage so as to minimise contaminated run-off and prevent increased risk of flooding to upstream sites. During the construction stage, this will be temporarily undergrounded so as to maximise on-site available space for soil storage, to allow movement of vehicles across the site and to minimise contamination;
- Construction welfare facilities, offices for construction staff inclusive of car parking, and construction compounds will be constructed on site. The main construction welfare compound to facilitate the Construction Phase of the Proposed Development will be located on the northern side of the Proposed Development site. The location of the construction welfare compound has been selected due to its relative location near to the majority of the Proposed Development works and access to the National and Regional Road network to minimise effects on the road network (refer to Chapter 6 (Traffic and Transport). The construction compound will contain a site welfare and accommodation block, and welfare facilities for management and construction personnel and appointed construction Contractors personnel. Materials such as topsoil, subsoil, concrete, rock etc., will be stored at the site for reuse as necessary after demobilisation. Items of plant and equipment will also be stored within the on-site secured construction compounds;
- Limited car parking will be provided at the construction compound and is estimated in the region of 300 parking spaces.

It is anticipated that all construction traffic will enter and exit the site via the R134 and through Profile Park internal roads. The appointed Contractors' Construction Traffic Management Plan (CTMP) shall include measures for managing traffic accessing and egressing the construction compounds (refer to Appendix 5.1 for further details on the CTMP);

- A permanent link footpath and cycleway will be established at the enabling works stage that will connect Profile Park Business Park and Grange Castle Business Park; and
- The majority of the area surrounding the Proposed Development is already artificially lit. However, temporary lighting will be required along the perimeter of the Proposed Development site at certain locations during the Construction Phase, where necessary, and at the main construction welfare compound and personnel parking. Temporary lighting will also be installed at the construction compounds for the duration of the Construction Phase. The standard of temporary lighting installed during the Construction Phase will meet the standard industry practice. Temporary construction lighting will generally be provided by fixed pole or surface mounted lighting and tower mounted floodlights, which will be cowled and angled downwards to minimise spillage of light from the site.

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#### *5.3.1.2 Site Clearance*

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.

#### *5.3.1.3 Diversion/ Connection of Utilities*

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***

Temporary Construction Phase electricity supply is envisaged to be supplied via the existing on-site electrical network and not required to be fed from an outside source. There will be instances and situations where diesel generators will be required to provide a temporary supply when the hard connection is unavailable.

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 coordinated with the Electricity Supply Board (ESB) who will design and execute the diversion works.

***Watermain***

A temporary Construction Phase connection to a water feed will be required. The additional demand will be notified and agreed with Uisce Eireann.

Any 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), but after treatment it is envisaged to be discharged into the local network.

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

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### 5.3.2 Main Construction Phase

#### *5.3.2.1 Sub Phase 1: Earthworks, Excavation, Foundation & Substructure Works*

**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;
- 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 the CEMP (Appendix 5.1) 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.

A Construction and Demolition Resource and Waste Management Plan (CDRWMP) is included in the CEMP (Appendix 5.1) will be further updated by the appointed construction contractor prior to construction.

**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;
- Fire water tank.

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Excavations are typically 1-2m deep for foundations and external areas. In the south west 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 (Appendix 5.1).

***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).

#### *5.3.2.2 Sub Phase 2: Superstructure Works*

In general, it is envisaged that the superstructure of the main building will commence at the eastern side of the site at the Facility Support Area (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.

#### *5.3.2.3 Sub Phase 3: Façade & 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 FSA.

It will then continue sequentially across the main Data Centre 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.

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#### *5.3.2.4 Sub Phase 4: 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 Data Centre building will be last to be developed. Once the construction compounds are decommissioned, this area will be reclaimed as suitable green landscaping, biodiversity enhancement and social area.

#### *5.3.2.5 Construction 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;

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- 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 fork lift trucks;
- Truck mounted concrete pump and boom arm; and
- Bar bender, cutter.

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### 5.3.3 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 will 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 such as concrete finishing works. 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.

## 5.4 Construction Traffic Management

### 5.4.1 Site Access

The majority of construction traffic will enter the Proposed Development via Profile Park Road 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.

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All HGV movements to and from the Proposed Development site during the Construction Phase will follow the proposed construction traffic route 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 5.1.

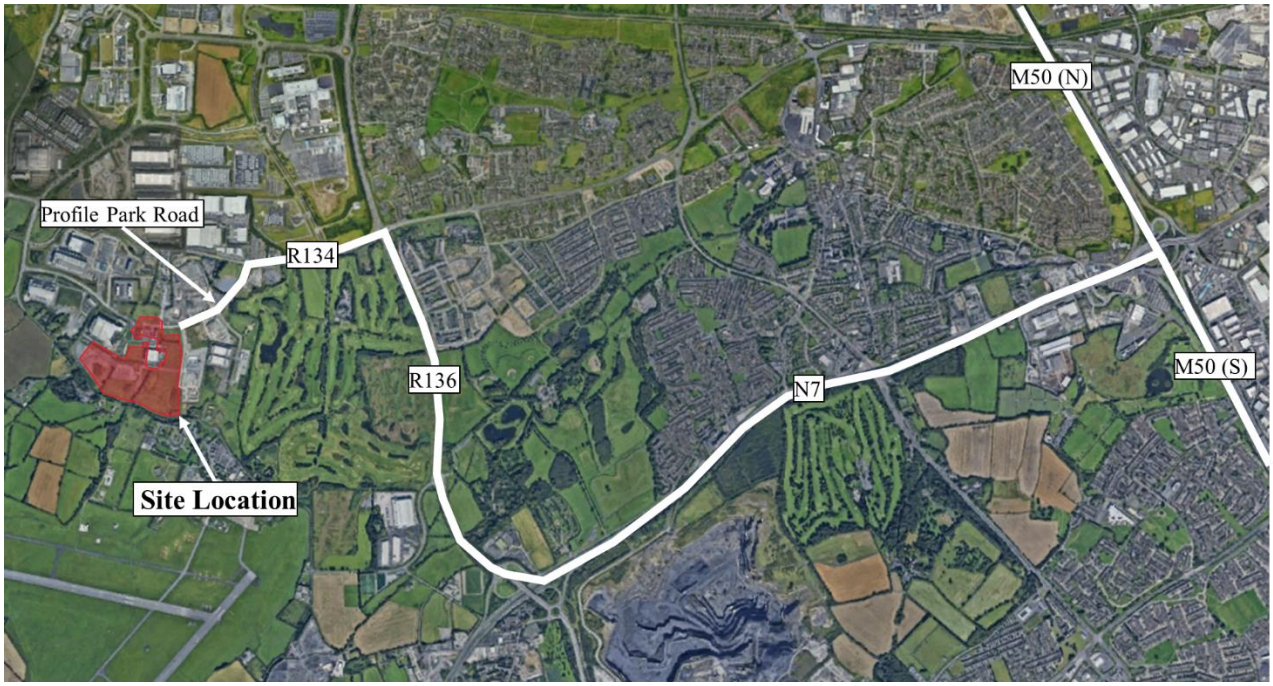


**Figure 5.1: Construction traffic route. Source: Google Earth.**

### 5.4.2 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 site will be developed in agreement with SDCC and with the objective of minimising the potential effect on the local areas for residents and businesses; 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 South Dublin County Council (SDCC) to avoid any site parking overspill issues.

A Construction Traffic Management Plan (CTMP) is provided in the CEMP (Appendix 5.1). GIL and the Project Management Consultant (PMC) will be required to promote travel by sustainable modes of transport. The Construction Mobility Management Plan is detailed in the CEMP (Appendix 5.1).

## 5.5 Construction Environmental Management

GILs PMC will manage the following for the duration of the construction contract.

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### 5.5.1 Health and Safety

The primary aim of planning for safety on this site is ensuring the safety of people involved in and affected by the development. This includes pedestrians, road users, neighbours, site staff and visitors to site. The following are examples of some site-specific issues that will have to be addressed during the Construction Phase of the Proposed Development:

- Identifying, storing and handling of hazardous and contaminated materials;
- Protecting existing roadways against damage, in areas where excavations and retaining structures are proposed adjacent to roadways;
- Identifying, diverting, maintaining, and connecting to existing live services;
- Managing vehicular and pedestrian traffic on the surrounding roadways for the duration of the construction works;
- Managing crane movements to limit lifting over live buildings and roadways; and
- Maintaining existing public and operational access routes and coordinating with GIL so that ongoing operations on the site remain unaffected.

All Contractors and sub-contractors must progress their works with reasonable skill, care and diligence and, at all times, proactively manage the works in a manner most likely to ensure the safety, health and welfare of those carrying out construction works, pedestrians, road users and other interacting stakeholders.

Contractors and sub-contractors are further required to ensure that, as a minimum, all aspects of their works and project facilities comply with legislation, good industry practice and all necessary consents.

Health and Safety requirements will be further 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.

### 5.5.2 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 will be provided to all the relevant stakeholders by the Applicant 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.

### 5.5.3 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.

Refer to Section 0 for details on the Environmental Incident Response Plan. 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.

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### 5.5.4 Construction Environmental Management Plan (CEMP)

As stated in Section 5.1, a CEMP has been prepared for the Proposed Development and is included as Appendix 5.1 of this EIAR. The CEMP will be updated by GIL prior to finalising the Construction Contract documents for tender, so as to include any additional measures required pursuant to conditions attached to the SDCC decision. It will be a condition of the Employer's Requirements that the successful appointed Contractors, immediately following appointment, must detail in the CEMP the manner in which it is intended to effectively implement all the applicable mitigation measures identified in this EIAR. The CEMP has regard to the guidance contained in the Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan (TII 2007), and the handbook published by CIRIA in the UK, Environmental Good Practice on Site Guide, 4th Edition (CIRIA 2015).

Details of mitigation measures proposed to address potential impacts arising from construction activities are described in Chapter 6 to Chapter 19, as appropriate, and are summarised in Chapter 20 (Summary of Mitigation & Monitoring Measures) of this EIAR.

A number of sub-plans have also been outlined in the CEMP and these are summarised in the following sections. For the avoidance of doubt, all of the measures set out in the CEMP and the sub-plans appended to this EIAR will be implemented in full by the appointed Contractors to the satisfaction of GIL and in accordance with the grant of planning.

#### *5.5.4.1 Construction Traffic Management Plan (CTMP)*

A CTMP has been prepared to demonstrate the manner in which the interface between the public and construction-related traffic will be managed and how vehicular movement will be controlled. It will be a condition of the Employer's Requirements that the successful appointed Contractors, immediately following appointment, must detail in the CTMP the manner in which it is intended to effectively implement all the applicable mitigation measures identified in this EIAR and any additional measures required pursuant to conditions imposed by SDCC, should approval be granted. Further details on the assessment of construction traffic, and traffic related mitigation measures are provided in Chapter 6 (Traffic & Transport) of this EIAR.

#### *5.5.4.2 Invasive Species Management Plan*

An Invasive Species Management Plan (ISMP) has been prepared which provides the strategy to be adopted in order to manage and prevent the spread of the non-native invasive plant species. Non-native invasive plant species were identified in close proximity to the Proposed Development during ecological surveys. It will be a condition of the Employer's Requirements that the successful appointed Contractors, immediately following appointment, must detail in the ISMP how it is intended to complete the works in accordance with the Employer's Requirements, and will be subject to GIL's approval. Further details on the assessment of non-native invasive species, and associated mitigation measures are provided in Chapter 11 (Biodiversity) of this EIAR.

#### *5.5.4.3 Surface Water Management Plan (SWMP)*

A SWMP has been prepared which details control and management measures for avoiding, preventing, or reducing any significant adverse impacts on the surface water environment during the Construction Phase of the Proposed Development. It will be a condition of the Employer's Requirements that the successful appointed Contractors, immediately following appointment, must detail in the SWMP how it is intended to effectively implement all the applicable measures identified in this EIAR and any additional measures required pursuant to conditions imposed by SDCC to any grant of approval.

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#### *5.5.4.4 Environmental Incident Response Plan*

The Environmental Incident Response Plan (EIRP) has been prepared to ensure that in the unlikely event of an incident (environmental, or non-environmental), 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 licence, or other such risks that could lead to a pollution incident, including flood risks. It will be a condition of the Employer's Requirements that the successful appointed Contractors, immediately following appointment must detail in the EIRP, the manner in which it is intended to effectively implement all the applicable mitigation measures identified in this EIAR and any additional measures required pursuant to conditions imposed by SDCC to any grant of approval.

#### *5.5.4.5 Construction and Demolition Resource and Waste Management Plan (CDRWMP)*

The CDRWMP has been prepared which provides the strategy that will be adopted in order to ensure that optimum levels of reduction, reuse and recycling are achieved. It will be a condition of the Employer's Requirements that the successful appointed Contractors, immediately following appointment, must detail in the CDRWMP the manner in which it is intended to effectively implement all the applicable mitigation measures identified in this EIAR and any additional measures required pursuant to conditions imposed by SDCC to any grant of approval. Further details on waste management are provided in Chapter 16 (Resource and Waste Management) of this EIAR.

## 5.6 Construction Mitigation and Monitoring Measures

Mitigation and monitoring measures have been identified as environmental commitments and overarching requirements which shall avoid, reduce or offset potential impacts which could arise throughout the Construction Phase of the Proposed Development. These mitigation and monitoring measures which are relevant to the Construction Phase of the Proposed Development are detailed in Chapter 6 to Chapter 19, the CEMP (Appendix 5.1) and are summarised in Chapter 20 (Summary of Mitigation & Monitoring Measures) of this EIAR.

## 5.7 Decommissioning

It is envisaged that the Proposed Development will have a long lifespan of 35-40 years, or more. Regular maintenance and upgrading of the data centre facility over time will enable it to continue to meet future demands. Upon closure, which is unforeseen at this time, it is anticipated that the facility will be suitable for re-use as would any other industrial site. All bespoke plant and equipment that would be surplus to requirements for a standard industrial site would simply be decommissioned, removed and recycled/disposed of as appropriate to the guidelines and regulations of that time. Any external areas or structures may be re-used for similar industrial usage. The costs associated with the closure of the facility will be met by the owners of the facility at that time.

The following is a standard requirement under the current IE licence and expected to be included in any revised licence:

*Following termination, or planned cessation tor a period greater than six months, of use or involvement of all or part of the site in the licensed activity, the licensee shall, to the satisfaction of the Agency, decommission, render safe or remove for disposal, recovery any soil, subsoil, buildings, plant or equipment, or any waste, materials or substances or other matter contained therein or thereon, that may result in environmental pollution. A final validation report to include a certificate of completion to demonstrate there is no continuing risk to the environment shall be submitted to the Agency within three months of termination or planned cessation of the activity.*

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## 5.8 References

Uisce Eireann (2020) *Code of Practice for Water Infrastructure*

Uisce Eireann (2020) *Water Infrastructure Standard Details*

European Communities (2011) *Waste Directive Regulations*

European Union (2006) *EU Regulation 1013/2006 on the Shipments of Waste (known as the Transfrontier Shipment Regulations), as amended*

Government of Ireland (GoI) (2007) *Waste Management (Shipments of Waste) Regulations 2007*

TII (2007) *Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan*

CIRIA (2015) *Environmental Good Practice on Site Guide, 4th Edition*

# 6. Traffic and Transport

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## 6.1 Introduction

This Chapter of the Environmental Impact Assessment Report (EIAR) identifies, describes and assesses the likely direct and indirect significant effects on traffic and transport associated with the Construction, Operational and Decommissioning Phases of the Data Centre Development DC3 (referred to as "the Proposed Development") in accordance with the Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, 2022).

During the Construction Phase, the potential traffic and transport effects associated with the Proposed Development have been assessed. This included construction activities such as construction staff and construction vehicle traffic trip generation and trip distribution.

During the Operational Phase, the potential traffic and transport effects associated with the Proposed Development have been assessed by providing an analysis of the expected private vehicle and heavy goods vehicle traffic (HGV) trip generation and trip distribution.

The design of the Proposed Development has evolved through comprehensive design iteration, with particular emphasis on minimising the potential for environmental effects, where practicable. In addition, feedback received from consultation undertaken with South Dublin County Council (SDCC) roads department throughout the alternatives assessment and design development process have been considered, where appropriate.

The aim of the Proposed Development when in operation is to offer expanded compute capacity to GIL's customers and products. The Proposed Development is described in detail in Chapter 4 (Description of the Proposed Development) and Chapter 5 (Construction) provides a description of the construction and demolition activities.

Refer to Appendix 1.1 for the competency of the author of this Chapter.

## 6.2 Assessment Methodology

The assessment methodology used in this assessment of effects is set out below.

### 6.2.1 Assessment Guidance Documentation

The assessment in this Chapter has been undertaken in line with the Transport Infrastructure Ireland (TII) (2014) Traffic and Transport Assessment Guidelines. The assessment also regards the relevant Environmental Impact Assessment guidelines, including:

- Department of Housing, Planning and Local Government (DoHPLG) (2018) - Guidelines for Planning Authorities and An Bord Pleanála in carrying out Environmental Impact Assessment;
- Environmental Protection Agency (EPA) (2022) - Guidelines on the information to be contained in Environmental Impact Assessment Reports; and
- European Commission (2017) - Environmental Impact Assessment of Projects: Guidance on the Preparation of the Environmental Impact Assessment Report.

### 6.2.2 Study Area

For the purposes of this assessment, the Proposed Development study area is defined as the road network in the immediate vicinity of the Proposed Development site (see Figure 6.2 in Section 6.3.3). This road network primarily consists of the R134 Nangor Road, R136 Grange Castle Road, Baldonnel Road, Grange Castle Business Park Access Road and Profile Park Access Road.

### 6.2.3 Consultation

The following body was consulted in the preparation of the EIAR:

- South Dublin County Council - Roads Department.

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### 6.2.4 Assessment of Effects Methodology

The assessment methodology followed is outlined in the TII Traffic and Transport Assessment Guidelines:

"*A Traffic and Transport Assessment is a comprehensive review of all the potential transport impacts of a Proposed Development or re-development, with an agreed plan to mitigate any adverse consequences. All new developments will generate trips on the existing transport network, either by car, commercial vehicle, cycling, walking or public transport. In cases where a Proposed Development is of a size or type that would generate significant additional trips on adjoining transport infrastructure, this additional demand may necessitate changes to the road layout or public transport service. It is essential that the developer or promoter should provide a full and detailed assessment of how the trips to and from the development might affect the transport network. The assessment should be an impartial description of the impacts of the Proposed Development and should outline both its positive and negative aspects*" (TII, 2014).

A baseline review has been carried out to develop an understanding of the existing traffic conditions. Future year scenarios were then developed for the years 2025, 2027, 2032 and 2037. The horizon year 2025 was identified as the peak construction time and therefore this year was identified to represent a worst case scenario for the construction impact. The horizon year 2027 is the assumed opening year of the development. The TII Traffic and Transport Assessment Guidelines recommends that traffic impact assessment is carried out for the opening year of the development followed by a 5 year and 15 year horizon from the opening year. Therefore 2032 and 2037 was also identified as future assessment years.

Future year scenarios have been calculated based on guidance contained in the TII Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections PE-PAG-02017. Future year scenarios were developed by applying annual growth rates from the TII Project Appraisal Guidelines, followed by calculating the number of trips expected to be generated during both the peak construction period and the operational period of the Proposed Development. The new trips have been distributed on the network based on existing trip distribution patterns derived from the base line traffic counts. The potential traffic effects associated with the operation of the Proposed Development have been determined based on the expected trip generation of the Proposed Development. The trip generation has been calculated for the weekday AM and PM network peak hour period as these time periods are considered to be the most critical i.e. the highest traffic volume per hour.

The potential effects on the surrounding road network have been assessed on the basis of an initial link flow analysis, followed by a junction assessment of effects. In line with the TII Traffic and Transport Assessment Guidelines the link flow analysis determined the percentage increase in traffic volume created as a result of the operation of the Proposed Development. According to the Guidelines, one of the key thresholds for conducting a Transport Impact Assessment is when *"traffic to and from the development exceeds 5% of the traffic flow on the adjoining road"* and so this threshold is used as a means to determine if a full junction analysis is conducted for a specific junction on the network (TII, 2014).

Junction analysis on the identified junctions for assessment based on the 5% threshold as per TII, 2024 has been conducted through the use of Junctions-9 software for priority junctions, and LinSig 3 for signalised junctions. If the Ratio of Flow to Capacity (RFC) for a priority junction or Degree of Saturation (DoS) for a signalised junction reached 90%, the junction was deemed to be over capacity. If a junction which currently operates at capacity is brought to operate over capacity as a result of the trips generated by the Proposed Development site, it was determined to be a Significant potential effect. If the junction remained within capacity, the potential effect was deemed 'Not Significant'.

An assessment of the walking and cycle infrastructure within the surrounding context of the Proposed Development site has been carried out to review its quality and connectivity.

With regard public transport, an assessment has been conducted through the analysis of the availability and proximity of bus infrastructure and services in the vicinity of the Proposed Development site.

## 6.3 Baseline Environment

### 6.3.1 National, Regional and Local Policies

There are a number of relevant national, regional and local policies that informed the assessment, including:

1. Project Ireland 2040, including the National Planning Framework and the National Development Plan 2021-2030;
2. National Investment Framework for Transport in Ireland (NIFTI);
3. Climate Action Plan (CAP) 2024;
4. Eastern and Midland Regional Spatial and Economic Strategy (RSES) 2019-2031;
5. South Dublin County Development Plan 2022-2028; and
6. South Dublin Climate Action Plan 2024-2029.

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### 6.3.2 Site Location

The Proposed Development is located in the south-western region of County Dublin and is under the jurisdiction of South Dublin County Council. Additionally, the Proposed Development site is situated within Grange Castle Business Park South, as shown below in Figure 6.1. Grange Castle Business Park South 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 6.1: Proposed Development site location.**

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 of the existing data centres.

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### 6.3.3 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 6.2 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 South to the entrance.

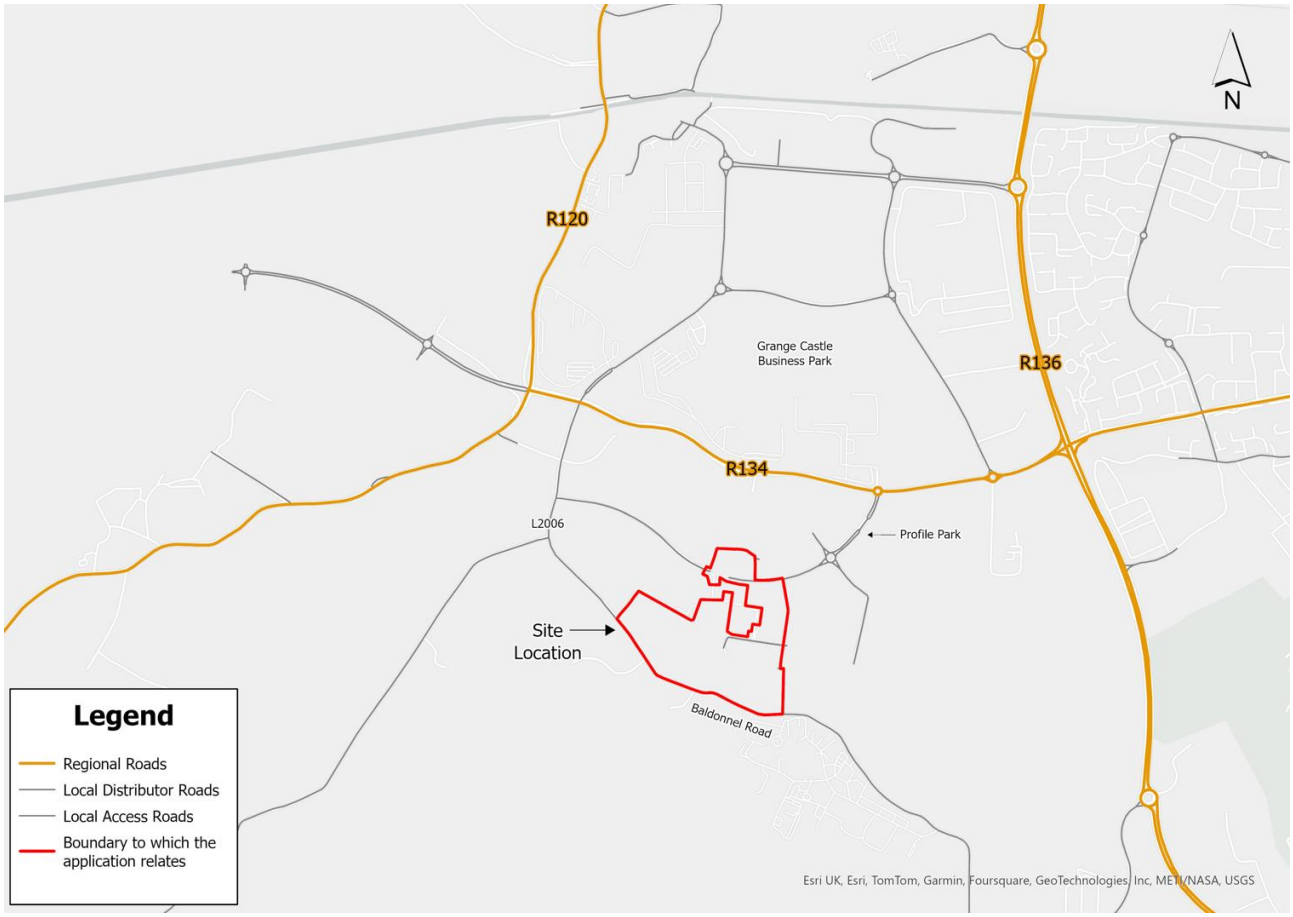


**Figure 6.2: Local road network.**

#### *6.3.3.1 R134 Nangor Road*

The R134 Nangor Road is a two-way single carriageway road connecting Grange Castle Business Park South 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.

#### *6.3.3.2 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 1.5km from the location of the Proposed Development.

#### *6.3.3.3 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.

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#### *6.3.3.4 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.

#### *6.3.3.5 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.

### 6.3.4 Existing GIL Campus Access

The existing access arrangements to the GIL Campus are shown in Figure 6.3 below. Access is provided from the Grange Castle Business Park Road and is located at the end of this road. All access to the GIL Campus including vehicle, cycle and pedestrian traffic is controlled by a security point at this location. A pedestrian access is provided adjacent to the vehicular access. There are in and out traffic lanes, security check points and pedestrian entrances. To facilitate entry security processing there are two inbound vehicular lanes, one for staff and the other for visitors and two spaces for vehicles to park. There is only one outbound lane.

**Figure 6.3: Existing GIL Campus access.**

### 6.3.5 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 6.4. 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.

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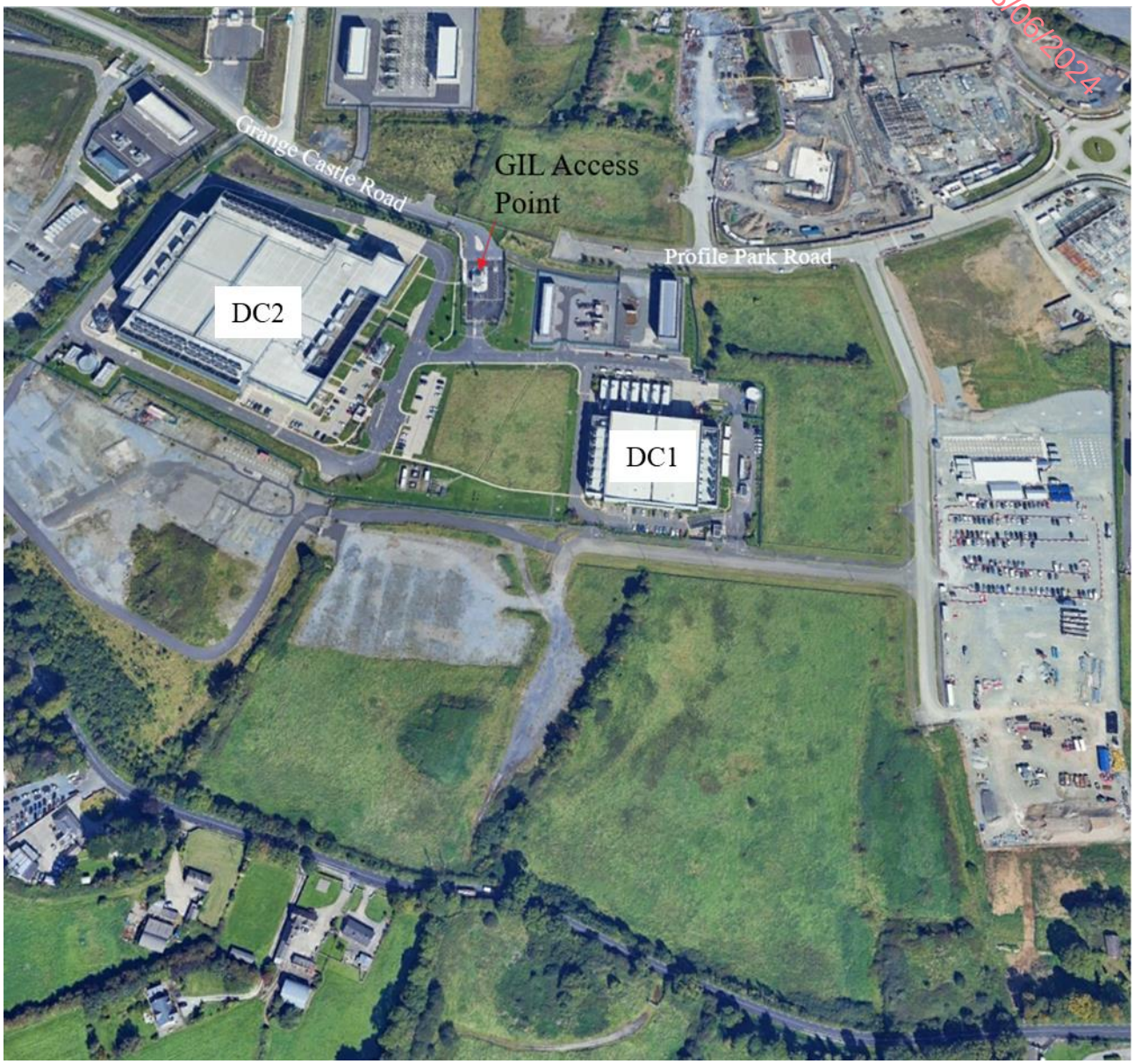


**Figure 6.4: Existing GIL Campus internal road network.**

### 6.3.6 Existing External Walkway and 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 6.5.

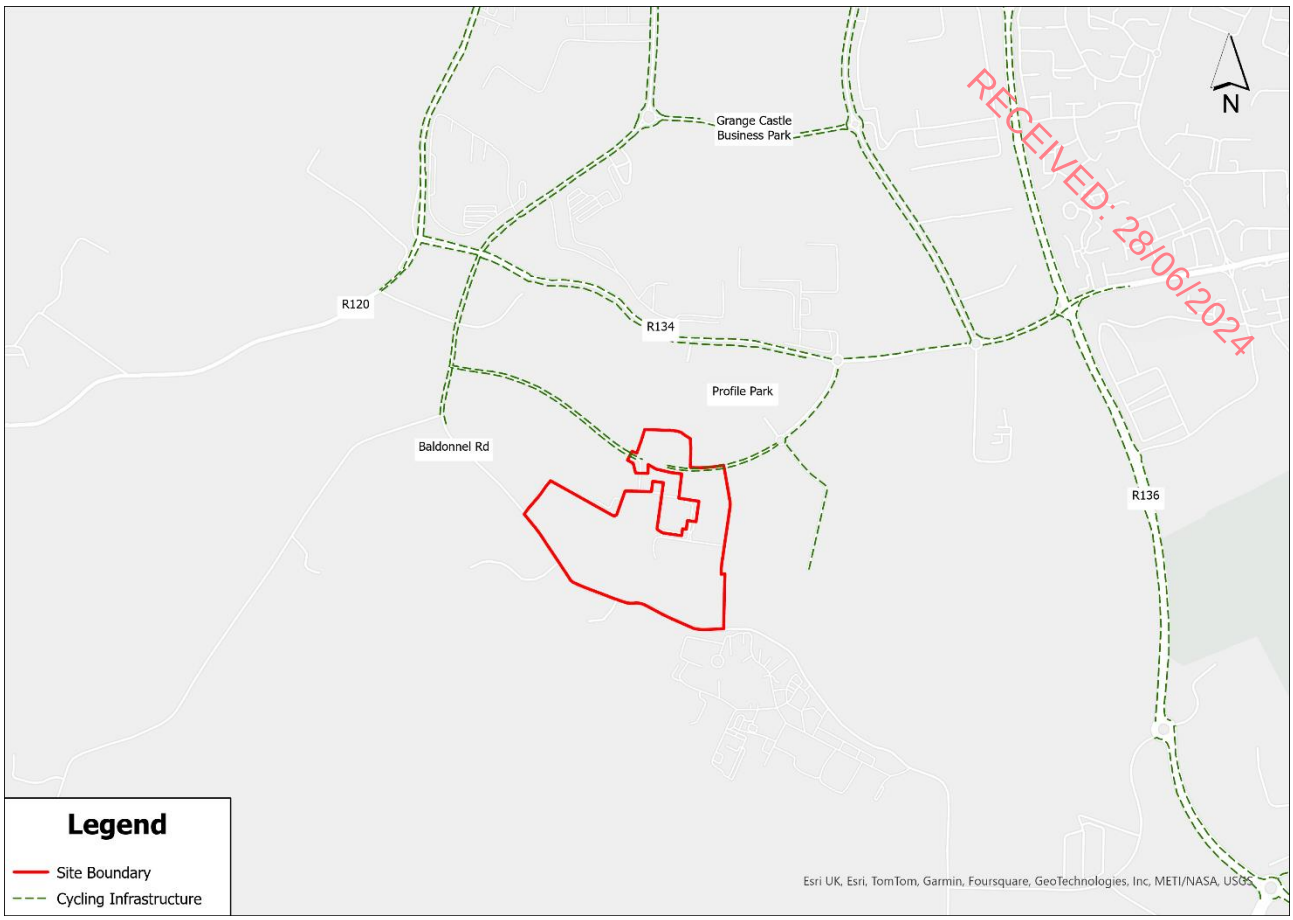

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**Figure 6.5: Cycle infrastructure in the vicinity of the Proposed Development site.**

### 6.3.7 Existing Public Transport Provision

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 6.6 shows the bus stop locations and lists the routes they serve.

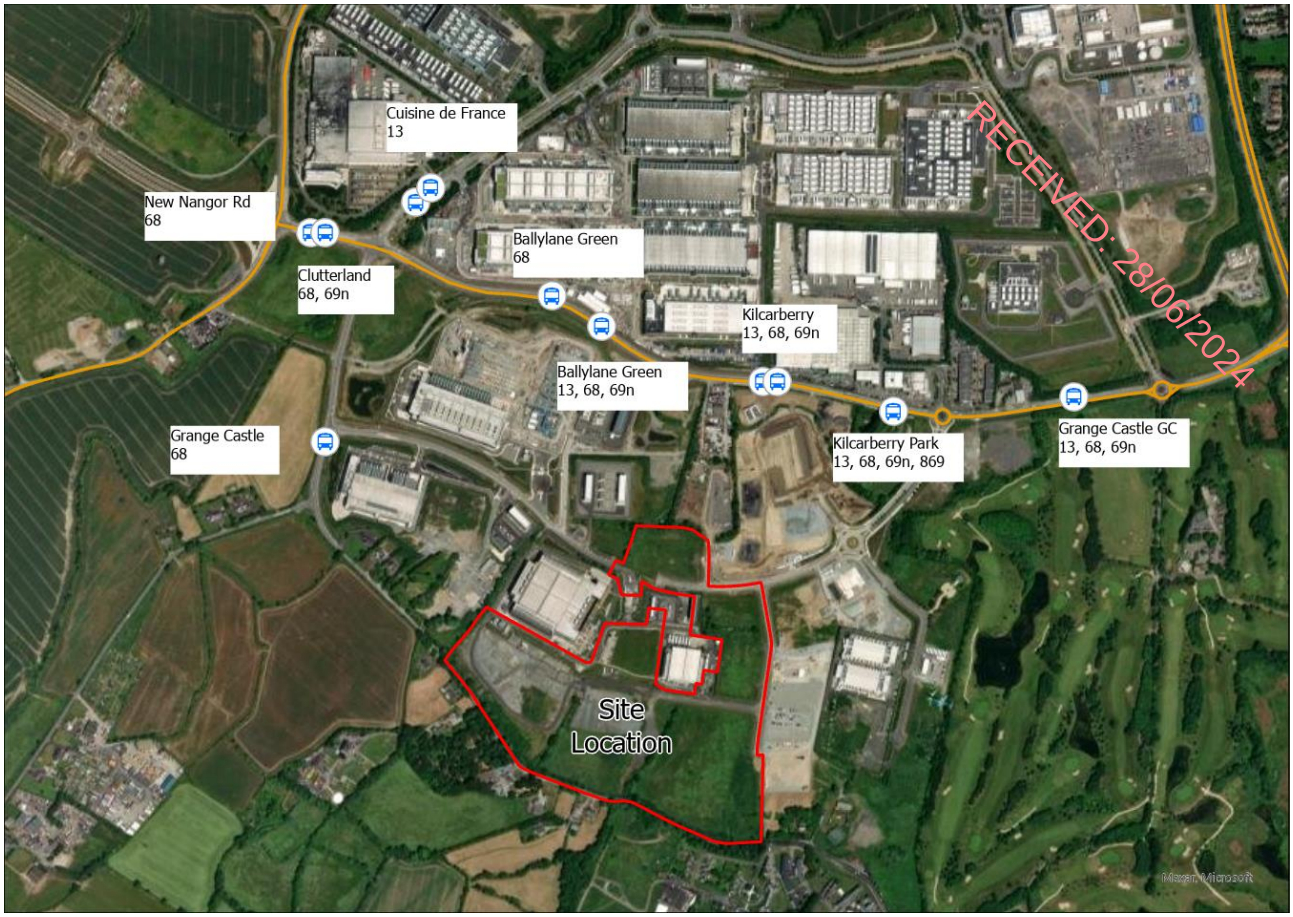


**Figure 6.6: Bus stop locations and bus routes in the surrounding area.**

### 6.3.8 Future Public Transport Provision

#### *6.3.8.1 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 South and Profile Park Business Park.

The local BusConnects routes are presented in Figure 6.7. 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 6.7: Proposed BusConnects routes in the surrounding area.**

#### *6.3.8.2 South Dublin County Council Development Plan 2022-2028*

The South Dublin County Council 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.

### 6.3.9 Existing Car Parking Provision

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, five are designated accessible parking spaces and seven spaces are Electric Vehicle charging spaces.

### 6.3.10 Existing Cycle Parking

There are currently 48 cycle parking spaces available on the GIL Campus, serving DC1 and DC 2. These spaces are located close the entrances to the buildings.

### 6.3.11 Existing Traffic Patterns

The existing traffic volumes and patterns were reviewed by carrying out traffic counts on the road network within the vicinity of the Proposed Development. The traffic counts were carried out on the 16th of April 2024 over a 14 hour period between the hours of 06:00 and 20:00, at five junctions. These junctions were selected due to both their proximity to the Proposed Development site and the expected access route to the Proposed Development site during both the Construction and Operational Phases. Figure 6.8 presents the location of these junctions in the environs of the GIL Campus site.

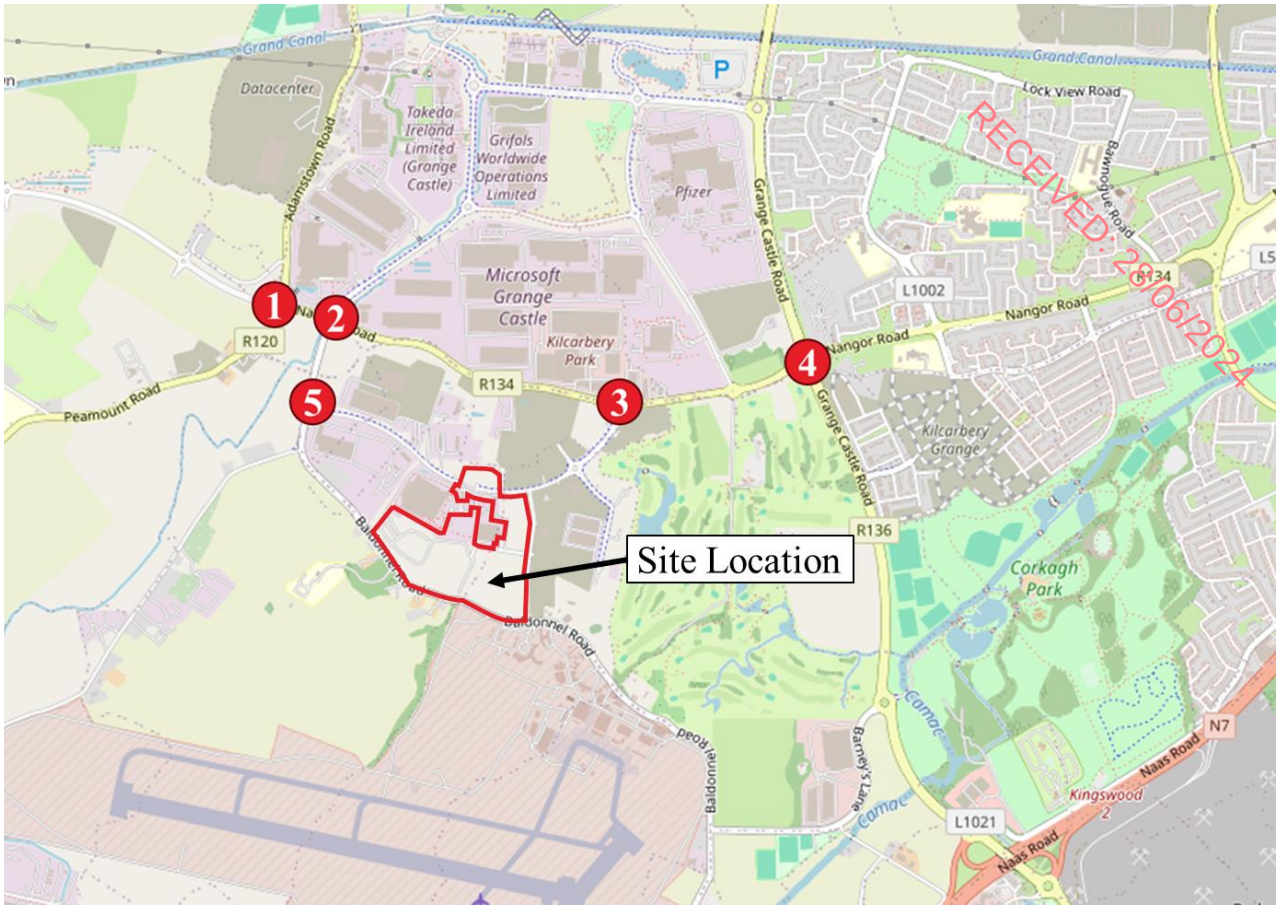


**Figure 6.8: Traffic survey count locations.**

Examination of the traffic count data concluded that the peak morning traffic flows at the survey locations occurred between 07:45 and 08:45, while the evening peak period was observed to occur between 16:45 and 17:45. The two-way traffic flows recorded during these time periods are presented in Table 6.1 below.

**Table 6.1: Two way link flows in the AM and PM Peak periods.**

| Site | Link | 2024 | |
|---|---|---|---|
| | | AM Peak 07:45-08:45 traffic numbers | PM Peak 16:45-17:45 traffic numbers |
| Site 1 | R120 Adamstown Road (N) | 925 | 1,139 |
| | R134 New Nangor Road (E) | 1,329 | 1,309 |
| | R120 Adamstown Road (S) | 920 | 826 |
| | Grange Castle Access Road (W) | 4 | 0 |
| | | | |
| Site 2 | Grange Castle Business Park (N) | 487 | 425 |
| | R134 New Nangor Road (E) | 1,000 | 899 |
| | L2001 Realigned Baldonnel Road (S) | 909 | 836 |
| | R134 New Nangor Road (W) | 1,300 | 1,296 |
| | | | |
| Site 3 | Kilcarbery Park (N) | 239 | 288 |
| | R134 New Nangor Road (E) | 1,153 | 1,188 |
| | Profile Park (S) | 131 | 312 |
| | R134 New Nangor Road (W) | 1,017 | 902 |
| | | | |
| Site 4 | R136 Grange Castle Road (N) | 1,792 | 2,064 |

| Site | Link | 2024 | |
|---|---|---|---|
| | | AM Peak 07:45-08:45 traffic numbers | PM Peak 16:45-17:45 traffic numbers |
| | R134 New Nangor Road (E) | 1,469 | 1458 |
| | R136 Grange Castle Road (S) | 2,750 | 2,967 |
| | R134 New Nangor Road (W) | 1,435 | 1,421 |
| | | | |
| Site 5 | L2001 Baldonnel Road (N) | 897 | 817 |
| | Conchobar Murray Avenue (E) | 100 | 102 |
| | L2001 Baldonnel Road (S) | 877 | 811 |

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## 6.4 Characteristics of the Proposed Development

### 6.4.1 Introduction

The Proposed Development is described in Chapter 4 (Description of the Proposed Development) and Chapter 5 (Construction) provides a description of the construction and demolition activities.

### 6.4.2 Internal Network

#### *6.4.2.1 Road Network*

To accommodate the Proposed Development, the existing road and pedestrian network within the GIL Campus will be expanded to provide access to new buildings. The entrance to DC3 will be via the existing entrance available at the end of Grange Castle Road. Access into the GIL Campus is security controlled. Vehicles will make use of existing roads within the campus to access DC3. A new 8.0m wide, two directional circulation route expanding in an east west direction will be provided to the south of the DC1 and DC2 sites. Road widths have been determined by considering the swept paths of the vehicles expected to use these roads. These include fire tender vehicles, large articulated vehicles, lo-loaders delivering large abnormal loads and mobile cranes delivering equipment such as electric generators. 5.0m wide service roads will also be provided off the circulation route to serve the mechanical and electrical yards supporting DC3.

A new secondary emergency vehicle entry point will be established to the east from Profile Park Road; this will have an associated pedestrian turnstile and cycle entry point.

A ring route is also provided around DC3 and Facility Support Area (FSA) building. It is predominantly one way except for the sections providing access to the delivery yard and providing access to the car parking on the road adjacent to the east of the FSA building.

#### *6.4.2.2 Internal Walkways*

The footpath network will also be expanded to follow a route adjacent to the proposed circular road and footpaths shall continue up to new building entrances and connect to car parking provided. Footpaths on the GIL Campus are provided at 1.5m width. There will also be an expansion of the internal footpath network within the GIL Campus. This network will provide the most direct route to the entrance of the FSA building.

The pedestrian and cycle accessibility to the GIL Campus site is currently indirect. It is proposed to provide a direct link between Profile Park Road and Grange Castle Business Park Road. This proposed pedestrian and cycle link is shown below in Figure 6.9. It connects existing pedestrian and cycle network infrastructure external to the GIL Campus to one another. The width and cross section of the Proposed Development is similar to the existing network currently available. It is also proposed to provide a pedestrian crossing with tactile paving to connect the footpath and cycleway north and south of Grange Castle Park Road. Security fences will be restructured to facilitate the provision of the footpath.

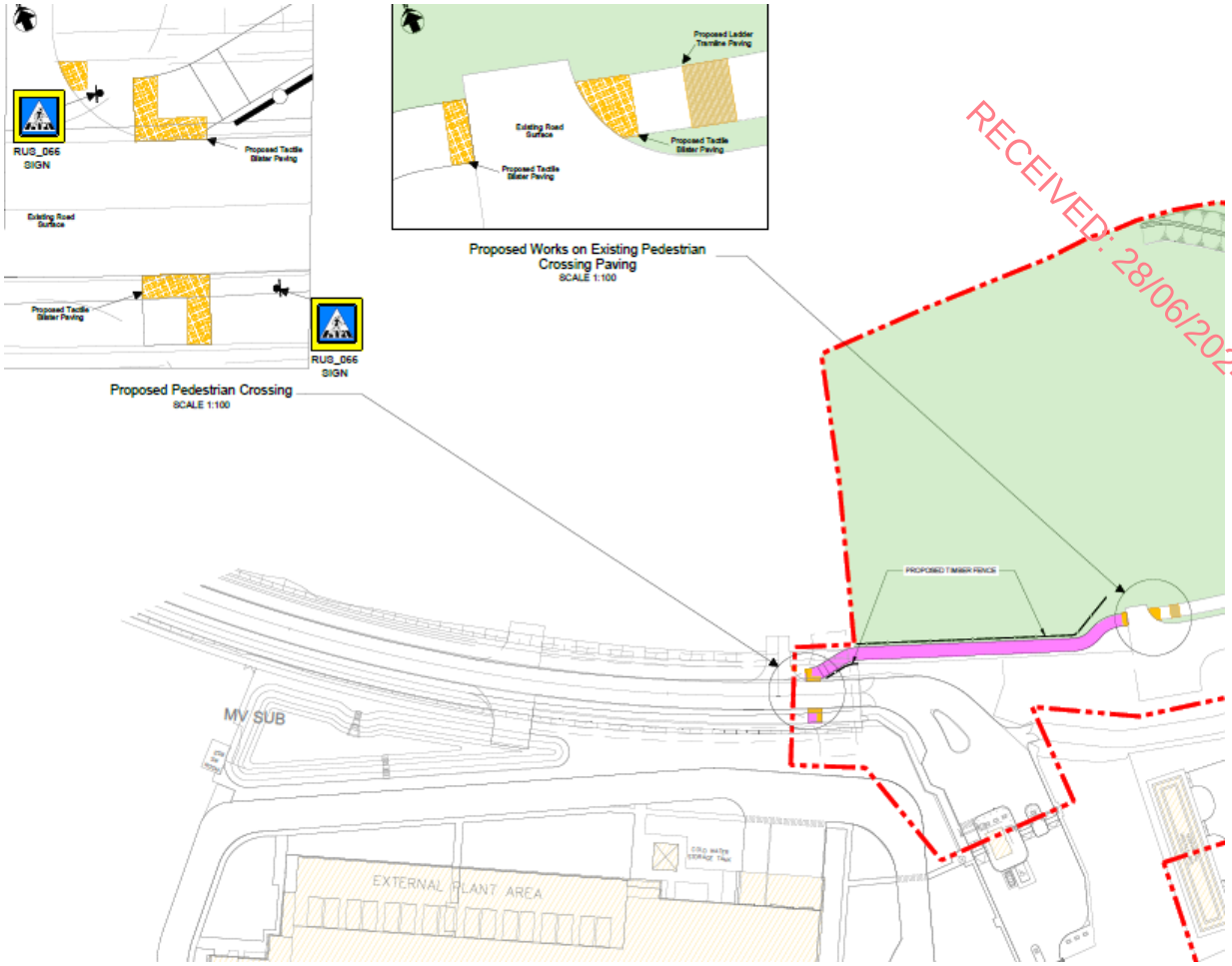


**Figure 6.9**: **Proposed pedestrian link from Profile Park.**

An emergency entrance is proposed to the east of the Proposed Development site which will provide emergency access to the site from Profile Park Road. This emergency access will also include the provision of a pedestrian turnstile and a combined footpath and cycle way internally in the site, which increases the pedestrian and cyclist accessibility to the site, and it also reduces the walking and cycling distance from residential estates within the vicinity to the site, whilst limiting vehicular access to the site to a single entry point. The location of the emergency access is identified in Figure 6.10.

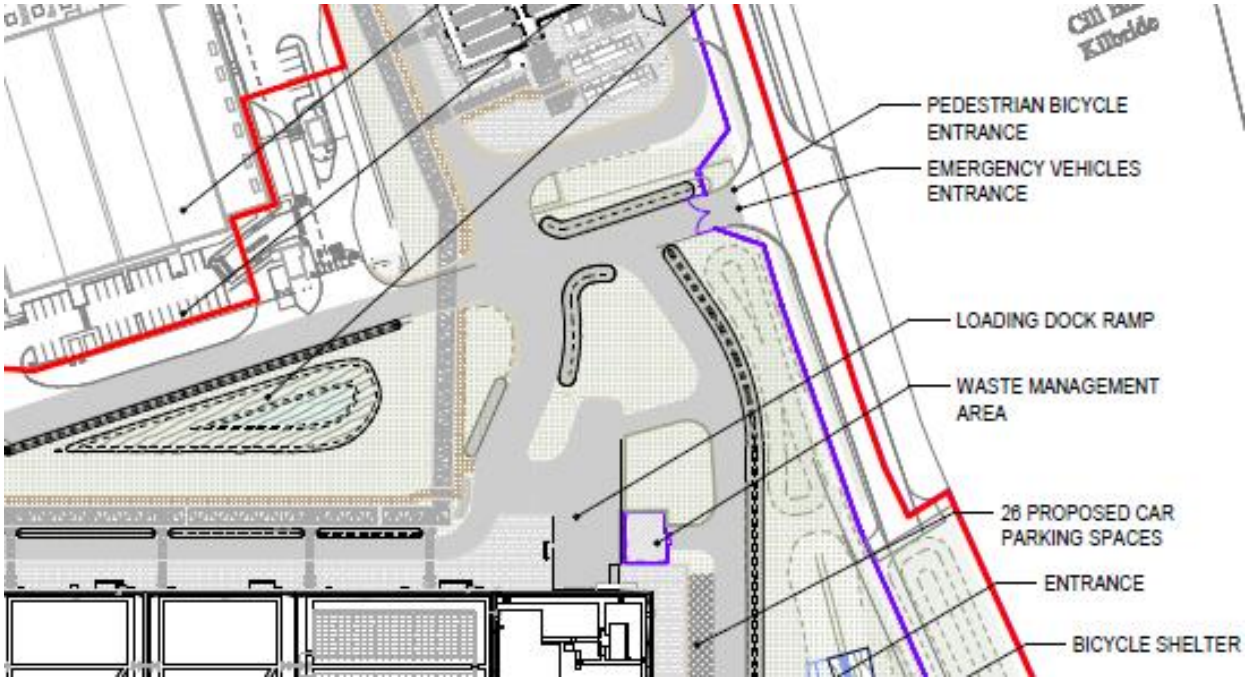


**Figure 6.10: Proposed secondary emergency access point.**

### 6.4.3 Car Parking

#### *6.4.3.1 Car Parking Policy*

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As car parking standards in the SDCC Development Plan 2022 – 2028 does not include Data Centres as a land use, the land use category considered most suitable to the Proposed Development was "*manufacturing/warehousing"* for Enterprise and Employment.

DC3 is located within Zone 2 and therefore complies with the associated car parking standards. The maximum car parking standards for "*manufacturing/warehouse"* within Zone 2 allows for 1 car parking space per 75m$^2$ of Gross Floor Area (GFA) within a development (SDCC Development Plan 2022 – 2028). This allows a maximum of 965 car parking spaces to be provided. Applying this ratio to the Proposed Development results in an oversupply of car parking spaces most of which will most likely not be utilised.

It was concluded that proposed car and cycle parking provisions on the Proposed Development site be based on the expected number of employees associated with the Proposed Development, the ambitions of the mobility management plan, existing car park ratios at the GIL Campus and utilisation.

At least 5%, or a minimum of one space, must also be provided as accessible parking. In all new developments, a minimum of 20% of all car parking spaces will be equipped with fully functional EV Charging Point(s). The remaining spaces shall be designed to facilitate the relevant infrastructure to accommodate future EV charging.

#### *6.4.3.2 Proposed Car Parking*

It is proposed to provide an additional 42 spaces beside DC3, of which 10 will be EV charging spaces and 4 will be designated accessible parking spaces. Therefore, upon completion of the Proposed Development, the total number of car parking spaces in the GIL Campus will be 149 car parking spaces. The proposed number of car parking spaces falls far below the maximum allowance of 965 car parking spaces for the most suitable land use category in the SDCC Development Plan 2022 – 2028.

It is expected that there will be a total of 25 direct staff and indirect staff (e.g. Contractors, support staff and deliveries) employed at the Proposed Development. Direct staff is staff that is expected to be most days at work while indirect staff includes support staff that only occasionally visit the Campus and generally for a short time period to do delivery, maintenance or contracting work.

There will typically be 50 additional staff on the campus compared to the existing situation. Currently, the staff predominantly travels to the GIL Campus by car. 15% of staff make use of car share or travel by other means than car to the GIL Campus. Therefore, applying a 0.85 ratio to the number of staff on a typical day on the GIL Campus, there would be a demand of 42 additional car parking spaces on the GIL Campus upon the completion of the Proposed Development.

Proposed car parking spaces are perpendicular parking spaces, which drivers will reverse into. As such, wheel stops shall be in place so as to prevent cars from protruding onto walkways. Figure 6.11 below shows an extract from the Proposed Development site plan which is the proposed car parking layout for the Proposed Development.

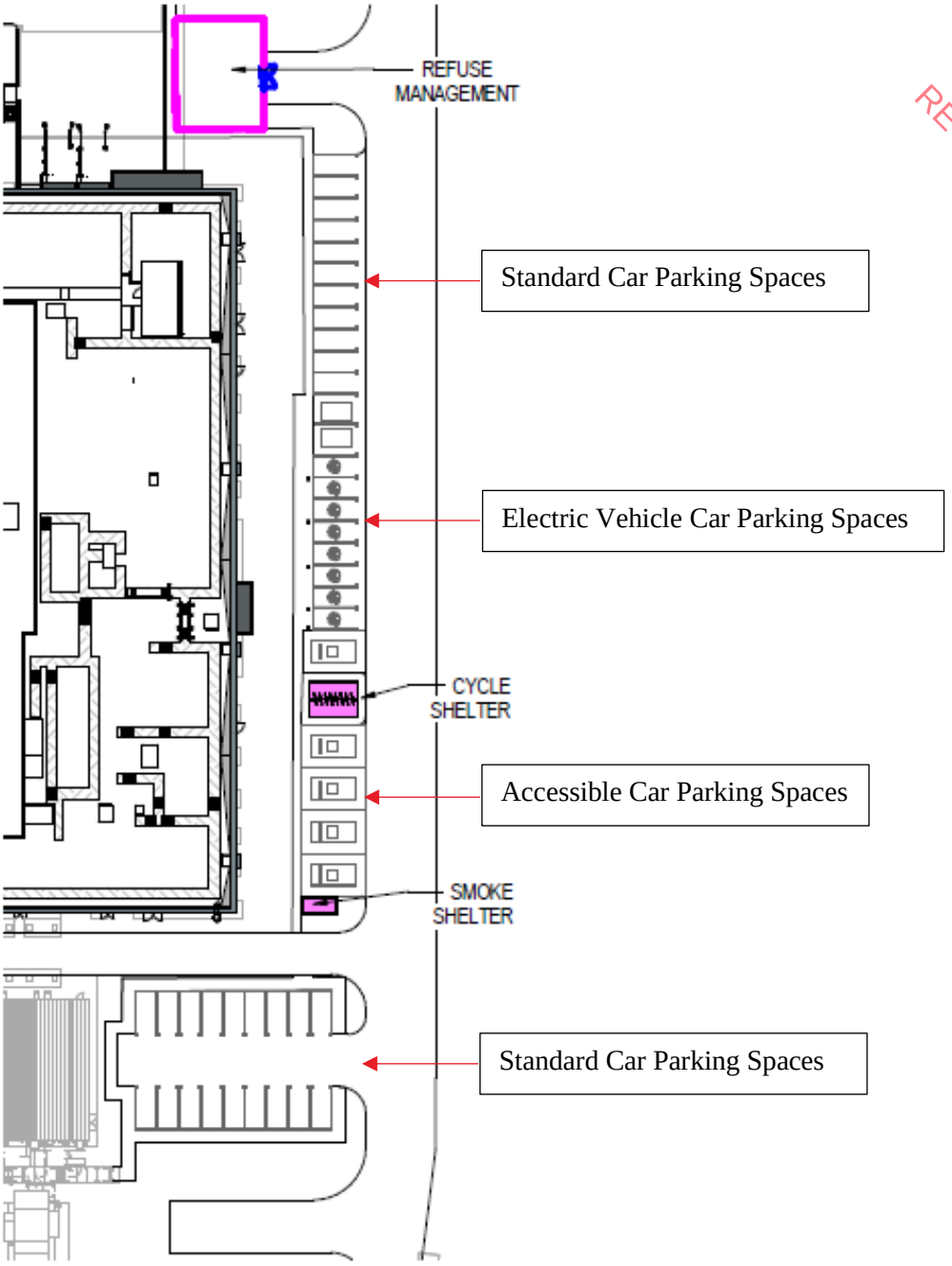


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**Figure 6.11: Proposed Development car parking layout plan.**

### *6.4.3.3 Proposed Cycle Parking*

The Proposed Development includes the provision of an additional 16 no. cycle parking spaces adjacent to the Proposed Development. These spaces will be provided within a secure bike shelter. A typical bike shelter is shown below in Figure 6.12. The proposed cycle shelter will increase the total number of cycle parking spaces to 64 no. covered spaces.

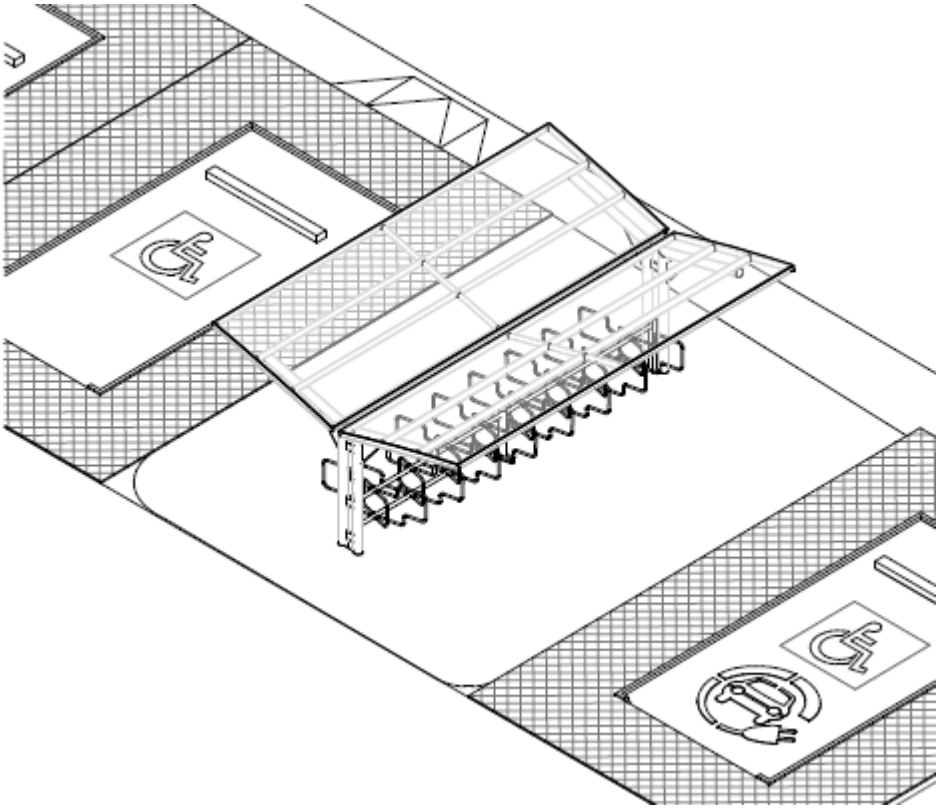

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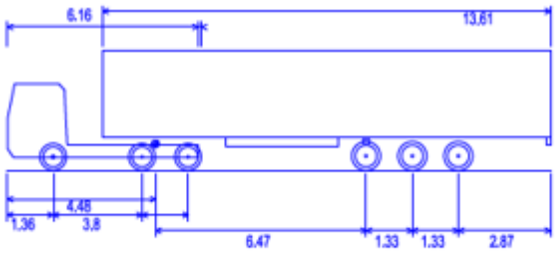
**Figure 6.12: Typical bike shelter.**

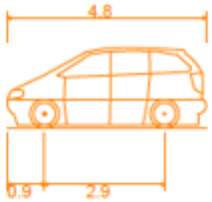
### *6.4.4* Emergency, Delivery and Service Access

Vehicle swept path analysis has been carried out on the existing and proposed internal site roads for standard vehicles, fire tender, refuse trucks and articulated trucks as well as mobile cranes and low loader trailers. The vehicles for which swept path analysis have been carried out are indicated below in Figure 6.13. The outputs of the analysis are shown in Figure 6.14 and shows that the proposed road network can accommodate all vehicle types expected to use them.




FTA Design Articulated Vehicle

| | |
|---|---|
| Overall Length | 16.480m |
| Overall Width | 2.550m |
| Overall Body Height | 3.870m |
| Min Body Ground Clearance | 0.515m |
| Max Track Width | 2.470m |
| Lock to Lock Time | 3.00 sec |
| Kerb to Kerb Turning Radius | 6.550m |

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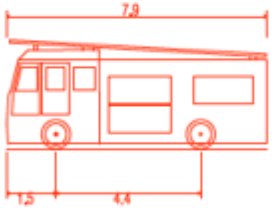
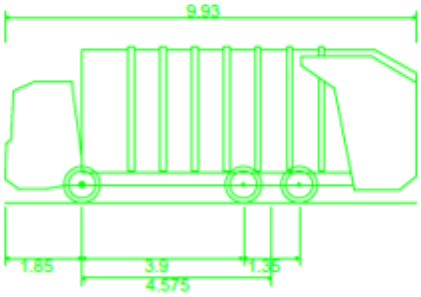
Standard Design Vehicle (SDV)

| | |
|---|---|
| Overall Length | 4.800m |
| Overall Width | 2.000m |
| Overall Body Height | 1.950m |
| Min Body Ground Clearance | 0.100m |
| Track Width | 2.000m |
| Lock-to-lock time | 4.00s |
| Wall to Wall Turning Radius | 6.000m |



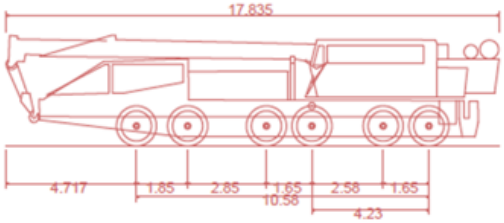

Pumping Appliance

| | |
|---|---|
| Overall Length | 7.900m |
| Overall Width | 2.500m |
| Overall Body Height | 3.300m |
| Min Body Ground Clearance | 0.140m |
| Track Width | 2.500m |
| Lock to Lock Time | 4.00s |
| Wall to Wall Turning Radius | 8.350m |



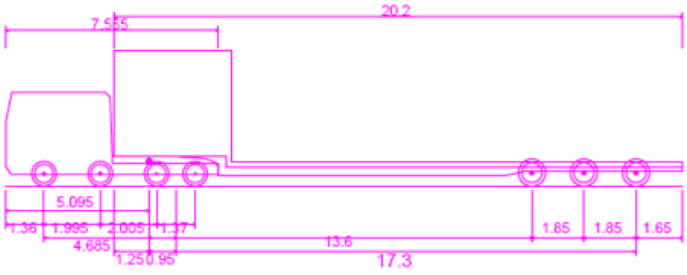

Vulture 2225 (with Mercedes Econic 2628LL 6x4 chassis)

| | |
|---|---|
| Overall Length | 9.930m |
| Overall Width | 2.490m |
| Overall Body Height | 3.749m |
| Min Body Ground Clearance | 0.302m |
| Track Width | 2.490m |
| Lock-to-lock time | 4.00s |
| Wall to Wall Turning Radius | 9.100m |




Liebherr LTM 1250-6.1 Mobile Crane

| | |
|---|---|
| Overall Length | 17.835m |
| Overall Width | 3.000m |
| Overall Body Height | 4.000m |
| Min Body Ground Clearance | 0.330m |
| Track Width | 3.000m |
| Lock to lock time | 4.00s |
| Kerb to Kerb Turning Radius | 11.624m |




Volvo FH16 8x4 + Broshuis Blade Trailer

| | |
|---|---|
| Overall Length | 24.045m |
| Overall Width | 2.550m |
| Overall Body Height | 4.800m |
| Min Body Ground Clearance | 0.375m |
| Track Width | 2.500m |
| Lock-to-lock time | 6.00s |
| Wall to Wall Turning Radius | 9.800m |

**Figure 6.13: Vehicles for auto tracking. Source: AutoCad Vehicle Tracking Software 2022.**

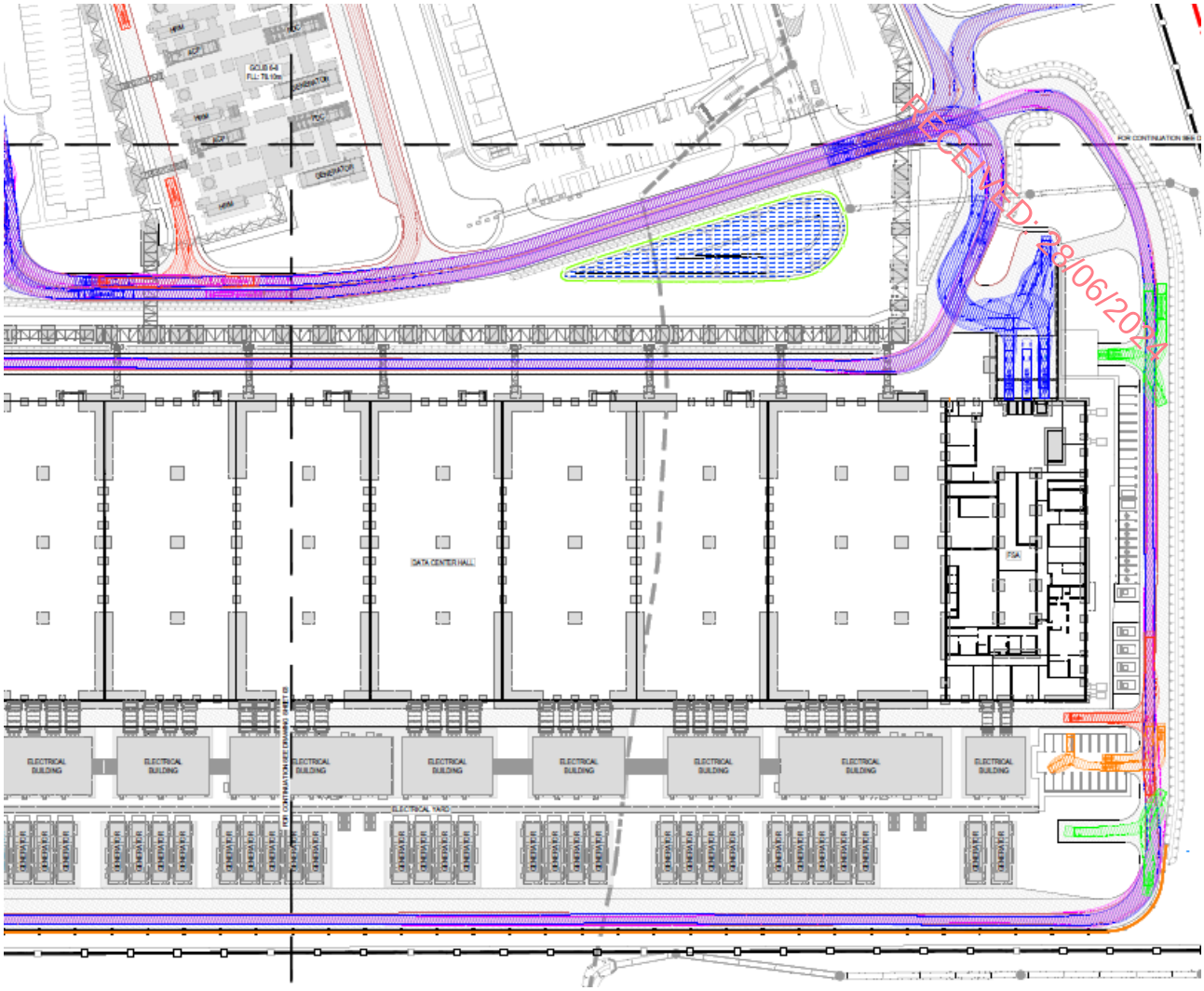



**Figure 6.14: Auto tracking swept path analysis. Source: AutoCad Vehicle Tracking Software 2022.**

## 6.4.5 Construction Phase Characteristics

### *6.4.5.1 Proposed Construction Routes*

It is proposed that access to the Proposed Development site during the Construction Phase will be provided via Profile Park Business Park in order for construction activities not to interfere with the operation of DC1, DC2 and other nearby facilities. The majority of construction traffic is expected to arrive 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 would 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 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 below in Figure 6.15.

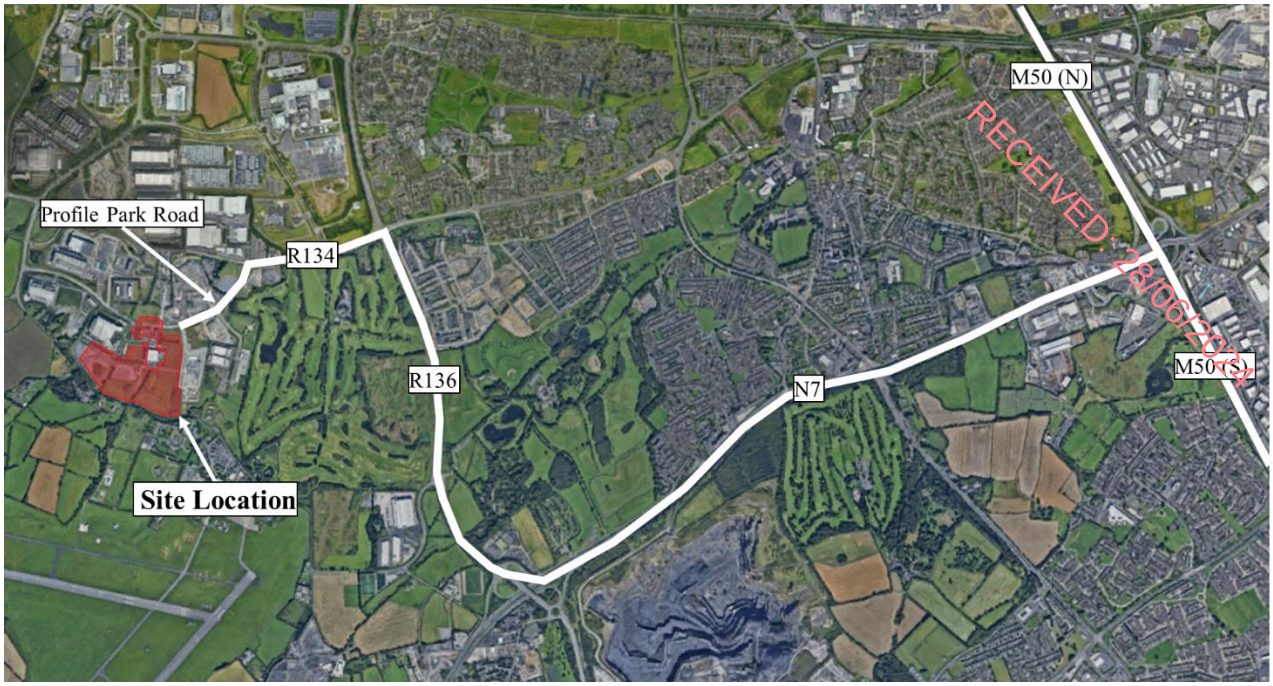



**Figure 6.15: HGV construction traffic route.**

#### *6.4.5.2 Working Hours*

Working hours would 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 would 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 would be subject to reasonable notice and either securing the required licences or obtaining prior agreement with SDCC.

#### *6.4.5.3 Construction Site and Car Parking*

Construction welfare compounds will be located within the confines of Profile Park Business Park and Grange Castle Business Park South. The appointed construction Contractor's CTMP shall include measures for managing traffic accessing and egressing the construction compounds. The construction compounds will contain a site welfare and accommodation block, and welfare facilities for management and construction personnel and appointed construction Contractor personnel. Limited car parking will be allowed at the construction compound, in line with the principles of the Construction Stage Mobility Management Plan.

## 6.5 Potential Effects

### 6.5.1 Do-Nothing Scenario

The 'Do-Nothing' alternative considers the likely scenario that would arise, assuming the Proposed Development were not progressed, i.e., if nothing were done. Under a do-nothing scenario, the Proposed Development site would continue to function as it currently does and will have no additional potential effect on the traffic and transport network.

## 6.5.2 Construction Phase

### *6.5.2.1 Trip Generation*

According to Chapter 5 (Construction), it is estimated that the peak construction period will occur in Q1 2025 to Q2 2026, however this may move to a later date depending on planning approval. During the peak construction period there will be approximately 494 two-way heavy goods vehicle movements per day. Assuming a 12-hour workday, it is estimated that there will be on average 42 HGV movements to and from the Proposed Development site in the peak hours on the local road network.

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During the peak construction period it is also estimated that there will be 800 construction worker vehicles on site per day with approximately 660 two-way staff trips to and from the Proposed Development site per day. Typically, construction workers will remain on the Proposed Development site from morning start to evening time which is from 07:00 to 19:00 Monday to Friday and 08:00 to 14:00 on Saturdays. Therefore it is not likely that staff trips to/from the Proposed Development site would coincide with the morning and evening peak in the local network since they will arrive before the AM peak hour and leave after the PM peak hour period. A Construction Traffic Mobility Management Plan will be developed to mitigate car dependence of construction workers.

However, to represent a worst case scenario, it is assumed that 20% of the expected staff trips arrive or depart during peak hours. Assuming that staff will all arrive or depart in single occupant vehicles, this scenario results in and additional 66 trips to the Proposed Development site in the morning peak and 66 trips leaving the Proposed Development site in the evening peak.

### *6.5.2.2 Trip Distribution*

As outlined in the Construction Environmental Management Plan (CEMP, refer to Appendix 5.1), construction traffic is expected to access the Proposed Development site via Profile Park Road at the junction with R134 New Nangor Road. All HGV movements to and from Proposed Development site during the Construction Phase is expected to take the route of Profile Park, R134, R136, N7 and M50 to minimise traffic on local roads in the area. Construction staff is expected to access the Proposed Development site via Profile Park Road at the junction with R134 New Nangor Road. These trips are expected to follow a similar trip distribution pattern to that followed by existing traffic on the network. The assumed trip distribution for construction staff was therefore based on the traffic patterns derived from the traffic count survey carried out on 16 April 2024.

### *6.5.2.3 Link Flow Assessment*

An assessment of road links in the vicinity of the Proposed Development site was carried out for the peak construction scenario considered. Table 6.2 presents the two-way traffic volumes at AM and PM peak for each link in the surrounding area, as well as the percentage increase on each link as a result of the Proposed Development. For the cases where the estimated increase is higher than 5%, junction assessments have been carried out.

**Table 6.2: Link flow assessment during the peak construction period (2025)**

| Link | 2025 | | | | | |
|---|---|---|---|---|---|---|
| | AM Peak (07:45-08:45) traffic movements | | | PM Peak (16:45-17:45) traffic movements | | |
| **Junction No. 1** | **Base** | **+ Construction** | **% Increase** | **Base** | **+ Construction** | **% Increase** |
| R120 Adamstown Road (N) | 943 | 956 | 1 | 1,160 | 1,173 | 1 |
| R134 New Nangor Road (E) | 1354 | 1,381 | 2 | 1,333 | 1,360 | 2 |
| R120 Adamstown Road (S) | 937 | 950 | 1 | 841 | 854 | 2 |
| Grange Castle Access Road (W) | 4 | 4 | 0 | 0 | 0 | 0 |
| **Junction No. 2** | **Base** | **+ Construction** | **% Increase** | **Base** | **+ Construction** | **% Increase** |
| Grange Castle Business Park (N) | 496 | 496 | 0 | 433 | 433 | 0 |

| Link | 2025 | | | | | |
|---|---|---|---|---|---|---|
| | AM Peak (07:45-08:45) traffic movements | | | PM Peak (16:45-17:45) traffic movements | | |
| R134 New Nangor Road (E) | 1,019 | 1,085 | 6 | 916 | 982 | 7 |
| L2001 Baldonnel Road (S) | 926 | 966 | 4 | 852 | 891 | 5 |
| R134 New Nangor Road (W) | 1,325 | 1,351 | 2 | 1,320 | 1,346 | 2 |
| **Junction No. 3** | **Base** | **+ Construction** | **% Increase** | **Base** | **+ Construction** | **% Increase** |
| Kilcarbery Park (N) | 244 | 244 | 0 | 293 | 293 | 0 |
| R134 New Nangor Road (E) | 1,175 | 1,283 | 9 | 1,210 | 1,318 | 9 |
| Profile Park (S) | 134 | 308 | 130 | 318 | 492 | 55 |
| R134 New Nangor Road (W) | 1,036 | 1102 | 6 | 919 | 985 | 7 |
| **Junction No. 4** | **Base** | **+ Construction** | **% Increase** | **Base** | **+ Construction** | **% Increase** |
| R136 Grange Castle Road (N) | 1,825 | 1,858 | 2 | 2,102 | 2,135 | 2 |
| R134 New Nangor Road (E) | 1,496 | 1,496 | 0 | 1,484 | 1,484 | 0 |
| R136 Grange Castle Road (S) | 2,802 | 2,893 | 3 | 3,021 | 3,113 | 3 |
| R134 New Nangor Road (W) | 1,462 | 1,587 | 9 | 1,447 | 1,571 | 9 |
| **Junction No. 5** | **Base** | **+ Construction** | **% Increase** | **Base** | **+ Construction** | **% Increase** |
| L2001 Baldonnel Road (N) | 914 | 954 | 4 | 832 | 872 | 5 |
| Conchobar Murray Avenue (E) | 102 | 102 | 0 | 104 | 104 | 0 |
| L2001 Baldonnel Road (S) | 894 | 933 | 4 | 826 | 866 | 5 |

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The above link flow assessment results show that Junction No. 2 R134 New Nangor Road / L2001 Baldonnel Road, Junction No. 3 Profile Park / R134 New Nangor Road and Junction No. 4 R136 Grange Castle Road / R134 New Nangor Road will present an increase in two way traffic volume as a result of traffic generated by the Proposed Development in the peak construction scenario. The effect of the peak construction scenario is further examined through modelling of the respective junctions as described in Section 6.5.2.5.

### *6.5.2.4 TII Assessment Thresholds*

The predicted increases in peak hour link and junction traffic volumes on Junction No. 1 R120 Adamstown Road / Grange Castle Access Road and Junction No.5 L2001 Baldonnel Road / Conchobar Murray Avenue, on average during the peak Construction Phase, would be less than the volumetric threshold (5%) identified in the TII Assessment Guidelines (2014) for consideration of congested or other sensitive locations. Therefore, it is concluded that there is no requirement to conduct further junction analysis on these junctions.

### *6.5.2.5 Junction Analysis*

The potential effects on Junction No. 2 R134 New Nangor Road / L2001 Baldonnel Road resulting from the peak Construction Phase of the Proposed Development has been assessed using the modelling software LinSig 3 for signalised junctions. Signalised junctions are assessed in terms of Degree of Saturation (deg sat) and Mean Maximum Queue (MMQ). The results are presented in Table 6.3.

**Table 6.3: Results of the assessment of Junction No.2 in the Peak Construction Year 2025.**

| Junction Arm | AM Peak (07:45-08:45) | | | | PM Peak (16:45-17:45) | | | |
|---|---|---|---|---|---|---|---|---|
| | Without Construction | | With Construction | | Without Construction | | With Construction | |
| | % Deg Sat | MMQ | % Deg Sat | MMQ | % Deg Sat | MMQ | % Deg Sat | MMQ |
| Grange Castle Business Park | 77 | 4.9 | 77 | 4.9 | 95 | 11.9 | 103 | 15.3 |

| Junction Arm | AM Peak (07:45-08:45) | | | | PM Peak (16:45-17:45) | | | |
|---|---|---|---|---|---|---|---|---|
| | Without Construction | | With Construction | | Without Construction | | With Construction | |
| | % Deg Sat | MMQ | % Deg Sat | MMQ | % Deg Sat | MMQ | % Deg Sat | MMQ |
| R134 New Nangor Road (E) | 90 | 9.4 | 93 | 11.4 | 100 | 26.7 | 102 | 31.5 |
| L2001 Baldonnel Road | 88 | 10.1 | 95 | 11.9 | 99 | 19.9 | 99 | 19.1 |
| R134 New Nangor Road (W) | 92 | 25.1 | 94 | 27 | 98 | 15.3 | 103 | 20.4 |

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The results show that the junction is at a level that approaches capacity in the AM Peak and operates at capacity in the PM Peak periods already within the *"without construction scenario"*. Although the "*with*" construction scenario only leads to minor increases in the degree of saturation on all arms, it leads to the junction being at capacity in the AM Peak period and overcapacity in the PM Peak period. Since this junction is already operating near or at capacity and the construction traffic only contributes to a small increase in queue lengths and degree of saturation, the impact is considered minor and temporary as the peak construction period will have a duration of a 9 to 12 months.

The potential effects on Junction No. 3 Profile Park Road / R134 New Nangor Road resulting from the peak Construction Phase of the Proposed Development has been assessed using the modelling software Junctions 9 for priority junctions. The priority junction is assessed in terms of Ratio of Flow to Capacity (RFC) and Queue Length measured in Passenger Car Units (PCUs). The results are presented below in Table 6.4.

**Table 6.4: Results of the assessment of Junction No.3 in the Peak Construction Year 2025.**

| Junction Arm | AM Peak (07:45-08:45) | | | | PM Peak (16:45-17:45) | | | |
|---|---|---|---|---|---|---|---|---|
| | Without Construction | | With Construction | | Without Construction | | With Construction | |
| | %RFC | Queue | %RFC | Queue | %RFC | Queue | %RFC | Queue |
| Kilcarbery Park | 5 | 0.1 | 6 | 0.1 | 31 | 0.5 | 33 | 0.5 |
| R134 New Nangor Road (E) | 32 | 0.5 | 35 | 0.5 | 27 | 0.4 | 30 | 0.4 |
| L2001 Baldonnel Road | 3 | 0.0 | 13 | 0.2 | 40 | 0.7 | 51 | 1.0 |
| R134 New Nangor Road (W) | 49 | 1.0 | 53 | 1.1 | 25 | 0.3 | 28 | 0.4 |

The results show that Junction No. 3 Profile Park Road/ R134 New Nangor Road operates at spare capacity levels and can accommodate the construction traffic easily, with all arms presenting low RFC and Queue values. The potential effect of the construction traffic at this junction is expected to be not significant and temporary.

The potential effects on Junction No. 4 R136 Grange Castle Road / R134 New Nangor Road resulting from the peak Construction Phase of the Proposed Development has been assessed using the modelling software LinSig 3 for signalised junctions. Signalised junctions are assessed in terms of Ratio of Flow to Capacity (RFC) and Queue Length measured in Passenger Car Units (PCUs). The results are presented below in Table 6.5.

**Table 6.5: Results of the assessment of Junction No.4 in the Peak Construction Year 2025.**

| Junction Arm | AM Peak (07:45-08:45) | | | | PM Peak (16:45-17:45) | | | |
|---|---|---|---|---|---|---|---|---|
| | Without Construction | | With Construction | | Without Construction | | With Construction | |
| | %RFC | Queue | %RFC | Queue | %RFC | Queue | %RFC | Queue |
| R136 Grange Castle Road (N) | 136 | 86.1 | 143 | 96.0 | 155 | 116.5 | 163 | 128.7 |
| R134 New Nangor Road (E) | 140 | 68.3 | 140 | 68.3 | 153 | 87.3 | 163 | 95.8 |

| Junction Arm | AM Peak (07:45-08:45) | | | | PM Peak (16:45-17:45) | | | |
|---|---|---|---|---|---|---|---|---|
| | Without Construction | | With Construction | | Without Construction | | With Construction | |
| | %RFC | Queue | %RFC | Queue | %RFC | Queue | %RFC | Queue |
| R136 Grange Castle Road (S) | 139 | 139.4 | 146 | 158.8 | 156 | 179.8 | 163 | 197.2 |
| R134 New Nangor Road (W) | 138 | 79.7 | 142 | 61.7 | 161 | 128.1 | 157 | 128.2 |

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The results show that the junction is currently exceeding capacity during both the AM Peak and PM Peak periods in the *"without construction scenario"*. The *"with construction traffic scenario"* is expected to result in minor increases in the degree of saturation on all arms. Since this junction is already over capacity and the construction traffic only contributes to a small increase in queue lengths and degree of saturation, the impact is considered moderate and temporary as the peak construction period will have a duration of a 9 to 12 months.

### 6.5.3 Operational Phase

The likely traffic movements and activities which could affect traffic and transportation are set out below. The assessment of the potential effect of the Proposed Development over the Operational Phase is made by comparing the projected future traffic volumes on links and junctions in the surrounding area to both *"with"* and *"without"* the Proposed Development scenarios.

#### *6.5.3.1 Assessment Periods*

The assessment has been carried out for the projected opening year of 2027, the interim year of 2032 (+5) and the design year of 2037 (+10) as per TII Traffic and Transport Assessment Guidelines (2014). Each of the future year assessments includes an assessment of scenarios both *"with"* and *"without"* the Proposed Development.

#### *6.5.3.2 Trip Generation*

The existing facility provides a total of 110 existing staff. The Proposed Development will increase total staff by up to 50 persons, bringing the total staff number to 160 persons. To consider a worst case (although unlikely) it is assumed that approximately 70% of the staff traveling to the Proposed Development site on a daily basis and arrive and depart during peak hour periods. Based on the above, the total number of additional trips associated with the Proposed Development would then be 220 two-way movements (i.e. 110 trips in and 110 trips out) per each 24 hour day.

The 50 additional staff associated with Proposed Development will follow existing staff start and finish work times. These are based on varying and flexible work start and finish times from 6.30 a.m. to 10.00 a.m. and from 4.00 p.m. to 7.30 p.m. This distributes staff generated travel during the morning and evening commuter peak traffic periods. However, for the purpose of this analysis, a robust assessment scenario is assumed in which up to 70% of staff would arrive during the morning peak traffic hour and depart during the evening peak traffic hour. This would increase peak hour vehicle trips generated by staff by an additional 32 vehicles, on the basis that 90% of staff would travel to and from work as car drivers, with 10% traveling as car passengers, or use public transport or cycle to work.

#### *6.5.3.3 Trip Distribution*

It is envisaged that the distribution of additional vehicle trips generated by the Proposed Development, on the existing local road network, would be similar to the existing traffic distribution on the road network. Vehicle access to the Proposed Development during the Operational Phase will be via the existing Grange Castle Business Park access. The Proposed Development operational vehicle travel distribution is shown in Table 6.6.

**Table 6.6: Proposed Development operational vehicle trip distribution.**

| Route | Proportion (%) |
|---|---|
| Grange Castle Business Park Access | 100 |
| L2001 Baldonnel Road North of Access | 70 |
| L2001 Baldonnel Road South of Access | 30 |
| R134 Nangor Road East of L2001 | 50 |
| R134 Nangor Road West of L2001 | 20 |
| R136 Grange Castle Road North | 25 |
| R136 Grange Castle Road South | 25 |
| R120 Adamstown Road North | 10 |
| R120 Adamstown Road South | 10 |

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#### *6.5.3.4 Link Flow Assessment*

An assessment of road links in the vicinity of the Proposed Development site was carried out for each of the scenarios considered (opening year (2027), +5 and +10 years horizon). The following tables present the two-way traffic volumes at AM and PM peak for each link in the surrounding area, as well as the percentage increase on each link as a result of the Proposed Development.

For the cases where the estimated increase is higher than 5%, the assessment of junctions presented in the following section further investigate the potential effect of the Proposed Development at this part of the network. The results of the link flow assessment are presented below in Table 6.7 to Table 6.9 for 2027, 2032 and 2037 respectively.

**Table 6.7: Results of the link flow assessment for the opening year 2027.**

| Link | 2027 | | | | | |
|---|---|---|---|---|---|---|
| | AM Peak (07:45-08:45) | | | PM Peak (16:45-17:45) | | |
| **Junction No. 1** | **Base** | **+ Development** | **% Increase** | **Base** | **+ Development** | **% Increase** |
| R120 Adamstown Road (N) | 1,061 | 1,065 | 0% | 1,250 | 1,253 | 0% |
| R134 New Nangor Road (E) | 1,505 | 1,512 | 0% | 1,425 | 1,432 | 0% |
| R120 Adamstown Road (S) | 993 | 996 | 0% | 897 | 900 | 0% |
| Grange Castle Access Road (W) | 4 | 4 | 0% | 0 | 0 | 0% |
| **Junction No. 2** | **Base** | **+ Development** | **% Increase** | **Base** | **+ Development** | **% Increase** |
| Grange Castle Business Park (N) | 540 | 540 | 0% | 458 | 458 | 0% |
| R134 New Nangor Road (E) | 1,149 | 1,165 | 1% | 994 | 1,010 | 2% |
| L2001 Baldonnel Road (S) | 1,010 | 1,032 | 2% | 920 | 942 | 2% |
| R134 New Nangor Road (W) | 1,479 | 1,485 | 0% | 1,412 | 1,418 | 0% |
| **Junction No. 3** | **Base** | **+ Development** | **% Increase** | **Base** | **+ Development** | **% Increase** |
| Kilcarbery Park (N) | 294 | 294 | 0% | 327 | 327 | 0% |
| R134 New Nangor  Road (E) | 1,342 | 1,342 | 0% | 1,303 | 1,319 | 1% |
| Profile Park (S) | 162 | 162 | 0% | 336 | 336 | 0% |
| R134 New Nangor  Road (W) | 1,165 | 1,165 | 0% | 998 | 1,014 | 2% |
| **Junction No. 4** | **Base** | **+ Development** | **% Increase** | **Base** | **+ Development** | **% Increase** |
| R136 Grange Castle Road (N) | 1,961 | 1,961 | 0% | 2,204 | 2,212 | 0% |
| R134 New Nangor Road (E) | 1,636 | 1,636 | 0% | 1,574 | 1,574 | 0% |

| Link | 2027 | | | | | |
|---|---|---|---|---|---|---|
| | AM Peak (07:45-08:45) | | | PM Peak (16:45-17:45) | | |
| R136 Grange Castle Road (S) | 3,100 | 3,100 | 0% | 3,200 | 3,203 | 0% |
| R134 New Nangor Road (W) | 1662 | 1,662 | 0% | 1,565 | 1,581 | 1% |
| **Junction No. 5** | **Base** | **+ Development** | **% Increase** | **Base** | **+ Development** | **% Increase** |
| L2001 Baldonnel Road (N) | 991 | 1,014 | 2% | 902 | 924 | 2% |
| Conchobar Murray Avenue (E) | 108 | 140 | 30% | 107 | 139 | 30% |
| L2001 Baldonnel Road (S) | 968 | 978 | 1% | 894 | 904 | 1% |

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The above link flow assessment results show that in the 2027 (Opening Year), Junction No. 5 L2001 Baldonnel Road / Conchobar Murray Avenue will present an increase in two way traffic volume as a result of traffic generated by the Proposed Development in the peak construction scenario. The increase in two way traffic is largely due to the existing relatively low flows on these links in the baseline scenario. The effect of the peak operational scenario is further examined through modelling of the respective junctions as described in Section 6.5.3.6.

**Table 6.8: Results of the link flow assessment for the opening year +5 (2032).**

| Link | 2032 | | | | | |
|---|---|---|---|---|---|---|
| | AM Peak (07:45-08:45) | | | PM Peak (16:45-17:45) | | |
| **Junction No. 1** | **Base** | **+ Development** | **% Increase** | **Base** | **+ Development** | **% Increase** |
| R120 Adamstown Road (N) | 1052 | 1055 | 0% | 1290 | 1293 | 0% |
| R134 New Nangor Road (E) | 1509 | 1515 | 0% | 1481 | 1487 | 0% |
| R120 Adamstown Road (S) | 1039 | 1043 | 0% | 934 | 937 | 0% |
| Grange Castle Access Road (W) | 5 | 5 | 0% | 0 | 0 | 0% |
| **Junction No. 2** | **Base** | **+ Development** | **% Increase** | **Base** | **+ Development** | **% Increase** |
| Grange Castle Business Park (N) | 552 | 552 | 0% | 480 | 480 | 0% |
| R134 New Nangor Road (E) | 1135 | 1151 | 1% | 1017 | 1033 | 2% |
| L2001 Baldonnel Road (S) | 1032 | 1054 | 2% | 947 | 970 | 2% |
| R134 New Nangor Road (W) | 1476 | 1482 | 0% | 1466 | 1472 | 0% |
| **Junction No. 3** | **Base** | **+ Development** | **% Increase** | **Base** | **+ Development** | **% Increase** |
| Kilcarbery Park (N) | 273 | 273 | 0% | 327 | 327 | 0% |
| R134 New Nangor Road (E) | 1311 | 1311 | 0% | 1345 | 1361 | 1% |
| Profile Park (S) | 150 | 150 | 0% | 352 | 352 | 0% |
| R134 New Nangor Road (W) | 1154 | 1154 | 0% | 1021 | 1037 | 2% |
| **Junction No. 4** | **Base** | **+ Development** | **% Increase** | **Base** | **+ Development** | **% Increase** |
| R136 Grange Castle Road (N) | 2028 | 2028 | 0% | 2330 | 2338 | 0% |
| R134 New Nangor Road (E) | 1663 | 1663 | 0% | 1645 | 1645 | 0% |
| R136 Grange Castle Road (S) | 3119 | 3119 | 0% | 3351 | 3359 | 0% |
| R134 New Nangor Road (W) | 1628 | 1628 | 0% | 1605 | 1621 | 1% |
| **Junction No. 5** | **Base** | **+ Development** | **% Increase** | **Base** | **+ Development** | **% Increase** |
| L2001 Baldonnel Road (N) | 1018 | 1040 | 2% | 926 | 948 | 2% |
| Conchobar Murray Avenue (E) | 113 | 145 | 28% | 115 | 147 | 28% |
| L2001 Baldonnel Road (S) | 995 | 1005 | 1% | 919 | 929 | 1% |

The above link flow assessment results show that in the 2032 (+5 Year), Junction No. 5 L2001 Baldonnel Road / Conchobar Murray Avenue will present an increase in two-way traffic volume as a result of traffic generated by the Proposed Development in the peak construction scenario. The effect of the peak construction scenario is further examined through modelling of the respective junctions as described in Section 6.5.3.6.

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**Table 6.9: Results of the link flow assessment for the opening year +10 (2037).**

| Link | 2037 | | | | | |
|---|---|---|---|---|---|---|
| | AM Peak (07:45-08:45) | | | PM Peak (16:45-17:45) | | |
| **Junction No. 1** | **Base** | **+ Development** | **% Increase** | **Base** | **+ Development** | **% Increase** |
| R120 Adamstown Road (N) | 1,089 | 1,093 | 0% | 1,333 | 1,336 | 0% |
| R134 New Nangor Road (E) | 1,561 | 1,567 | 0% | 1,530 | 1,536 | 0% |
| R120 Adamstown Road (S) | 1,073 | 1,077 | 0% | 965 | 968 | 0% |
| Grange Castle Access Road (W) | 5 | 5 | 0% | 0 | 0 | 0% |
| **Junction No. 2** | **Base** | **+ Development** | **% Increase** | **Base** | **+ Development** | **% Increase** |
| Grange Castle Business Park (N) | 570 | 570 | 0% | 496 | 496 | 0% |
| R134 New Nangor Road (E) | 1,175 | 1,191 | 1% | 1,051 | 1067 | 2% |
| L2001 Baldonnel Road (S) | 1,068 | 1,090 | 2% | 979 | 1,002 | 2% |
| R134 New Nangor Road (W) | 1,527 | 1,534 | 0% | 1,515 | 1,521 | 0% |
| **Junction No. 3** | **Base** | **+ Development** | **% Increase** | **Base** | **+ Development** | **% Increase** |
| Kilcarbery Park (N) | 284 | 284 | 0% | 338 | 338 | 0% |
| R134 New Nangor Road (E) | 1,357 | 1,357 | 0% | 1,389 | 1,405 | 1% |
| Profile Park (S) | 156 | 156 | 0% | 364 | 364 | 0% |
| R134 New Nangor Road (W) | 1,194 | 1,194 | 0% | 1,056 | 1,072 | 2% |
| **Junction No. 4** | **Base** | **+ Development** | **% Increase** | **Base** | **+ Development** | **% Increase** |
| R136 Grange Castle Road (N) | 2,095 | 2,095 | 0% | 2405 | 2413 | 0% |
| R134 New Nangor Road (E) | 1,720 | 1,720 | 0% | 1,698 | 1,698 | 0% |
| R136 Grange Castle Road (S) | 3,226 | 3,226 | 0% | 3,460 | 3,468 | 0% |
| R134 New Nangor Road (W) | 1,685 | 1,685 | 0% | 1,657 | 1,673 | 1% |
| **Junction No. 5** | **Base** | **+ Development** | **% Increase** | **Base** | **+ Development** | **% Increase** |
| L2001 Baldonnel Road (N) | 1,053 | 1,076 | 2% | 957 | 980 | 2% |
| Conchobar Murray Avenue (E) | 117 | 149 | 27% | 119 | 151 | 27% |
| L2001 Baldonnel Road (S) | 1,029 | 1,039 | 1% | 950 | 960 | 1% |

The above link flow assessment results show that in the 2037 (+10 Year), Junction No. 5 L2001 Baldonnel Road / Conchobar Murray Avenue will present an increase in two-way traffic volume as a result of traffic generated by the Proposed Development in the peak construction scenario. The effect of the peak construction scenario is further examined through modelling of the respective junctions as described Section 6.5.3.6.

### *6.5.3.5 TII Assessment Thresholds*

The predicted increases in peak hour link and junction traffic volumes on Junction No. 1 R120 Adamstown Road / Grange Castle Access Road, Junction No. 2 R134 New Nangor Road / L2001 Baldonnel Road, Junction No. 3 Profile Park / R134 New Nangor Road and Junction No. 4 R136 Grange Castle Road / R134 New Nangor Road would be less than the volumetric threshold (5%) identified in the TII Assessment Guidelines (2014) for consideration of congested or other sensitive locations. Therefore, it is concluded that there is no requirement to conduct further junction analysis on these junctions.

### *6.5.3.6 Junction Analysis*

The potential effects on Junction No. 5 L2001 Baldonnel Road / Conchobar Murray Avenue resulting from the Operational Phase of the Proposed Development has been assessed using the modelling software Junctions 9 for priority junctions. The priority junction is assessed in terms of Ratio of Flow to Capacity (RFC) and Queue Length measured in Passenger Car Units (PCUs). The results are presented below in Table 6.10 to Table 6.13 for 2024, 2027, 2032 and 2037 respectively.

RECEIVED: 28/06/2024

**Table 6.10: Results of the assessment of Junction No.5 in the Base Year 2024.**

| Junction Arm | AM Peak (07:45-08:45) | | PM Peak (16:45-17:45) | |
|---|---|---|---|---|
| | %RFC | Queue | %RFC | Queue |
| Conchobar Murray Avenue | 6% | 0.1 | 22% | 0.3 |
| L2001 Baldonnel Road | 7% | 0.1 | 1% | 0.0 |

**Table 6.11: Results of Junction No.5 in the Opening Year 2027 'without' and 'with' the Proposed Development.**

| Junction Arm | AM Peak (07:45-08:45) | | | | PM Peak (16:45-17:45) | | | |
|---|---|---|---|---|---|---|---|---|
| | Without | | With Development | | Without | | With Development | |
| | %RFC | Queue | %RFC | Queue | %RFC | Queue | %RFC | Queue |
| Conchobar Murray Avenue | 6% | 0.1 | 6% | 0.1 | 24% | 0.3 | 32% | 0.6 |
| L2001 Baldonnel Road | 7% | 0.1 | 9% | 0.1 | 1% | 0.0 | 1% | 0.0 |

**Table 6.12: Results of Junction No.5 in the Opening Year +5 (2032) 'without' and 'with' the Proposed Development.**

| Junction Arm | AM Peak (07:45-08:45) | | | | PM Peak (16:45-17:45) | | | |
|---|---|---|---|---|---|---|---|---|
| | Without | | With Development | | Without | | With Development | |
| | %RFC | Queue | %RFC | Queue | %RFC | Queue | %RFC | Queue |
| Conchobar Murray Avenue | 7% | 0.1 | 7% | 0.1 | 26% | 0.4 | 35% | 0.6 |
| L2001 Baldonnel Road | 8% | 0.1 | 10% | 0.2 | 1% | 0.0 | 1% | 0.0 |

**Table 6.13: Results of Junction No.5 in the Opening Year +10 (2037) 'without' and 'with' the Proposed Development.**

| Junction Arm | AM Peak (07:45-08:45) | | | | PM Peak (16:45-17:45) | | | |
|---|---|---|---|---|---|---|---|---|
| | Without | | With Development | | Without | | With Development | |
| | %RFC | Queue | %RFC | Queue | %RFC | Queue | %RFC | Queue |
| Conchobar Murray Avenue | 7% | 0.1 | 8% | 0.1 | 27% | 0.4 | 36% | 0.7 |
| L2001 Baldonnel Road | 8% | 0.1 | 10% | 0.2 | 1% | 0.0 | 1% | 0.0 |

The results show that Junction No. 5 at L2001 Baldonnel Road / Conchobar Murray Avenue is operating satisfactorily within capacity, with all arms presenting low RFC and Queue values. As seen in the tables above, there are no capacity issues observed in any of the scenarios modelled and there is ample reserve capacity at all arms of this junction. The junction currently operates well below capacity currently and will continue to do so with the Proposed Development in place. The impact of operational traffic on this junction is therefore considered to be permanent but insignificant.

### *6.5.3.7 Pedestrian and Cycle Accessibility*

The provision of a new proposed active travel link between Grange Castle Road and Profile Park Road is expected to have long-term permanent significant effects on pedestrian and cycle accessibility as walking and cycling distances to and from the site will be reduced significantly.

### 6.5.4 Decommissioning Phase

It is envisaged that the Proposed Development will have a long lifespan of 35-40 years, or more. Regular maintenance and upgrading of the data centre facility over time will enable it to continue to meet future demands. The decommissioning of the Proposed Development will be regulated by the EPA under the revised IE licence.

RECEIVED: 28/06/2024

The works of the peak period during the decommissioning is expected to be minor in comparison to that which are required for the peak period Construction Phase, the workforce will be smaller and the duration of the works will be shorter. Works required will be updated to reflect best practices at the time of implementation of the Decommissioning Phase.

Mitigation measures will be implemented throughout the Decommissioning Phase so as to minimise the potential effects of this phase on the surrounding local road network.

## 6.6 Mitigation and Monitoring Measures

### 6.6.1 Construction Phase

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 site 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
- The Project Supervisor Construction Stage (PSCS) will be required to promote travel by sustainable modes of transport. The mobility management plan is detailed below.

#### *6.6.1.1 Construction Traffic Management Plan (CTMP)*

As outlined in the CEMP (Appendix 5.1), a CTMP will be developed by a specialist Contractor. 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 vehicles;
- 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.

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The CTMP (refer to the CEMP) and the Construction Stage mobility management plan, which will be developed upon appointment of a specialist Contractor, 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 level of effect is expected to remain the same.

#### *6.6.1.2 Construction Mobility Management*

As part of the construction contract, the 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.

### 6.6.2 Operational Phase

#### *6.6.2.1 Mobility Management*

GIL will continue to operate its existing mobility management measures at its existing GIL Campus facility for its Proposed Development staff. These existing measures include:

- A flexible work time policy is in place at the GIL Campus providing staff the option to start anytime between 6.30 a.m. to 10.00 a.m. and to leave from 4.00 p.m. to 7.30 p.m. This distributes staff generated travel during the morning and evening commuter peak traffic periods;
- Staff showers, changing areas and lockers;
- Covered secure cycle parking;
- Revenue's tax saver scheme for public transport; and

- Revenue's bike to work scheme.

Operational Phase Mobility Management Plan has been developed as a support document to the planning application which is included in Appendix 6.1.

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### 6.6.3 Decommissioning Phase

The Decommissioning Phase will be similar to the Construction Phase. The mitigation measures as outlined in Section 6.6.1 for the Construction Phase, updated in order to reflect best practice at the time, will be implemented for the Decommissioning Phase.

## 6.7 Residual Effects

### 6.7.1 Construction Phase

The residual effects of the construction works are predicted to be Not Significant and Short-term as construction traffic to and from the Proposed Development site will be carried out in accordance with the robust CTMP. The CTMP will ensure that effects on the local road network during construction are minimised by setting specific measures to reduce the potential number of vehicular arrivals and departures and the promotion of sustainable modes of transport to the site. This CTMP will be updated by the Contractor, prior to the commencement of construction.

### 6.7.2 Operational Phase

During the Operational Phase, the Proposed Development will generate additional vehicle trips on the road network within the local vicinity, however, this predicted effect is considered Slight and Permanent.

The proposed new pedestrian and cycle link between Profile Park Road and Grange Castle Road is expected to have a Significant Permanent Positive impact on walking and cycling as travel distance by these modes of transport are significantly reduced.

### 6.7.3 Decommissioning Phase

During the Decommissioning Phase, the residual effects of the works are predicted to be similar to that of the Construction Phase, as traffic to and from the Proposed Development site will be temporary and likely run over a shorter period of time than that of the Construction Phase. The decommissioning of the Proposed Development will be regulated by the EPA. As outlined in Section 5.7 of Chapter 5 (Construction), decommissioning activities will need to be undertaken in accordance with the requirements of the revised IE licence.

## 6.8 References

Department of Housing, Planning and Local Government (DoHPLG) (2018) *Guidelines for Planning Authorities and An Bord Pleanála in carrying out Environmental Impact Assessment*

Department of Housing, Local Government and Heritage (DoHPLG) (2020) *National Planning Framework – Ireland 2040 Our Plan (NPF)*

Department of Public Expenditure, NDP Delivery and Reform (DoPENDPDR) (2018) *National Development Plan 2021-2030*

Department of Public Expenditure, NDP Delivery and Reform (DoPENDPDR) (2018) *Project Ireland 2030*

Department of the Environment, Climate and Communications (DoECC) (2023) *Climate Action Plan 2024*

Department of Transport (DoT) (2021) *National Investment Framework for Transport in Ireland (NIFTI)*

Eastern and Midland Regional Assembly (EMRA) (2019) *Eastern and Midland Regional Spatial and Economic Strategy (RSES) 2019-2031*

Environmental Protection Agency (EPA) (2022*). Guidelines on the information to be contained in Environmental Impact Assessment Reports*

European Commission (EC) (2017) *Environmental Impact Assessment of Projects: Guidance on the Preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU)*

Transport Infrastructure Ireland (TII) (2021) *Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections PE-PAG-02017*

Transport Infrastructure Ireland (TII) (2014) *Traffic and Transport Assessment Guidelines*

South Dublin County Council (SDCC) (2024) *South Dublin Climate Change Action Plan 2019-2024*

South Dublin County Council (SDCC) (2022) *South Dublin County Development Plan 2022-2028*

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