ATKINS
Member of the SNC-Lavalin Group

Remote South Staff Car Park

Environmental Impact Assessment Report – Volume 2 Main EIAR

daa

June 2024

D21081-ATK-ZZZ-XX-XXX-RP-V-XXX-0001

Notice

This document and its contents have been prepared and are intended solely as information for daa plc. and use in relation to the Remote South Staff Car Park project.

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This document has 290 pages including the cover.

Document history

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Rev 2	Final – Planning	RG, PA, OW, DB, JL	JL, CW, DL	KL, AON	DL	11/06/2024

Client signoff

Client	daa plc.
Project	Remote South Staff Car Park
Job number	D21081
Client signature / date	

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1. Introduction and Methodology

This Environmental Impact Assessment Report (EIAR) has been prepared by AtkinsRéalis (‘Atkins’) on behalf of daa plc. (hereafter referred to as ‘daa’) to accompany the application for a Proposed Development at Dublin Airport (‘the Airport’) comprising of the Remote South Staff Car Park. The Proposed Development will address a critical deficit in existing Airport staff car parking by way of an extension to the appropriately located existing, established Holiday Blue Long-Term Car Park to the south-west of the Airport Campus.

1.1. Proposed Remote South Staff Car Park

The proposed site is located directly south of the western corner of the South Airport Runway, in the townland of Harristown. This proposed development is a proposed extension to the existing Holiday Blue Long-Term Car Park to cater for airport staff car parking at Harristown, Dublin Airport, Swords, Co. Dublin. The site is bounded by the South Parallel Road (R108) to the north, Harristown Lane to the west, Horizon Business Park to the south, an existing former construction access road to Horizon Business Park and the existing Holiday Blue Long-Term Car Park to the east in the townland of Harristown, Dublin Airport, Co. Dublin. Santry River (IE_EA_09S010300) crosses through the middle of the site and discharges to the North Bull Island (IE_EA_090_0100) transitional waterbody to the east of the site.

The lands on which the development is proposed is entirely within daa land ownership and are zoned in the Fingal County Development Plan 2023-2029 (the Plan) as ‘*GE – General Employment’*, with the zoning objective being to ‘*provide opportunities for general enterprise and employment’.* Part of the proposed development site is located in the existing, established Holiday Blue Long-Term Car Park, which benefits from a specific *‘Car Park’* objective in the Plan.

The proposed development is currently a greenfield site with an area of approximately 4.46ha. The proposed Remote South Staff Car Park will cater for 950 staff car parking spaces, of which 48 no. will be provided for Persons with Reduced Mobility (PRM) and 96 no. will be serviced by Electric Vehicle (EV) charging points. The proposed development will connect to the existing Holiday Blue Long Term Car Park to the east. The proposed development also includes cycle parking, a bus stop, substation and a welfare facility building and associated infrastructure. In addition, a new security hut with a toilet and sink will be located on the traffic island along the existing entrance road.

The site is to be accessed off the South Parallel Road (R108). An emergency access will be provided through the existing Holiday Blue Long-Term Car Park immediately east of the proposed development. The emergency access will be via a tie-in, with security barriers, to the existing internal roundabout.

The location of the proposed Remote South Staff Car Park is illustrated in Figure 1-1 and 1-2. The proposed site layout of the proposed Remote South Staff Car Park is illustrated in Figure 1-3.

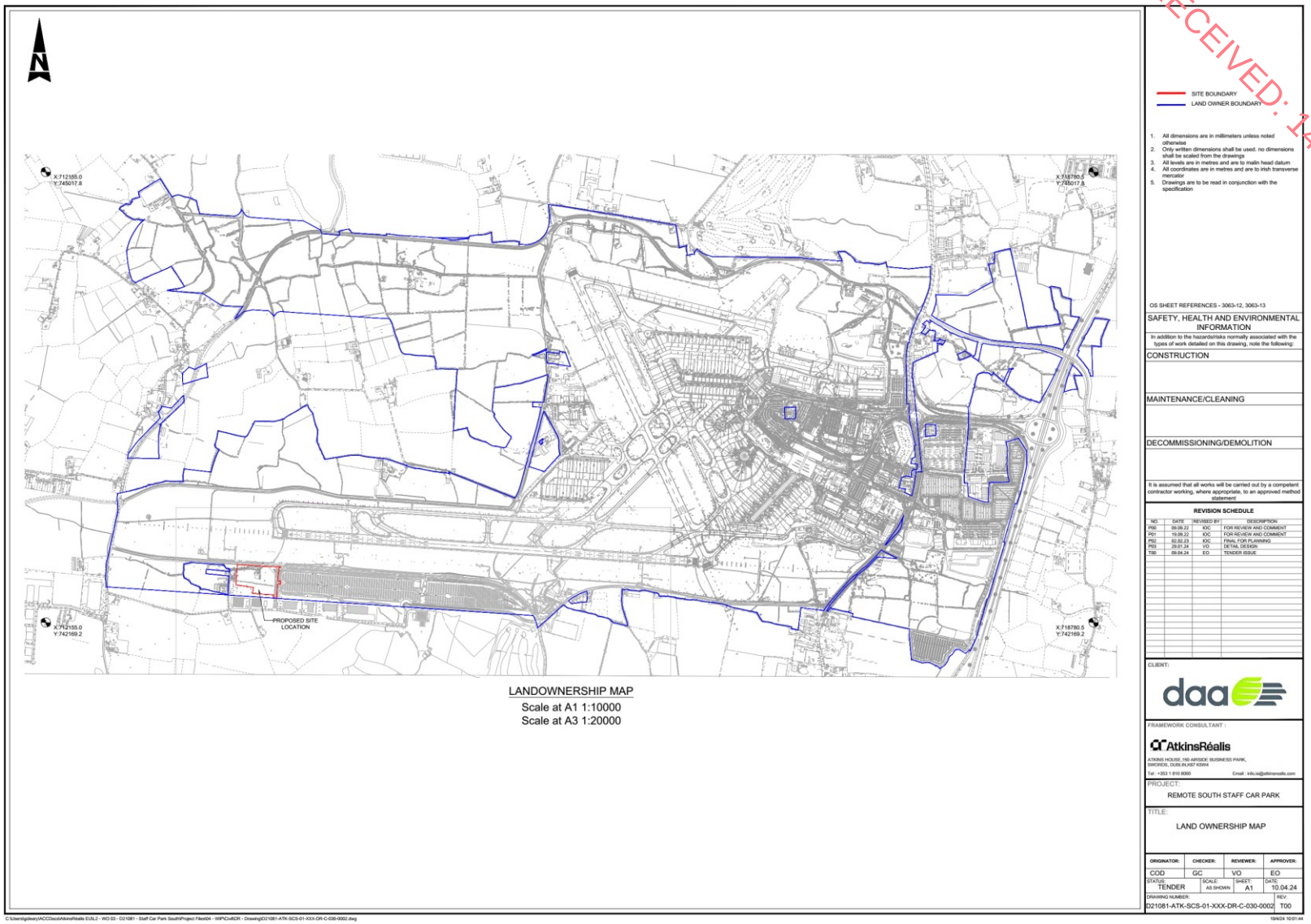


Figure 1-1 - Location of the proposed Remote South Staff Car Park (1 of 2)

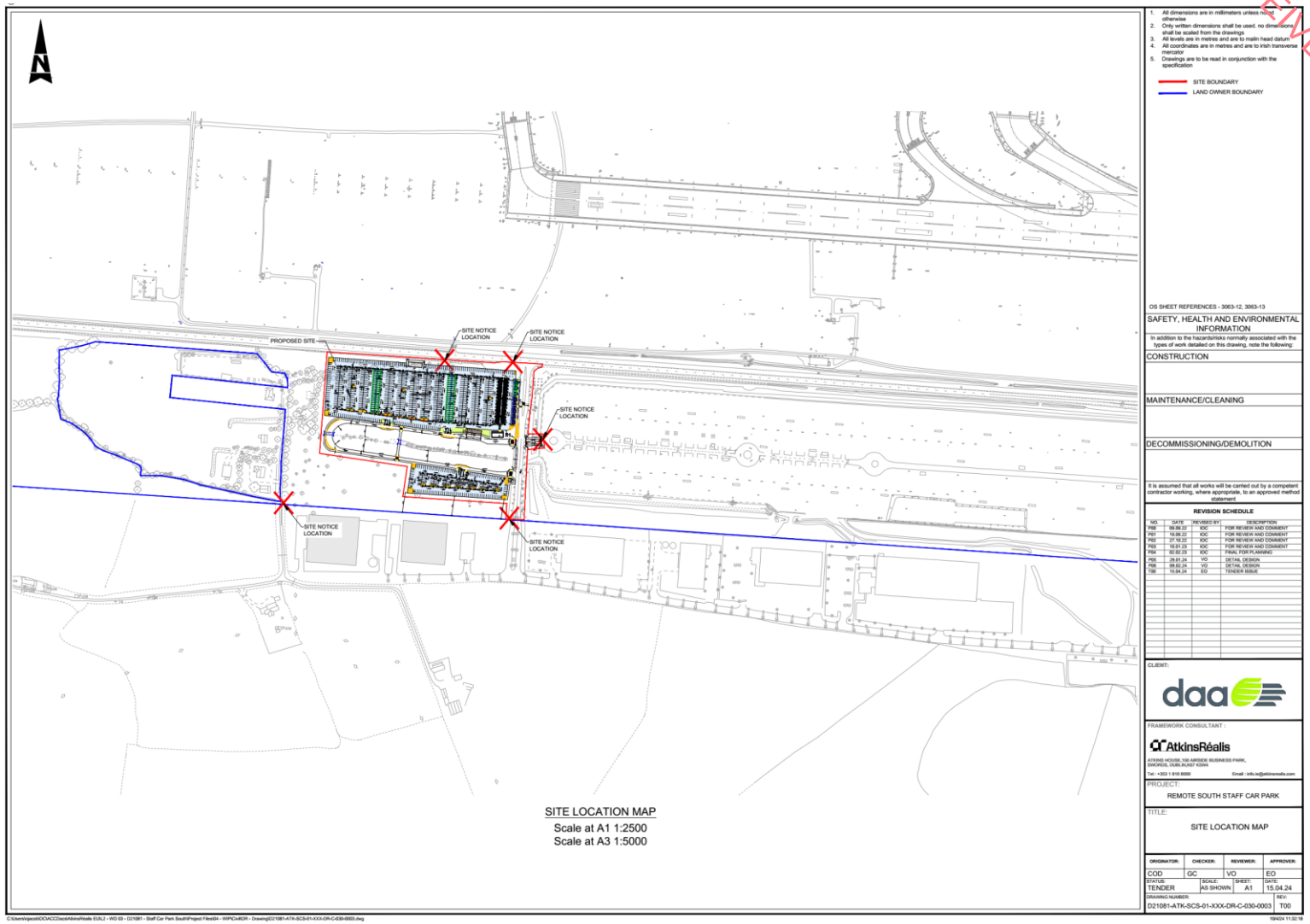


Figure 1-2 - Location of the proposed Remote South Staff Car Park (2 of 2)

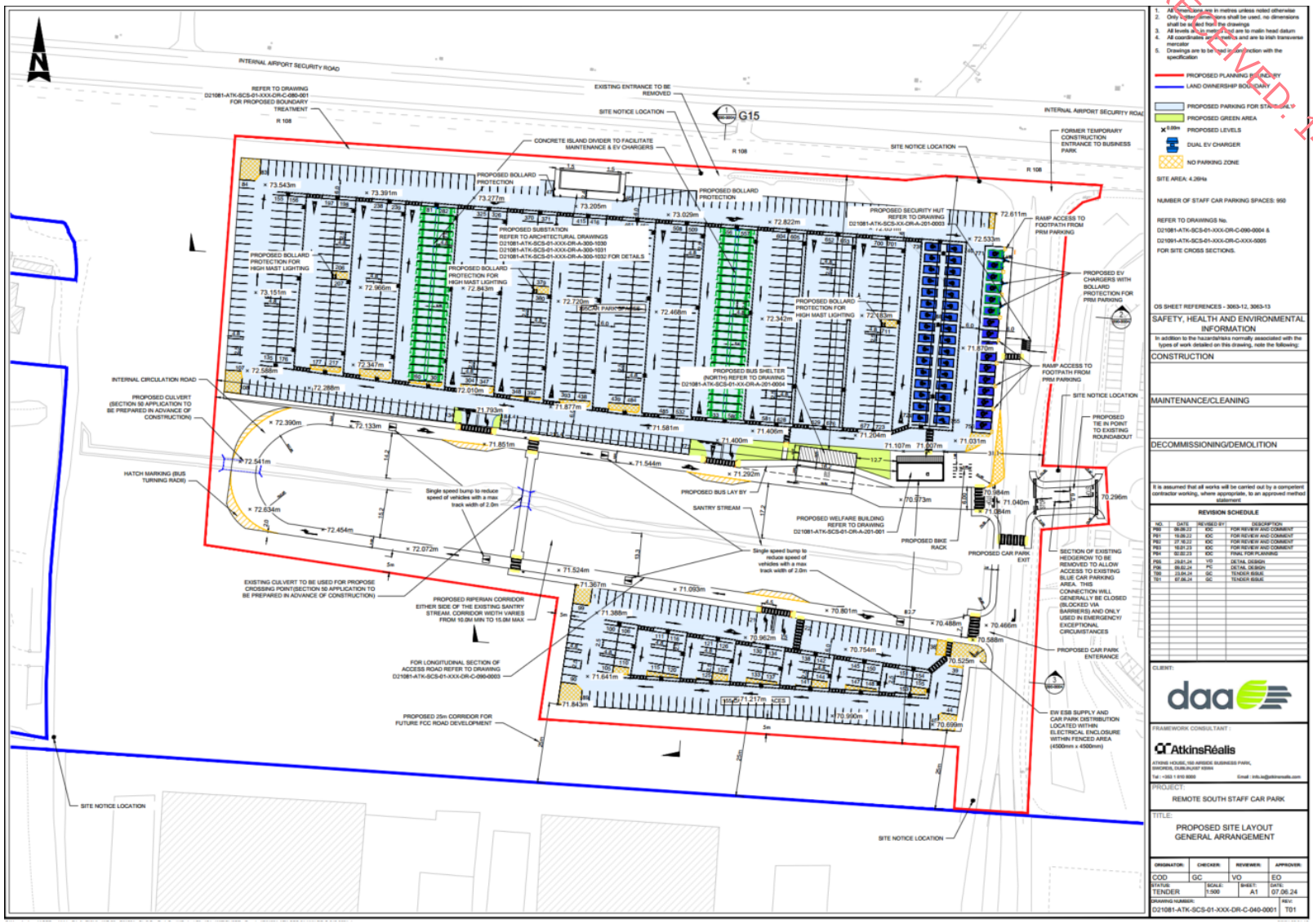


Figure 1-3 - Proposed Site Layout Plan for Remote South Staff Car Park

1.2. Need for EIAR

The proposed development has been screened against the types of development, various processes and activities listed in Schedule 5 Part 1 of the Planning and Development Regulations as amended (2001-2023), including S.I. No. 296 of 2018 – European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 which came into operation on 1st September 2018. The proposed development is not a category of project which requires an EIAR in accordance with Schedule 5 Part 1.

The proposed development has been screened against the types of development, various processes and activities listed in Schedule 5 Part 2 of the Planning and Development Regulations. In accordance with Schedule 2, Section 10(b)(ii) an Environmental an Environmental Impact Assessment Report (EIAR) would be required if the proposed infrastructure consists of the construction of a car park providing more than 400 spaces, other than a car park provided as part of, and incidental to the primary purpose of, a development. The car park will connect to the existing Holiday Blue Long Term Car Park. The proposed development comprises 950 no. car park spaces, hence exceeds this relevant threshold and thus a mandatory EIAR is required.

1.3. EIAR Contributors

This EIAR has been prepared by competent experts. The following table clearly sets out a list of the experts who have contributed to this EIAR, showing which parts of the EIAR they have worked on, their qualifications, experience and any other relevant credentials.

Name	Company	Area of Expertise	Relevant Chapter / Input	Relevant Qualifications / Professional Accreditation	Relevant Experience
Julie Larkin	AtkinsRéalis	Resource and Waste Management Plans, Project Management, Environmental Assessment, Contaminated Land Assessments, Environmental Human Health Assessments	EIAR co-ordinator Chapter 1 – Introduction Chapter 2 - Project Description Chapter 3 – Alternatives Chapter 14 - Material Assets	M.Sc. of Environmental Protection and Management (Hons), 2014 B.Sc. Environmental Science (Hons), 2013 Chartered Member of Institute of Water and Environmental Management (C.WEM)	10 years
Avril McCollom	AtkinsRéalis	Environmental Human Health Assessments	Chapter 4 – Population and Human Health	BSc. (Hons.) in Freshwater and Marine Biology, 2017	7 years
Deirdre Larkin	AtkinsRéalis	Geology, Hydrogeology, Hydrology, Human Health, Risk Assessment	Chapter 11 – Land, Soils and Geology Chapter 12 – Water	BSc. (Hons) Geology (2003) UCC MSc Applied Hydrogeology (2012) University of Newcastle. IGI PGeo No. 223 EurGeol No. 1064	20 years
Daniel Blake	AtkinsRéalis	Biodiversity / Ecology	Chapter 5 – Biodiversity	BSc Hons Wildlife Biology	6 years
Colin Wilson	AtkinsRéalis	Biodiversity / Ecology	Chapter 5 – Biodiversity Appendix 5.1 NIS	B.Sc. (Hons) Environmental Science (Middlesex University 1992	18 years

Name	Company	Area of Expertise	Relevant Chapter / Input	Relevant Qualifications / Professional Accreditation	Relevant Experience
Caroline Shield	Caroline Shield	Biodiversity / Ecology Bat Specialist	Bat Survey – Appendix 5.2	B.Sc. (Hons) Zoology at University College Galway Ph.D. on Leisler's bat in 1998 - "Diet, foraging and activity at the roost of Leisler's bat (Nyctalus leisleri) with special reference to nursery colonies in south Co, Wexford, Ireland".	26 years
Eamonn Byrne	Eamonn Byrne Landscape Architects (EBLA)	Landscape and Visual Specialist	Chapter 6 – Landscape and Visual Appendix 6.1 Visibility drawing Appendix 6.2. Viewpoint Images	MLI Chartered Member of the Landscape Institute (2006, UK) Professional Member of Institute of Horticulture (MCI Hort) Dip. Landscape Design (2003, University of Sheffield) Dip. Hort. Kew (1999, Royal Botanic Gardens Kew, London) HND Landscape Management (1996, Writtle University College, Essex) NCH Hort. (1993, Glasnevin, Dublin)	Over 20 years experience in landscape design and 19 years specifically in LVIA
John Morgan	Independent Tree Surveys	Arboricultural Consultant	Tree Survey – Appendix 6.3	BSc (Hons) Forestry, Tech Cert (Arbor A) M Arbor	16 years
Aisling Cashell	AWN Consulting Ltd	Mapping software, primarily in ArcGIS, She specialises in the area of air quality, climate and sustainability.	Chapter 7 – Air Quality Chapter 8 – Climate	BA and an MAI in Civil, Structural and Environmental Engineering from Trinity College Dublin. She is a member of Engineers Ireland.	4 years
Ciara Nolan	AWN Consulting Ltd	Air Quality and Climate EIAR Assessments and Licencing. Including dispersion modelling and source apportionment of particulate matter.	Chapter 7 – Air Quality Chapter 8 – Climate	BSc Energy Systems Engineering UCD (2014) MSc in Applied Environmental Science UCD (2016). Institute of Environmental Science (MIEnvSc) Member of the Institute of Air Quality Management (MIAQM) and the Institute of Environmental Science (MIEnvSc)	8 years
Jennifer Harmon	AWN Consulting Ltd	Noise and Vibration	Chapter 9 – Noise and Vibration	BSc (Environmental Science) University of Ulster 1999 Diploma in Area Studies Universidade Nova de Lisboa 1999 Diploma in Acoustics and Noise Control Institute of Acoustics 2001 MIOA, Member of the Institute of Acoustics	18 years
Nicholas van den Berg	AtkinsRéalis	Traffic and Transportation	Chapter 10 – Traffic	Chartered Engineer with the Institution of Engineers Ireland,	10 years

Name	Company	Area of Expertise	Relevant Chapter / Input	Relevant Qualifications / Professional Accreditation	Relevant Experience
			Appendix 10.1 Traffic and Transport Assessment	BSc (Eng) from the University of Kwazulu-Natal (2013)	
Tony Cummins	John Cronin & Associates	Architecture, Archaeology and Cultural Heritage	Chapter 13 - Cultural Heritage Appendix 13.1: Archaeological Test Trenching Report Appendix 13.2: Database of Irish Excavation Reports descriptions Appendix 13.3: Fingal County Council Planning Objectives	Bachelor's Degree (Archaeology), University College Cork, 1992 Master's Degree (Archaeology), University College Cork, 1994	29 years
Garry Hanratty	AtkinsRéalis	Storm water / wastewater design, Flood Risk Assessment	Flood Risk Assessment - Appendix 12.3	BEng Tech CEng MIEI	22 years

1.4. EIAR Scoping

As part of the assessment process, an environmental scoping exercise was carried out. The purpose of the exercise was to define the scope of the EIAR. Consultation was undertaken with relevant statutory organisations as part of the assessment process, as detailed further in Section 2.

1.5. Appropriate Assessment

Natura 2000 Sites, which comprise Special Protection Areas (SPAs) and Special Areas of Conservation (SACs), are a network of Sites designated across Europe in order to protect biodiversity within the EU. SACs are designated under the EU Habitats Directive (92/43/EEC), as transcribed into Irish law by the European Communities (Birds & Natural Habitats) Regulations, 2011 [S.I. 477 of 2011], while SPAs are designated under the EU Birds Directive (79/4089/EEC and amendments as consolidated in 2009/147/EC).

Article 6(3) of the EU Habitats Directive states that: '*Any plan or project not directly connected with or necessary to the management of the [Natura 2000] Site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the Site in view of the Site's conservation objectives*.' Such an assessment is known as an Appropriate Assessment or a Habitats Directive Assessment. Further guidance on this process is provided by the European Commission (2000) and DEHLG (2009[1]).

A Natura Impact Assessment was undertaken as part of this application to consider the potential impacts of the proposed development on the conservation interests of surrounding Natura 2000 Sites (AtkinsRéalis, 2024).

Based on the findings of the Natura Impact Statement the following conclusions have been made '*The proposed development has been subject to Appropriate Assessment Screening which determined, following a precautionary principle, the risk of likely significant effects to North Dublin Bay SAC and North Bull Island SPA Qualifying Interest Habitats could not entirely be ruled out. The NIS has examined the potential impacts of the proposed development on the integrity of North Dublin Bay SAC and North Bull Island SPA alone and in combination with other plans and projects, considering each European site's structure, function and conservation objectives. Where potential likely effects were identified, mitigation measures were identified to mitigate effects.*

[1] Note: DEHLG (2009) guidance was updated in 2010, by replacing the term "Statement for Appropriate Assessment" with "Natura Impact Statement" or "NIS.

Following a comprehensive evaluation of the potential direct, indirect and in-combination effects on the qualifying interests of North Dublin Bay SAC and North Bull Island SPA and the implementation of the prescribed mitigation measures, it has been concluded by the authors of this report that there will be no adverse effects on the integrity of European sites as a result of the proposed development, either alone, or in combination with other plans or projects' (AtkinsRéalis, 2024).

1.6. Methodology & Structure of this Report

This EIAR has been prepared in accordance with Planning and Development Regulations as amended 2001-2023, and with due regard to the following EIAR guidance;

- *Guidelines for Planning Authorities and An Bord Pleanala on carrying out Environmental Impact Assessment (Government of Ireland, 2018);*
- *'Guidelines on the information to be contained in Environmental Impact Assessment Reports' published in 2022 (EPA, 2022);*
- *'Environmental Impact Assessment of Projects Guidance on Scoping'* (Directive 2011/92/EU as amended by 2014/52/EU); and,
- *'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),* published by the European Commission.'

Additionally, discipline specific best practice guidance has been consulted by each specialist for each of the relevant topics (Population & Human Health; Biodiversity; Landscape and Visual; Air Quality; Climate; Noise & Vibration; Traffic; Land, Soils & Geology; Water; Cultural Heritage; and, Material Assets) during the preparation of the EIAR.

This EIAR includes all necessary technical studies to address the likely environmental effects of the demolition, construction, and operation of the proposed development. The disciplines identified for inclusion in this EIAR, along with the technical content, were determined based on a site walkover survey, completion of an environmental scoping exercise (to inform the content and extent of matters covered in the environmental information) and consultation with statutory bodies.

The EIAR is presented in three volumes as follows;

- Volume 1 - Non-Technical Summary;
- Volume 2 - EIAR; and,
- Volume 3 - EIAR Appendices.

Within the main body of the EIAR (Volume 2), Chapter 1 sets out the introduction and methodology, Chapter 2 describes the project and identifies the information required in an EIAR, and Chapter 3 identifies the alternatives considered.

The environmental topics where there is potential for significant effects to arise are addressed in Chapters 4 to 18 as follows;

- Chapter 4 Population and Human Health;
- Chapter 5 Biodiversity;
- Chapter 6 Landscape & Visual;
- Chapter 7 Air Quality;
- Chapter 8 Climate;
- Chapter 9 Noise & Vibration;
- Chapter 10 Traffic;
- Chapter 11 Land, Soils & Geology;
- Chapter 12 Water;
- Chapter 13 Cultural Heritage;
- Chapter 14 Material Assets;
- Chapter 17 Future Airport Development; and,
- Chapter 18 Cumulative Impacts;

Interactions between disciplines are addressed in Chapter 15 and the Schedule of Environmental Commitments are presented in Chapter 16.

Where appropriate, each of the main sections of this report are structured in the same general format, as follows:

- An introduction describing the purpose of the section;
- A description of the methodology used in the section;
- A description of the aspects of the existing environment (and where relevant future receiving environment) relevant to the environmental topic under consideration;
- A description of the future receiving environment relevant to the location of the proposed development
- Characteristics of the proposed development under consideration;
- An assessment of the likely significant effects of the impacts of the proposed development on the environmental topic;
- Recommendations for mitigation measures to reduce or eliminate any impacts which may have potential to result in significant adverse effects identified; and,
- An assessment of the residual effects that will remain, assuming that recommended mitigation measures are fully and successfully implemented.

Further details of the methodology and discipline specific best practice and guidance are presented in the relevant Chapters included within this report. All required planning drawings are submitted as part of this planning application and have not been duplicated within the EIAR appendices.

Sources of information mentioned in the text are either i) listed in full in the bibliography (Chapter 19 – References) or ii) are referenced in full in the text.

The full planning application pack, including this EIAR will be available for public viewing at the Fingal County Council Office.

1.7. Context

The proposed car park is based on Dublin Airport's staff commuting principle, which will assign staff parking permits in the remote car parks based on each employees' home location. This will ensure that the staff travelling to the proposed south car park will be those living south of the airport, thereby removing the need for them to travel to the main airport campus and use the road network directly adjacent. The overall aim of this commuting principle is to rationalise surface access to the airport in the context of the ongoing discussions with Fingal County Council, the National Transport Authority and Transport Infrastructure in relation to Objective SF02 of the Dublin Airport Local Area Plan (LAP, 2020).

The Proposed Development site is located adjacent to the existing, established, permanent Holiday Blue long-stay passenger car park. As noted above, the Proposed Development site is zoned GE, General Employment, Car parking is a use that is neither 'Permitted in Principle' nor 'Not Permitted' on GE zoned lands. In such circumstances, a car parking use is to be assessed in terms of its contribution towards the achievement of the Zoning Objective and Vision and their compliance and consistency with the policies and objectives of the Plan. Part of the Proposed Development site is located in the existing, established Holiday Blue Long-Term Car Park, which benefits from a specific 'Car Park' objective in the Plan. 950no. parking spaces for existing staff are proposed as an extension to the Holiday Blue Car Park, to which a 'CP-Car Parking' specific objective applies, defined in the Plan as 'provide a car park'. In the context of the applicable GE zoning objective, the proposed development to provide for the car parking needs of existing staff can be supported by reference to the following:

- Section 4.5 of the National Aviation Policy for Ireland (NAP, 2015), which advises that:

  > *Air transport requires a specific level of airport infrastructure, both in terms of quantity and quality, to facilitate the optimum level of air services for Ireland. This includes terminal and runway capacity as well as* ***surface access*** *to airports and is particularly relevant to the development of Dublin Airport as a secondary hub.* [emphasis added].

- National Strategic Outcome 6: High Quality International Connectivity of the National Planning Framework (NPF, 2018), which prioritises the need to enhance land-side access at Dublin Airport. The proposed development will enhance land-side access for daa staff.
- Regional Policy Objective (RPO) 8.18 of the Eastern and Midland Regional Spatial and Economic Strategy (RSES, 2019), which supports appropriate levels of car parking at Dublin Airport. The proposed development will facilitate the provision of an appropriate level of car parking to serve existing staff needs.
- Objective DAO2 of the Fingal County Development Plan (the Plan, 2023), which seeks to safeguard the current and future operational, safety, technical and developmental requirements of Dublin Airport and provide for its ongoing development in accordance with the Dublin Airport Local Area Plan 2020, or any

subsequent LAP or extension of same. The proposed development will safeguard a current operational requirement for existing staff at the Airport.

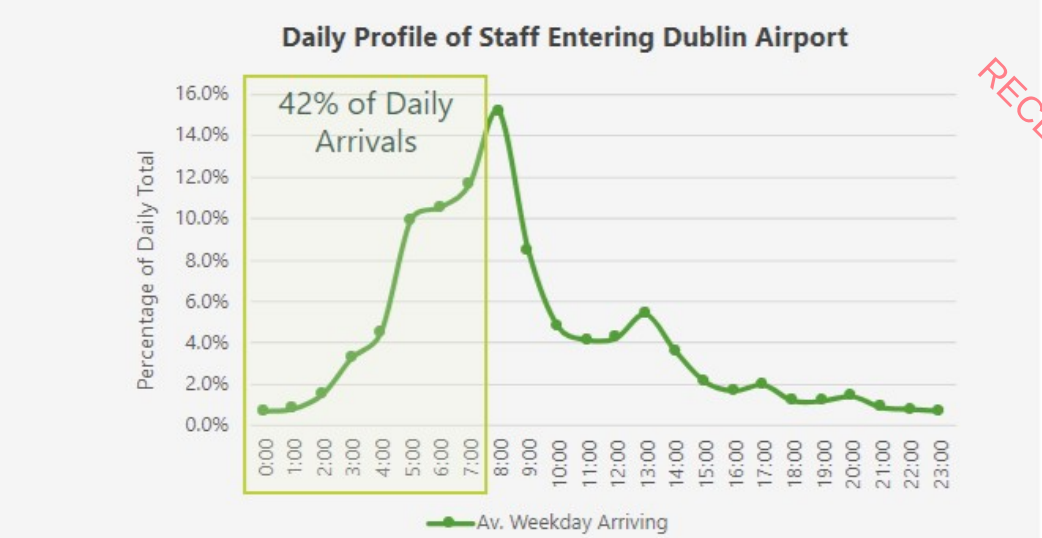
- Objective DAO6 of the Plan, which seeks to *control the supply of car parking at the Airport so as to maximize as far as is practical the use of public transport and sustainable transport modes (walking / cycling) by workers and passengers* and *to* secure the efficient use of land and safeguard the strategic function of the adjacent road network. Staff car parking is controlled by condition 23© of the Terminal 2 permission (PL06F.220670 (F06A/1248)). This states that there shall be no material increase in the number of employee car parking spaces at the airport. The T2 planning application stated there were 5,360no. staff car parking spaces at Dublin Airport.
- Objective DAO9 of the Plan, which prioritises the maintenance and protection of accessibility to the Airport. . The proposed development will maintain and protect accessibility to the Airport for daa staff.
- Objective CP04 of the Dublin Airport Local Area Plan (LAP, 2020) which seeks to *limit the growth of employee parking in order to improve public transport usage, particularly in locations near the centre of Dublin Airport campus where land can be more efficiently used for other purposes.* The proposed development does not provide an increase in staff car parking at Dublin Airport but seeks to facilitate the needs of existing staff. The overall quantum of staff car parking remains within the 5,360-space limit set by condition 23© of the Terminal 2 permission (PL06F.220670 (F06A/1248)). Section 8.6.1 of the LAP confirms that 5,360no. car parking spaces supports the airport's staff car parking requirements. In addition, the location of the proposed development at a remove from the centre of the Airport campus is fully aligned with objective CP04.
- In the context of objective CP07 of the Dublin Airport Local Area Plan (LAP, 2020), which, this car parking will ensure that the overall number of airport staff parking spaces remains within the limit established by Condition 23 of the Terminal 2 permission.

The Proposed Development is also consistent with the pattern of development in the immediate vicinity, in particular the existing, established Holiday Blue Long-Term Car Park which forms part of the Proposed Development Site.

The proposed parking spaces are to be used for all existing Dublin Airport staff, not exclusively daa staff. The development will supplement and make use of existing shuttle buses to transport staff to the main airport campus.

1.8. Need for the Proposed Development

At Dublin Airport, and in the context of the Airport's Mobility Management Plan which remains focused on sustainable transportation modes, appropriate levels of staff parking are a fundamental requirement if the airport is to operate efficiently in line with national, regional and local planning policy objectives, and as recognised in the Terminal 2 permission (PL06F.220670 (F06A/1248)). The nature of airport travel demand means that a large proportion of staff arrive outside the traditional public transport operating hours. Staff parking is therefore essential for staff that arrive and work during unsocial hours, in order to provide them with reliable and safe passage to work. Refer to Figure 1-4. Analysis of staff arrival profiles indicates that although the AM peak hour (8:00 – 9:00) is the single hour with the largest proportion of staff arriving, over 42% of the daily total staff arrive before this, which is significantly higher than would be expected at most 'typical' employment locations. Since Terminal 2 was permitted (in 2007 under ABP Ref. No. PL06F.220670 (F06A/1248)), a number of essential airport developments have been permitted and constructed, resulting in a net loss of airport staff parking spaces, with staff having to park where possible on the Airport campus. This proposal will provide a co-ordinated, consolidated, and controlled approach to staff parking aligned with the total of 5,360no. spaces permitted by condition no. 23 of the Terminal 2 permission and endorsed by Section 8.6.1 of the Dublin Airport LAP. Refer to Coakley O'Neill (2024) Planning Statement for further detail which is submitted as part of planning application.



Spines & Branches		Weekday																	
Route no.	To and From	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11
A-SPINE	Swords Rd - City Centre - Terenure	8	4	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4	8
A1	Beaumont - City Centre - Knocklyon	30	15	12	12	12	12	12	12	12	12	12	12	12	12	15	15	15	15	30
A2	Airport - City Centre - Ballinteer - Dundrum	30	15	12	12	12	12	12	12	12	12	12	12	12	12	15	15	15	15	30
A3	DCU - City Centre - Tallaght	30	15	12	12	12	12	12	12	12	12	12	12	12	12	15	15	15	15	30
A4	Swords - City Centre - Dundrum	30	15	12	12	12	12	12	12	12	12	12	12	12	12	15	15	15	15	30

Figure 1-4 - Daily Profile of Staff Entering Dublin Airport

2. Project Description

This Chapter of the EIAR describes the proposed development, including design, size and other relevant features of the proposed project and the physical characteristics. The chapter also sets out the likely construction programme, phasing, and activities, including proposed mitigation methods for construction environmental impacts. The proposed Remote South Staff Car Park is hereafter referred to as 'the proposed development' or 'the site'.

2.1. Nature and Extent of the Proposed Development

daa are seeking permission for a proposed development on a site of approximately 4.26ha, bounded by the South Parallel Road (R108) to the north, Harristown Lane to the west, Horizon Business Park to the south, an existing former construction access road to Horizon Business Park and the existing Holiday Blue Long-Term Car Park to the east in the townland of Harristown, Dublin Airport, Co. Dublin.

The proposed development will consist of:

1. the demolition of existing cattle pen and hard standing area (total 911m2) and the removal of 1 no. existing gated site entrance from the South Parallel Road (R108), and the construction of a westwards extension to the existing Holiday Blue Long-Term Car Park to provide an extended surface car park which will comprise 950 no. airport staff car parking spaces, of which 48 no. will be provided for Persons with Reduced Mobility (PRM) and 96 no. will be serviced by Electric Vehicle (EV) charging points, to be accessed off the South Parallel Road (R108) via an upgraded existing former temporary construction access/egress, with an emergency access also to be provided through the existing Holiday Blue Long-Term Car Park immediately east of the proposed development site via a tie in, with security barriers, to the existing internal roundabout;
2. 30 no. bicycle spaces;
3. 1 no. new bus shelter;
4. new internal road layout, with set down areas for buses and footpaths, incorporating 2 no. existing culverts (one of which is to be extended) and 1no. new culvert over the Santry River;
5. proposed riparian corridor either side of the Santry River;
6. 1 no. single-storey substation;
7. 1 no. new single storey welfare building;
8. 1 no. new single-storey security hut with security barriers;
9. new foul and surface water drainage system works incorporating attenuation;
10. the erection of CCTV equipment, security fencing, electrical enclosure, lighting, signage, and boundary fencing; and,
11. all other associated site development works, including temporary construction compound, and all hard and soft landscaping.

The site is located within Fingal County Council (FCC) and entirely on land owned by daa, within the boundary of Dublin Airport. Dublin Airport is located ca. 10km north of Dublin City Centre and 2km south of the closest town of Swords. Santry River crosses through the middle of the site and discharges to the North Bull Island transitional waterbody to the east of the site.

There are 3 no. crossing points of the Santry River within the site boundary proposed, as follows:

- To the eastern end of the site: this is an extension of the existing culvert under the existing access road (culvert to be extended is 900mm diameter);
- In the centre of the site: this is an existing culvert of the stream which will be reused for pedestrian access; and,
- To the western end of the site; this is the one new crossing point which will require a twin culvert.

2.2. Construction Methodology

The construction methodology will be carried out in 8no. phases, as follows:

1. Phase 1: Site Clearance and Demolition

It is proposed to demolish the existing cattle pen and hard standing area (total 911m^2) as part of the proposed development, along with the removal of 1no. existing gated site entrance from the South Parallel Road (R108) and the existing secure fencing from the north-eastern corner of the site. Hedgerow and vegetation will be removed as part of this proposed development, as follows:

- The removal of an existing belt of trees and scrub from within the site.
- The removal of existing semi-mature trees located at the junction of the entrance road with the South Parallel Road in the north-eastern corner of the site.
- The removal of artificial mounding at the junction of the entrance road with the South Parallel Road in the north-eastern corner of the site.
- The Contractor will be required to ensure that all demolition material is managed, stored and disposed of in an appropriate manner in accordance with all relevant waste legislation. Refer to Figure 2-1.

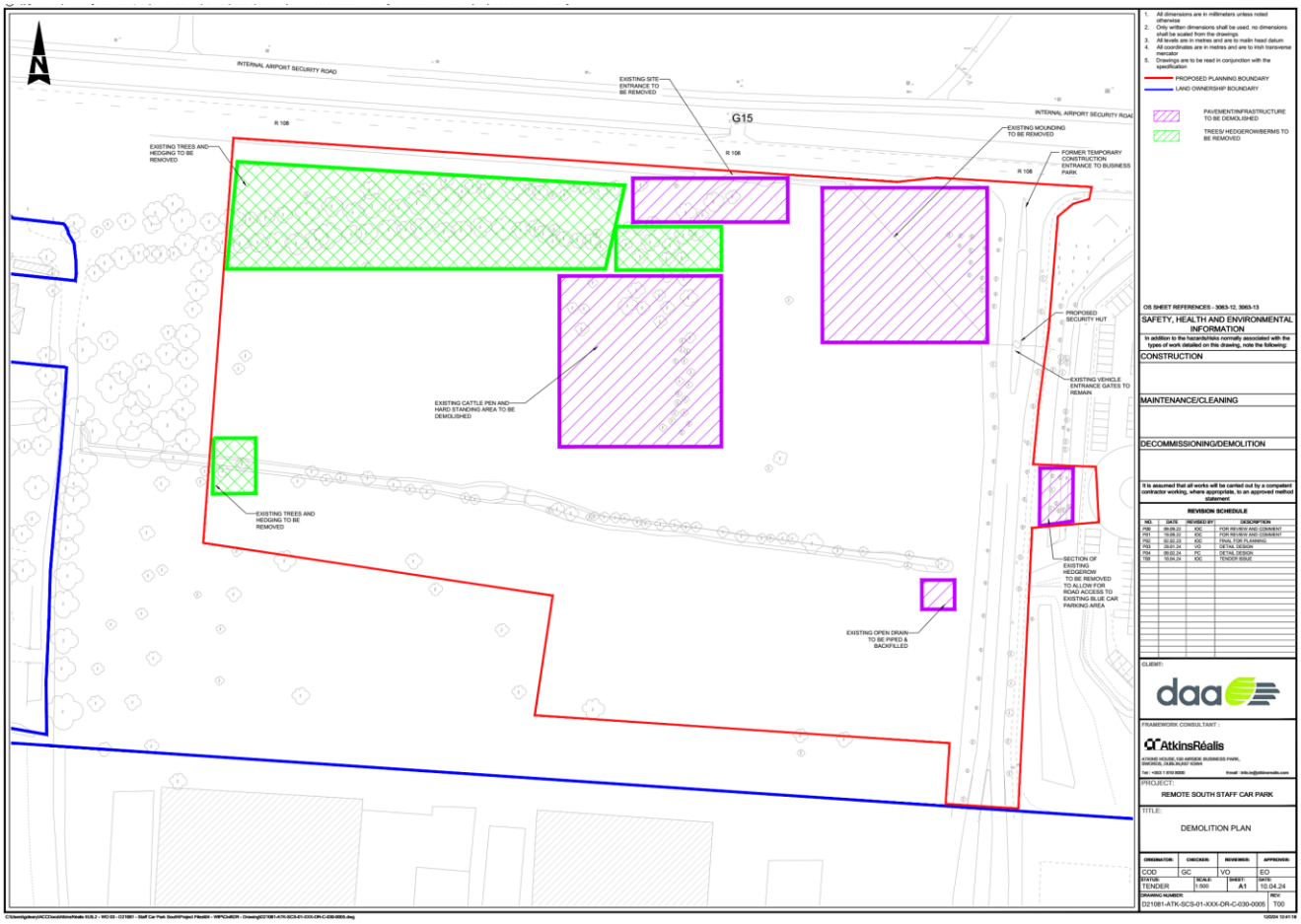


Figure 2-1 - Proposed demolition areas within the proposed development

2. Phase 2: Topsoil strip

The topsoil layers will be stripped and generally disposed of offsite to an appropriately licensed facility by a licensed contractor. The total volume of soil to be excavated is ca. 20,220 tonnes. There will be ca. 550 tonnes of topsoil retained on site for landscaping. Soils should be placed in clearly identified stockpiles and chemical testing undertaken to confirm the potential for re-use on site, or, if considered inappropriate for re-use (due to geotechnical or chemical properties or being surplus), to inform off site treatment and/or disposal routes. Where soil materials meet the geotechnical and chemical criteria for re-use given the proposed end use scenario, such materials may be re-used on site, if required, for landscape purposes. Therefore there is potential to obtain additional excavation soil onsite for landscaping, depending on the chemical testing to confirm re-use. Topsoil to be retained shall be temporarily stored upon geotextile such as Terram 1000 (www.terram.com) and covered with same. The contractor is to submit proposals for supplier and product, which should be a nonwoven geotextile manufactured from UV stabilised, high tenacity, virgin polypropylene fibres that have been both mechanically and thermally bonded with a minimum of 5 years lifespan in all soil conditions. All excess soil will be removed off-site to an appropriately licenced waste facility by a licensed contractor / haulier.

3. Phase 3: Ground Works

The site will be excavated to the formation level depth specified in the design drawings. At this stage it is assumed that the existing sub-grade at formation level will have a CBR of 5%, this will be confirmed following the completion of site investigation works. The maximum excavation depth is ca. 5m bgl for drainage infrastructure and the majority of the site will be excavated to ca. 1.2m bgl for the pavement foundations. The extent of excavation for service / utility trenches will vary. Potential rock breaking will be required north of the Santry River due to the presence of a small area of bedrock outcrop or subcrop, based on a review of the GSI (2024) database. It is expected that the project will commence upon receipt of development consent, and it is estimated that the duration of the build will be ca. be 9 no. months.

4. Phase 4: Existing Underground Services and Drainage Connections

Storm Water Drainage

The surface water infrastructure for the site will mimic the natural drainage catchments of the existing site. The proposed site is split into two catchments, a northern catchment, and a southern catchment. At the eastern boundary, the stream is culverted under the unused access road prior to continuing to the south of the existing Holiday Blue car park. There is a second existing culvert crossing at the centre of the site which is currently used as a field crossing. The stormwater drainage system for the proposed development is presented as indicated on Drawings D21081-ATK-SCS-01-XXX-DR-C-520-0001, which is presented as part of this planning application.

Stormwater management for the proposed development is designed to comply with the Greater Dublin Strategic Drainage Study (GDSDS) and CIRIA Design Report C753 'The SuDS Manual'. In addition, the storm drainage system has been designed in accordance with the key documents and standards as listed below:

- Fingal County Council Development Plan, 2023-2029;
- Dublin Airport Local Area Plan, 2020; and,
- Dublin Airport Sustainable Drainage Policy Document.

The catchments are separated by the Santry River which intersects and traverses the centre of the site flowing from the western boundary to the eastern boundary:

- The Northern catchment will have SuDS porous surfacing parking bays that will comprise of porous asphalt. The stormwater runoff will discharge into the permeable surface prior to collection by filter drains. The filter drains allow for adequate drainage of the permeable granular stone material into the proposed carrier drainage network.
- The Southern catchment will have SuDS porous surfacing parking bays that will comprise of porous asphalt. The stormwater runoff will discharge into the permeable surface prior to collection by filter drains. The filter drains allow for adequate drainage of the permeable granular stone material into the proposed carrier drainage network.
- It should be noted that internal circulation roads within the car park areas will be constructed of non-permeable asphalt but will be graded such that stormwater runoff drains from the surface to the adjacent porous car-parking bays.
- The main car park access circulation road will have an impermeable Stone Mastic Asphalt (SMA) surface which will be drained via the use of traditional road gullies.
- A vortex flow control device will be located downstream of the proposed carrier drainage network limiting flows to a maximum discharge rate specified below. Prior to discharge into the Santry River a bypass separator will ensure silts and oil is removed.
- Attenuation for both catchments is provided through the use of a proprietary modular geocellular structure with a maintenance/inspection tunnel for providing underground surface water attenuation storage and infiltration to manage storm water runoff. Refer to Engineering Planning Report (D21081-ATK-SCS-01-XXX-RP-C-XXX-0002) for further details.
- A petrol interceptor will be provided on each outfall from the site. Petrol interceptors work on the premise that some hydrocarbons such as petroleum and diesel float on the top of water. Class I bypass separators are proposed which enable the main collection chamber to be by-passed at times of heavy rainfall which prevents any collected oil from being flushed out. Class I bypass separators are designed to achieve a concentration of less than 5mg/l of oil. Kingspan Klargester Class 1 Bypass Petrol Interceptors or equal approved will be used prior to the discharge points north and south of the Santry River and will be NSBE010 and NSBP003 at the north and south catchments respectively.

The proposed development will incorporate a riparian strip along the length of the section of the Santry River in accordance with FCC Development Plan. The Santry River within the proposed development currently has two existing field crossing points for land access, the existing crossing locations will be re-used for road and pedestrian access for the proposed development. In addition, a third new crossing point to the west of the site

will be constructed. A new headwall will be constructed at the existing culvert under the proposed access road to the south car-park.

Rainwater from the welfare building roof will be collected in a tank to be stored and reused for greywater usage (toilets) in the block, this is regarded as a source control technique. The system will be located under the proposed development adjacent to the welfare building and the contributing catchment for harvesting will be the roof area of the block. The system will be fitted with an overflow that will discharge into the proposed cavier drain.

Foul Drainage

It is proposed to provide a new security hut with toilet and sink on the traffic island along the existing entrance road. In addition, a new welfare facility building shall be located at the entrance to the proposed development. The existing package pumping station serving the existing security hut will be removed and the new security hut and welfare building will connect, via a new gravity foul network, to a new package pumping station located adjacent the welfare building. The new pump station will connect to the existing rising main and the redundant sections of rising main will be removed as part of the removal of the existing pump station and the areas made good. The proposed underground packaged pumping station will include duty/standby sewage pumps and will include inbuilt emergency storage in case of breakdown. A pre-connection application to Uisce Éireann was submitted which included calculations of design wastewater flows in September 2022. AtkinsRéalis received a 'confirmation of feasibility' letter from Uisce Éireann in October 2022. The peak foul discharge from the proposed development was determined to be 0.58 l/s and the daily discharge will be 0.13l/s. The foul drainage system for the proposed development is presented as indicated on Drawings D21081-ATK-SCS-01-XXX-DR-C-520-0002, which is presented as part of this planning application. Refer to Engineering Planning Report (D21081-ATK-SCS-01-XXX-RP-C-XXX-0002) for further details.

Water Supply

It is proposed to connect the water supply for the development to the existing watermain spur located in the entrance road. For details of the watermains proposals refer to drawing D21081-ATK-SCS-01-XXX-DR-C-530-0001. The water supply for the site has been designed in accordance with Uisce Éireann Code of Practice and standard construction details. A pre-connection application to Uisce Éireann was submitted which included calculations of design water flows in September 2022. AtkinsRéalis received a 'confirmation of feasibility' letter from Uisce Éireann in October 2022. In line Fire Hydrants will be located on the watermains in accordance with Uisce Éireann standard construction details and "2006 Building Regulations" (Part B Fire Safety), so that no Fire Hydrant is > 46m and < 6m from any building. Refer to Engineering Planning Report (D21081-ATK-SCS-01-XXX-RP-C-XXX-0002) for further details.

5. Phase 5: Culverting Work

There are 3no. proposed crossing points of the Santry River within the proposed development. Two of the culverts are existing culverted crossing points, while the third (to the west of the site) will require a new culverted crossing point. A Section 50 application will be prepared as part of the detailed design. Culverts at these crossing points will be sized and constructed in accordance with final Section 50 approval from the OPW. The final headwall sizes will also be agreed with the OPW. Considering the river is a not large and the fact that it is already culverted in two of the three proposed crossing points it is not envisaged that the hydraulics of the stream will be impacted.

- To the east of the site: this is an extension of the existing culvert under the existing access road (culvert to be extended is 900mm dia);
- In the centre of the site: this is an existing culvert of the stream which will be reused for pedestrian access; and,
- To the west of the site; this is the one new crossing point which will require a twin culvert.

This portion of the Santry River is not of fisheries importance. When the site was visited in July 2022 and December 2023 the drain was shallow, muddy and held very little water. It is anticipated, however, that the drain could hold more water following periods of rainfall. It will therefore be necessary to have a system on site which will allow the Contractor to pump (flume) water around the culvert works areas for the duration of works in order to allow culvert works to be undertaken.

This will be achieved by damming water upstream of the works area in order to create a reservoir of water from which waters can then be effectively pumped around the works area. This can be achieved by the introduction of a suitable impervious barrier at the upstream side of works (dam 1), using for example a line of sealed sandbags. Due to the small scale of the watercourse, the simplest method would be to pump the water into a settlement tank located on the riverbank from which clean water can then be discharged directly back to the drain downstream of the works. The settlement tank to be used should be sized to deal with the anticipated levels of water that might be encountered in the drain. This approach can be used in turn at each of the 3 locations where works are required.

6. Phase 6: Pavement Foundation

There will be 3no. different type of pavements, as follows:

- Pavement Type A – Footpath:
  - 100mm granular sub-base CL808;
  - Separation membrane impermeable plastic sheet 125 microns laid flat min 3000mm at overlaps; and,
  - 100mm concrete to TII specification for road works CL1106.
- Pavement Type B – Road:
  - 40mm surface course SMA 10 PMB 65/105 60 DES PSV 60;
  - 60mm binder courses AC 20 HDM 70/100 DES;
  - 80mm Base course AC 32 HDM 40/50 DES; and,
  - 225mm min sub-base crushed CL808 on capping layer as required.
- Pavement Type C – Porous Asphalt:
  - 40mm porous asphalt surface course;
  - 110mm porous asphalt binder course; and,
  - 225mm min sub-base crushed CL808 on capping layer as required.

For the proposed car park, a stone sub-base layer consisting of clean single size, crushed large stone with 30 – 40% percent voids will be provided. This serves as a structural layer and also temporarily stores stormwater as it discharges at a controlled rate into a drainage collection system. An impermeable membrane that does not allow water to pass through from the sub-grade into the stone recharge bed will also be provided.

Pavement

The pavement shall then be installed. Surface finish as follows:

- Main Circulation Road- SMA;
- Staff Car Parking Areas- Porous Asphalt; and,
- Passenger Car Parking Areas- Gravel.

Lining and Wayfinding

Road Markings and wayfinding signage will be provided in line with the daa requirements.

7. Phase 7: Construction

The construction of 1no. bus shelter, 1no. substation, 1no. new single-storey security hut and 1 no. new single storey welfare building within the proposed development.

8. Phase 8: All other associated site development works

The erection of CCTV equipment, security fencing, electrical enclosure, gate on the Horizon Road, lighting, signage, and boundary fencing.

The proposed landscaping will occur. The landscaping drawing is presented in Appendix 6.4 in Volume 3.

2.2.1. Site Compound

The contractors site compound will be located within the red line boundary, in the north-eastern portion of the site.

The compound will be set up to securely enclose the working area around the new development envelope providing a working area, limited site storage and temporary welfare facilities comprising of the following:

- Canteen;
- Serviced Toilet;
- Site office;
- Site storage container; and,
- Lockable Mixed Waste Skip, to avoid Foreign Object Debris.

2.2.2. Environmental Management

The construction of the proposed development will be in accordance with the Outline Construction Environmental Management Plan (CEMP) submitted as part of this planning application (which takes account of the Schedule of Environmental Commitments presented within this EIAR). This document will be further developed and added to within the Detailed CEMP which will be prepared by the Contractor in advance of the demolition and construction phases and will be fully implemented onsite for the duration of the construction phase of the project. Environmental monitoring will be carried out during the construction phase as detailed in Chapter 16 - Schedule of Environmental Commitments.

2.2.3. Traffic Management

The proposed transport routes of all machinery entering and egressing the site, for the full duration of the 9no. month phased construction period shall be through the proposed entrance off R108, north of the site. All construction activities will be managed and informed by a Construction Traffic Management Plan (CTMP). The details of the CTMP will be agreed with the roads department of the Local Authority in advance of construction activities commencing on-site.

The final layout for the site compound will be included in the contractors detailed Logistics and Traffic Management Plan. The facilities will be adequate to provide accommodation for the number of operatives identified in the tender documentation. The Site Security plan will be developed with the contractor.

2.2.4. Waste Management

The construction of the proposed development will be in accordance with the Resource and Waste Management Plan (RWMP) included within the CEMP submitted as part of this planning application. The Contractor will prepare a detailed C&D Resource and Waste Management Plan (RWMP) in accordance with the relevant following guidance '*Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects'* (EPA, 2021) which will take full account of the CEMP submitted as part of this planning application. The Construction RWMP will provide a mechanism for monitoring and auditing waste management performance and compliance for the duration of the project. The document will also provide a detailed overview of key waste management considerations for the project and will be fully implemented onsite for the duration of the construction phase of the project.

2.3. Description of Baseline Scenario

The baseline scenario including a description of the relevant aspects of the current receiving environment has been considered as part of this EIAR through the collection and collation of baseline data including analytical data where relevant (air quality, noise levels, surface water quality). A detailed description of the current receiving environment is presented in relevant sections for each environmental topic. The baseline assessments were carried out from June 2022 to December 2023. The predicted changing baseline (i.e. the likely future receiving environment) that could arise as a result of committed development within the vicinity has also been addressed, where relevant, and is presented under the cumulative effects section of this EIAR.

2.4. Consideration of Reasonable Alternatives and Cumulative Effects

The consideration of reasonable alternatives is discussed further in Chapter 3 – Alternatives. Cumulative effects in relation to airport cumulative effects are addressed in Chapter 17 – Future Airport Development and Chapter 18 – Cumulative Effects.

2.5. Consultation

As part of the EIAR assessment process, consultation was undertaken with statutory organisations at various stages of the pre-planning process for the current application. All environmental consultees were consulted by scoping letter in November 2023 (during the Environmental Scoping phase of EIAR) regarding any environmental or planning interests that they may have in relation to the development. This scoping letter is presented in Appendix 2.1.

A summary of all relevant feedback in relation to the proposed development is presented below. A copy of all pre-application consultation correspondence received from statutory organisations as part of the EIAR process is presented in Appendix 2.2.

All relevant comments from the various consultees have been fully addressed as required within this EIAR and the accompanying Natura Impact Statement (NIS).

2.5.1. Pre- Application Consultation

The following bodies / interest groups have been consulted at pre-application stage as part of the preparation of this EIAR:

- Irish Aviation Authority (IAA);
- AirNav Ireland;
- An Chomhairle Ealaíon (The Arts Council);
- Aircraft Noise Competent Authority;
- An Taisce ;
- Birdwatch Ireland;
- Department of Agriculture, Food and the Marine;
- The Minister for Communications, Climate Action and Environment;
- The Minister for Housing, Planning, Community and Local Government;
- Dublin Bus;
- Final County Council (FCC) - Planning ;
- Environment Protection Agency (EPA);
- Failte Ireland;
- Geological Survey of Ireland;
- Iarnród Éireann (Irish Rail) ;
- Inland Fisheries Ireland (IFI) ;
- Irish Wildlife trust;
- National Transport Authority (NTA) ;
- The Department of Culture, Heritage and the Gaeltacht;
- National Parks and Wildlife Service (NPWS) ;
- National Monuments / Architecture;
- The Eastern & Midland Regional Assembly;
- The Health Services Executive, Environmental Health;
- The Heritage Council;
- Transport Infrastructure Ireland (TII);
- The Health and Safety Authority;
- Uisce Éireann;
- Department of Transport, Tourism and Sport ;and,
- Dublin Regional Authority.

A synopsis of the responses received as part of the EIAR consultation and scoping stage are presented as follows. Refer to Appendix 2.2 for a copy of all relevant responses.

2.5.1.1. Fingal County Council (FCC) Conservation Department

In email correspondence received on 8th of November 2023, FCC identified that the '*historic maps for the site indicate it to be a field that was bordered by a road/laneway to west and north that is named as Harristown Lane and led to Harristown House (which no longer exists as site is under the runway)'.* All relevant comments have been addressed within Chapter 13 – Culture Heritage. Full details are presented in Appendix 2.2.

2.5.1.2. Irish Aviation Authority (IAA)

In email correspondence received on 16th of November 2023, IAA confirmed that they have no comments or queries at this time. They '*recommend engagement with daa Dublin Airport and the Air Navigation Service Provider AirNav Ireland for their review and comment'*. The scoping letter was issued to AirNav Ireland. A copy of this correspondence is presented in Appendix 2.2.

2.5.1.3. Transport Infrastructure Ireland (TII)

In email correspondence received on 21st of November 2023, TII provided recommendations in relation to the preparation of the EIAR, specifically the request that a '*Traffic and Transport Assessment (TTA) be carried out in accordance with relevant guidelines, noting traffic volumes attending the site and traffic routes to/from the site with reference to impacts on the national road network and junctions of lower category roads with national roads. TII's Traffic and Transport Assessment Guidelines (2014) should be referred to in relation to proposed development with potential impacts on the national road network. Having regard to the nature of the proposed development and location, the TTA should be undertaken in accordance with the TII TTA Guidelines (2014)'.* Full details are presented in Appendix 2.2. All relevant comments have been addressed within Chapter 10 – Traffic.

2.5.1.4. Geological Survey Ireland (GSI)

In letter correspondence dated 28th of November 2023, the GSI noted:

- **Geoheritage '***Our records show that there are no CGSs in the vicinity of the proposed Dublin Airport Development'*
- **Groundwater '***Proposed developments need to consider any potential on specific groundwater abstractions and on groundwater resources in general…***'**
- **Geological Mapping** *'Geological Survey Ireland maintains online datasets of bedrock and subsoils geological mapping that are reliable and accessible. We would encourage you to use these data which can be found here, in your future assessments…'*
- **Geotechnical Database Resources '***We would encourage the use of this database as part of any baseline geological assessment of the proposed development as it can provide invaluable baseline data for the region or vicinity of proposed development areas. This information may be beneficial and cost saving for any site-specific investigations that may be designed as part of the project.'*
- **Natural Resources (Minerals/Aggregates) '***We would recommend use of the Aggregate Potential Mapping viewer to identify areas of High to Very High source aggregate potential within the area. In keeping with a suitable approach we would recommend use of our data and mapping viewers to identify and ensure that natural resources used in the proposed . refurbishment and upgrade project are sustainably sources from properly recognised and licensed facilities, and that consideration of future resource sterilization is considered'';*
- **Geochemistry of soils, surface waters and sediments for the Dublin Regions '***Geological Survey Ireland has completed a geochemical characterization of the subsoil beneath large parts of Dublin, known colloquially as the Dublin Boulder Clay. The report documents the analysis completed on a third-party geochemical dataset obtained from the private sector and is accompanied by an excel spreadsheet containing the database of geochemical observations.'*
- **Guidelines '***The following guidelines may also be of assistance:*
    - *Institute of Geologists of Ireland, 2013. Guidelines for the Preparation of the Soils, Geology and Hydrogeology Chapters of Geology in Environmental Impact Statements.*
    - *EPA, 2022. Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)*

The above comments from GSI have been addressed where relevant to the Site within Chapter 11 – Land, Soils and Geology. Full details are presented in Appendix 2.2.

2.5.1.5. Department of Transport

In the email correspondence received on the 28th of November 2023, the Department of Transport recommendations in relation to the design of the proposed development. *'The Department of Transport suggest that the daa consider liaising with the local authority to ensure the provisioning of the additional carparking spaces aligns with the local authority's strategies and policies, which contribute to national targets as specified in the Climate Action Plan. The Department of Transport notes from the scoping letter that provision will be made for 20 bike parking spaces and 950 car parking spaces. In line with Government policy, focus is being placed on modal shift away from car use and towards sustainable and active travel. In this regard, the Department would encourage a re-examination of the ratio between bike and car parking spaces with a view to increasing the capacity for secure bike parking. In addition, it should be borne in mind that spaces should be accessible to pedal bikes, e-bikes and cargo bikes, where possible'.* Full details are presented in Appendix 2.2. This response is noted and at Dublin Airport, and in the context of the Airport's Mobility Management Plan which remains focused on sustainable transportation modes, appropriate levels of staff parking are a fundamental requirement if the airport is to operate efficiently in line with national, regional and local planning policy objectives, and as recognised in the Terminal 2 permission (PL06F.220670 (F06A/1248)). The nature of airport travel demand

means that a large proportion of staff arrive outside the traditional public transport operating hours. Staff parking is therefore essential for staff that arrive and work during unsocial hours, in order to provide them with reliable and safe passage to work. Analysis of staff arrival profiles indicates that although the AM peak hour (8:00 – 9:00) is the single hour with the largest proportion of staff arriving, over 42% of the daily total staff arrive before this, which is significantly higher than would be expected at most 'typical' employment locations. Since Terminal 2 was permitted (in 2007 under ABP Ref. No. PL06F.220670 (F06A/1248)), a number of essential airport developments have been permitted and constructed, resulting in a net loss of airport staff parking spaces, with staff having to park where possible on the Airport campus. This proposal will provide a co-ordinated, consolidated, and controlled approach to staff parking aligned with the total of 5,360no. spaces permitted by condition no. 23 of the Terminal 2 permission and endorsed by Section 8.6.1 of the Dublin Airport LAP .

2.5.1.6. Health and Safety Authority

In email correspondence received on 3rd of November 2023, Health and Safety Authority (HSA) stated the following:

'The Health and Safety Authority (the Authority), acting as the Central Competent Authority under the Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015 (S.I. 209 of 2015) gives technical advice to the Planning Authority when requested, under regulation

24(2) in relation to:

(a) the siting and development of new establishments;

(b) modifications to establishments of the type described in Regulation 12 (1);

(c) new developments including transport routes, locations of public use and residential areas in the vicinity of establishments, where the siting, modifications or developments may be the source of, or increase the risk or consequences of, a major accident.

Since the above-referenced application appears to be outside the scope of the Regulations, the Authority has no observations to forward'. This response is noted.

2.5.1.7. Dublin Bus

In email correspondence received on 13th of November 2023, Dublin Bus have stated that *'from a Dublin Bus perspective we do not foresee any major issues arising from the works carried out'.* The Dublin Bus had a query regarding the site access '*vehicular access to the site be through the Industrial estate or the R108'.* AtkinsRéalis responded to Dublin Bus who acknowledged the response. This response is within Appendix 2.3.

2.5.1.8. Fingal County Council (FCC)

A meeting to discuss the preparation and submission at an early stage in the design process for the subject site was held between the officers of Fingal County Council and the applicant, their design team and representatives of the landowner on 15th May 2023. FCC advised the following in respect to the earlier proposal:

- *The proposed development is of a significant scale. FCC noted that the pre planning consultation process has begun in respect of the infrastructural developments envisaged in the Dublin Airport Local Area Plan and the proposal for 950 private car parking spaces is significant in this context and should be encompassed in these consultations in order to ensure an integrated approach to intensification of use. The development may be considered premature otherwise, and in that context could be determined to contravene materially Objective SF02 of the Dublin Airport Local Area Plan 2020 and Objective DAO6 of the Fingal County Development Plan 2023-2029.*
- *It was noted by FCC that previous planning applications referenced by the daa which included the removal of car parking were assessed on their merits. In proposing and in consenting these developments the reduction in spaces was determined to be appropriate, in accordance with prevailing planning policy and with the proper planning and sustainable development of the area……*

A copy of FCC meeting minutes is presented in Appendix 2.4. Refer to Planning Report for further details.

2.6. Consideration of Cumulative Effects with other projects

Potential cumulative effects, defined as '*the addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects'* (EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports, 2022) have been considered for each environmental topic within this EIAR. Refer to Chapter 17- Future Airport Development and Chapter 18 – Cumulative Effects.

2.7. Risk of Major Accidents and / or Disasters

This section describes the risk of major accidents and disasters on the proposed development at Dublin Airport, and the risk of the proposed development in creating a new source of a major accident. This includes vulnerability of the proposed development to natural disasters or a major accident from on and off-site, existing and future sources of hazards taking account of existing assessments under other regimes where applicable, e.g., Seveso designations relevant to the Airport site. Further potential impacts on air, climate, noise emissions, soil, natural heritage, water, visual and traffic are addressed in relevant chapters of the EIAR.

An Outline Construction Environmental Management Plan (CEMP) has been submitted as part of this planning application. This document will be added to by the Contractor and will list all environmental mitigation measures that will be implemented by all site personnel during the construction of this development, including the appointment of an Environmental Manager during the construction phase.

The Environmental Manager will be responsible for the preparation of an Environmental Incident Emergency Response Plan which should be made available to all relevant site staff. Typically, emergency procedures would include contact details of key personnel in local authorities and statutory authorities including the National Parks and Wildlife Services (NPWS), Inland Fisheries Ireland (IFI), FCC and the Environmental Protection Agency (EPA).

2.7.1. Potential Sources of Offsite Hazards

Two offsite (i.e. beyond the site boundary) hazards exist. These include aircraft movements (airside operations) (including taxiing, take-offs and landings), and a fuel farm facility, on Corballis Road South operated by Exolum. The fuel farm (established by CLH Aviation Ireland Ltd. and currently operated by Exolum) is located at Corballis Road South ca. 3.70km east of the proposed development. This is a Lower Tier Seveso site.

2.7.1.1. Potential for Likely Significant Effects

The risk of aviation accidents was investigated recently as part of the North Runway Relevant Action application and this exercise concluded that the risk of aviation accidents was within the level that is considered acceptable. This is supported by the historical record as the Bureau of Aircraft Accident Archives lists only two crashes at Dublin Airport, both in the 1960s. Therefore significant effects in relation to major accidents and /or disasters associated with aircraft movements are not likely.

The proposed development is located within the Outer Public Safety Zone for Dublin Airport. ERM Environmental Resources Management Ireland Ltd[2] report is a detailed report investigating the Public Safety Zones (PSZs) at Ireland's three principal airports; Cork, Dublin and Shannon. A carpark is a permitted development within the Outer Public Safety Zone in accordance with the ERM Environmental Resources Management Ireland Ltd report *'car parks are permitted in the outer PSZs. This is provided that persons are normally expected to park their car and then leave the car park development'.*

The fuel farm is a known hazard regulated by the Health and Safety Authority as a Lower Tier Seveso establishment. This requires the operator to operate the site in strict accordance with a major accident prevention policy and notify the regulator of any accidents that occur. Therefore significant effects in relation to major accidents and /or disasters associated with the fuel farm located 3.70km east of the proposed development, are not likely.

There are 23no. Upper and Lower Tier Seveso sites (in addition to the Exolum establishment discussed above) within 15km of the site (Refer to Table 2.1). Based on the location of these Seveso sites (i.e. distance from the proposed development) significant effects in relation to major accidents and /or disasters are not likely.

Table 2.1. Seveso Establishments Within 15km of the Proposed Development

Facility	Tier	Location	Approx. Distance from Proposed Development
Barclay Chemicals Manufacturing Ltd.	Upper	Damastown Road, Damastown Industrial Park, Mulhuddart, Dublin 15	7.20km southwest
BOC Gases Ireland Ltd.	Upper	PO Box 201, Bluebell, Dublin 12	10.7km southwest
Calor Teoranta	Upper	Tolka Quay Road, Dublin Port, Dublin 1	9.20km southeast

[2] https://www.gov.ie/pdf/?file=https://assets.gov.ie/42743/32a0f723c34b436691dc4758c57c938d.pdf#page=null

Facility	Tier	Location	Approx. Distance from Proposed Development
Contract & General Warehousing Ltd.	Upper	Westpoint Business Park, Navan Rd. Mulhuddart, Dublin 15	8km southwest
Fareplay Energy Ltd (under the Topaz Group)	Upper	Promenade Road, Dublin Port, Dublin 1	9.20km southeast
Indaver Ireland Ltd.	Upper	Tolka Quay Road, Dublin Port, Dublin 1	9.20km southeast
Tedcastles Oil Products	Upper	Yard 1, Promenade Road, Parish of St Thomas, Dublin 3	8.60km southeast
Tedcastles Oil Products	Upper	Yard 2, Tolka Quay Road, Parish of St. Thomas, Dublin Port, Dublin 1	8.60km southeast
The National Oil Reserves Agency Ltd.	Upper	Shellybanks Road (Off Pigeon House Road), Ringsend, Dublin 4	9.5km southwest
The National Oil Reserves Agency Ltd.	Upper	National Oil Reserves Agency Poolbeg Tank Farm, Pigeon House Road, Dublin 4	9.5km southwest
Valero Energy Ireland Ltd.	Upper	Alexandra Road, Dublin Port, Dublin 1	9.20km south
Astellas Ireland Co. Ltd.	Lower	Damastown Road, Damastown Industrial Park, Mulhuddart, Dublin 15	7.20km southwest
Clarochem Ireland Ltd.	Lower	Damastown, Mulhuddart, Dublin 15	7.20km southwest
Electricity Supply Board	Lower	North Wall Generating Station, Alexandra Road, Dublin Port, Dublin 1	8.60km southeast
ESB Dublin Bay Power	Lower	Pigeon House Road, Ringsend, Dublin 4	9.5km southwest
Gensys Power Ltd	Lower	Huntstown Power Station, Huntstown Quarry, Dublin 11	2.30km southwest
Iarnród Éireann	Lower	Iarnród Éireann Dublin Port, Alexandra Road, Dublin Port, Dublin 1	9.20km south
Iarnród Éireann	Lower	Iarnród Éireann Inchicore Works, Inchicore Parade, Dublin 8	9km south
Irish Distillers Pernod Ricard	Lower	Robinhood Road, Fox & Geese, Clondalkin, Dublin 22	11.60km south
Kayfoam Woolfson	Lower	Bluebell Industrial Estate, Bluebell Avenue, Naas Road, Dublin 12	10.60km south
SK Biotek	Lower	Watery Lane, Swords, Co. Dublin	6.60km northeast
Topaz Energy Group	Lower	Dublin Terminal T1, Alexandra Road, Dublin Port, Dublin 1	9.20km south
Topaz Energy Group	Lower	Yard 3, Alexandra Road, Dublin Port, Dublin 1	9.20km south

As the proposed development will not have any likely significant effects on the potential for Major Accidents & Disasters, there is no requirement for monitoring measures.

3. Alternatives

3.1. Introduction

This Chapter outlines the alternatives considered to meet the identified requirements outlined in Chapter 1 – Introduction and Methodology, of this EIAR.

The requirement to consider alternatives within an EIAR is set out in Article 5(1)(d) of EIA Directive (2014/52/EU). Annex IV (2) of the Directive provides for the information required in relation to reasonable alternatives as follows:

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

3.2. Need for the Proposed Development

As discussed in Chapter 1 – Introduction and Methodology, the proposed development is needed to address an existing deficit in parking for existing Airport staff, as these are a fundamental n requirement for the airport to operate efficiently.

However, alternatives have been considered as part of the iterative design and assessment process where relevant.

3.3. Assessment Methodology

3.3.1. Types of Alternatives

The EPA's 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2022) (hereafter referred to as 'the EPA Guidelines') outlines different types of alternatives that should be considered in an EIAR. These include: do nothing scenario; alternative processes and alternative locations (where feasible); alternative layouts; alternative designs; and, alternative mitigation measures.

The approach adopted for this assessment was first to identify where there were reasonable alternatives to all elements of the Proposed Development, then to consider the impact of these alternatives (if any) on the environmental factors used in this EIAR. Where an impact was identified, this effect was compared with the assessed effect of the 'Proposed Development'.

An indication of the main reasons for the option chosen, taking into account the effects of the project on the environment and including a comparison of their environmental effects is what is required by the Directive. As the EPA notes: "It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each option. A detailed assessment (or 'mini-EIA') of each alternative is not required."

3.3.2. Limitations and Assumptions

The degree to which it is possible to assess alternatives depends on the amount of information available for each alternative. Alternatives discarded at an early stage of the design process necessarily will not have the same level of information as is available for the Proposed Development.

3.4. Consideration of Reasonable Alternatives

3.4.1. Alternative Location

Option 1 - Purple Car Park

The purple car park is located in the Dublin Airport Campus (DAC) Masterplan Lands. It is currently used for DAC staff and contains 750 spaces. This option involves constructing a deck over the car park to provide an extra level of parking. It is anticipated that this option would provide an additional 750 spaces. This location is zoned HT – High Technology and is situated within the Dublin Airport Central Masterplan Area.

Figure 3-1 - Option 1 Location

Option 2 - DAC Multi-Storey Car Park (MSCP)

The proposed DAC MSCP is located within the Dublin Airport Central (DAC) Masterplan Lands. These lands are zoned as HT – High Technology. The DAC MSCP is proposed to be used by DAC tenants. It is anticipated that MSCP would take 3-5 years to construct and would provide about 700 spaces.

Figure 3.2 - Option 2 Location

Option 3: DAC Green

Option 3A: DAC Green (Surface Car Park)

The DAC Green car park is also located in Dublin Airport Central (DAC) and is zoned as DA – Dublin Airport. It is currently used as a DAC staff car park. The solution here is to change the car park use from DAC staff to daa staff. This would provide about 400 spaces.

Option 3B: DAC Green (MSCP0)

A 4 level MSCP option at this location is estimated to facilitate about 1600 spaces. Construction of a MSCP is likely to increase the timeline of delivery as well as costs.

Figure 3.3 - Option 3 Location

Option 4: Extended Holiday Blue

The holiday blue car park is a long-term passenger car park to the south of the main runway at Dublin Airport. Any option here would be a new build. This option proposes to construct an extension of this car park to the west of the existing car park. The site land is currently zoned as GE - General Employment and it could facilitate about 2000 spaces. The location of this option is within the outskirts of the Airport area. It is accessible from areas to the south of the airport. Plans for a car park at this location have already been developed.

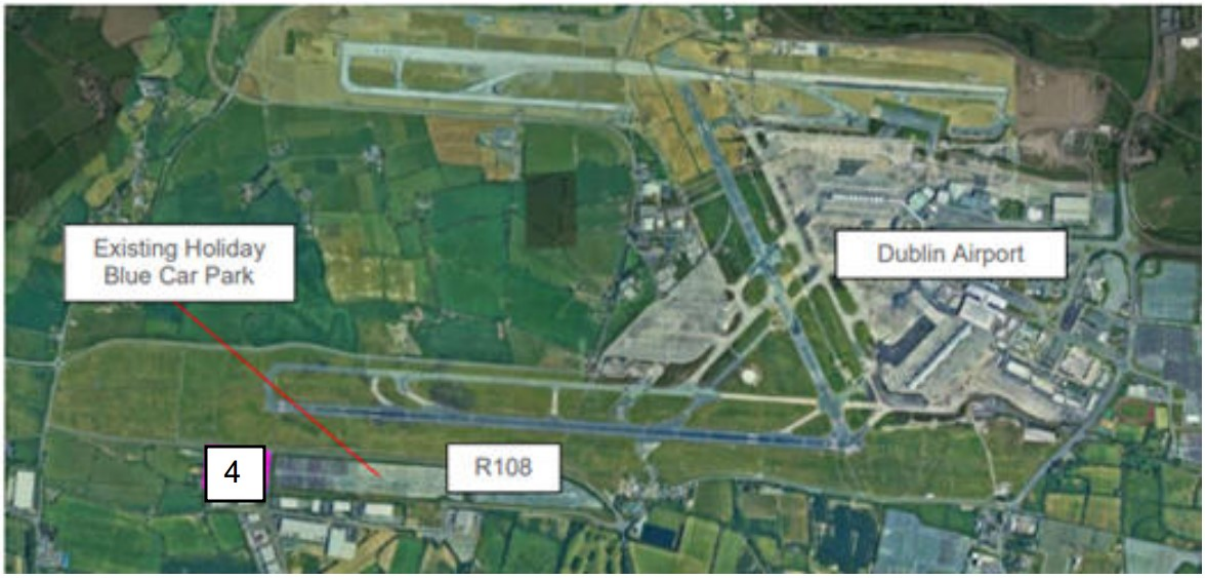


Figure 3-4 - Option 4 Location

The chosen option was option 4. The site location can be accessed via the Western Access Road which limits the impact of increased traffic within the Dublin Airport campus. Furthermore, considering that the site is located adjacent to the Long-term Blue Car Park, it presents an opportunity for future-proofing the car park where it can be repurposed as an extension to the existing customer car park should the need arise.

3.4.2. Design Iterations

Three design iterations were presented during the design stage:

Frist Design Iteration

The first design iteration comprised of 1,528 car parking spaces of which 979 comprised of staff car-parking spaces and 549 comprised of long term passenger car parking spaces with an area of ca. 5.22ha. Refer to Figure 3-1.

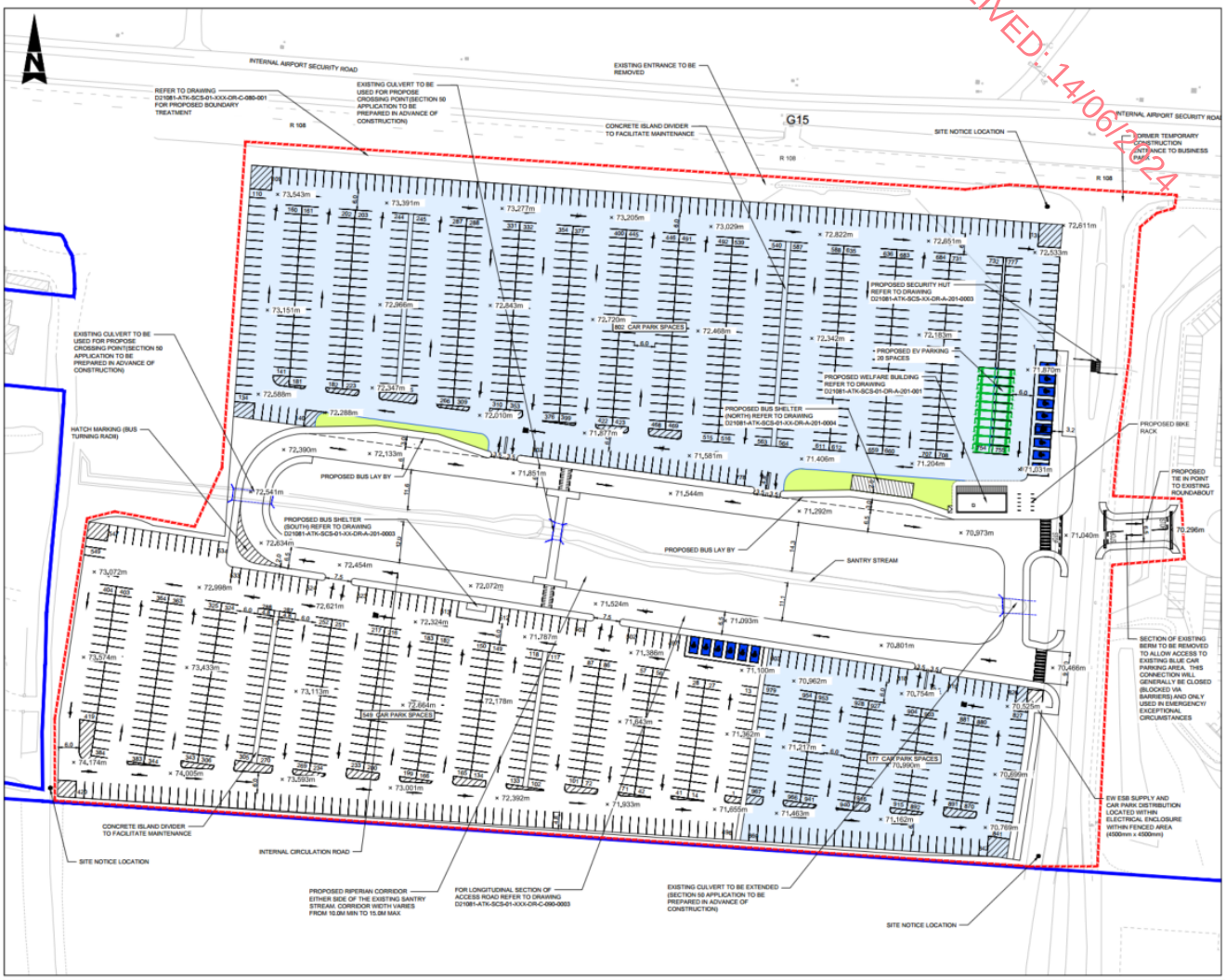


Figure 3-5 - Frist Design Iteration

This first design iteration has been considered as part of this EIAR and the outcome for environmental topics are summarised below.

Population and Human Health

This option would have a greater effect on the receiving human health environment, as this design would ultimately have involved more construction and associated materials use/ waste generation etc.

Landscape & Visual

This option would have a greater effect on the receiving landscape, as this design would include removing additional trees and hedgerows. There would be a likely significant effect on landscape character or visual amenity.

Noise & Vibration

This option would have a greater potential for noise and vibration effects, as this design would ultimately have involved more construction and associated materials use/ waste generation etc.

Land & Soils

This option would have a greater potential for waste soils generation, as this design would ultimately have involved more construction and associated materials use/ waste generation etc. Also additional land take would be required for this option.

Cultural Heritage

There would have no difference in this scenario as the Proposed Development will not have any effect on cultural heritage.

Biodiversity

This option would have a greater effect on the receiving biodiversity, as this design would include removing additional habitat. There would be a likely significant effect on biodiversity within the area.

Traffic & Transport

This option would have a greater effect on Traffic and Transport as this design would ultimately have involved more construction and associated traffic volumes. Also due to the number of car parking there would be a great effect on Traffic and Transport during the operation phase.

Air Quality

This option would have a greater potential for air quality effects, as this design would ultimately have involved more construction and associated materials use/ waste generation etc.

Material Assets (Waste)

This option would have a greater potential for waste soils generation, as this design would ultimately have involved more construction and associated materials use/ waste generation etc.

Material Assets (Built Services)

This option would have a greater potential for built services impact, as this design would ultimately have involved more construction and associated potential impacts on built services.

Water

This option would have a greater potential for water quality impacts, as this design would ultimately have involved more construction and associated materials use/ waste generation etc.

Climate

There would be little difference in this scenario based on the findings of this assessment.

Major Accidents & Disasters

There would be little difference in this scenario based on the findings of this assessment.

Second Design Iteration

The second design iteration comprised of 950no. car park spaces, of which 20no. will be serviced by Electric Vehicle (EV) charging points and 10no. were provided for Persons with Reduced Mobility (PRM) within 4.26 hectares.

The national Climate Action Plan 2023[3] sets out a '*government target to accelerate the take up of EV cars and vans so that Ireland reaches 100% of all new cars and vans being EVs by 2030. Approximately one third of all vehicles sold during the decade will be Battery Electric Vehicles (BEV) or Plug-in Hybrid Electric Vehicles (PHEV)'.* In order to provide for the increase in EVs, it will be essential to guarantee that sufficient charging points and rapid charging infrastructure are provided to suitable design and siting considerations and having regard to the Planning and Development Regulations 2001 as amended, which have been updated to include EV vehicle charging point installation.

The FCC Development Plan 2023-2029 has the following policy and objectives in relation to EV charging points and car park spaces:

- ***Policy CAP27 – Electric Vehicles****: Ensure that sufficient charging points and rapid charging infrastructure are provided on existing streets where such infrastructure does not impede persons with mobility issues and in new developments subject to appropriate design, siting and built heritage considerations and having regard to the Planning and Development Regulations 2001 as amended, which have been updated to include EV vehicle charging point installation, so that EV Street Charging Points be provided to every community of the County.*
- ***Objective EEO30 – The Green Economy****: Support the growth of the 'green economy' including renewable energy, retrofitting, and electric vehicles and charging infrastructure, supporting the transition towards a circular economy in compliance with national policy and legislation.*

[3] https://www.gov.ie/en/publication/7bd8c-climate-action-plan-2023/

Also within FCC Development Plan 2023-2029 to encourage the use of EVs, developments shall provide the following minimum standards for EV charging points and infrastructure:

- *Non-residential development shall be required to provide functioning EV charging points at a minimum of 10% of all spaces and all other spaces shall incorporate appropriate infrastructure (ducting) to allow for future fit out of a charging point at all spaces.*
- *Publicly accessible EV parking spaces should be clearly marked and be capable of communicating usage data with the National Charge Point Management System. EV parking spaces for accessible spaces should also be included in the development where these exist.*
- *All other parking spaces, including in residential developments, should be constructed to be capable of accommodating future charging points as required.*

Therefore in the third and final design iteration the number of EV charging points has increased from 20no. charging points to 92no. charging points for the proposed development.

The second design iteration comprises of 10no. car park space for Persons with Reduced Mobility (PRM). According to FCC Development Plan 2023-2029 *'A minimum of 5% of car parking spaces provided should be set aside for disabled car parking in non-residential developments. Where the nature of particular developments are likely to generate a demand for higher levels of disabled car parking, the Council may require a higher proportion of parking for this purpose. Disabled car parking spaces should be provided as close as reasonably possible to building entrance points and allocated and suitably sign posted for convenient access. Provision for designated Age Friendly car parking and Parent and Child car parking provision is encouraged. These parking spaces should be provided as close as reasonably possible to building entrance points and should be allocated, sign posted and appropriately managed'.*

Therefore in the third and final design iteration the number of PRM car park spaces has increased from 10no. charging points to 48no. car parking spaces for the proposed development.

The preferred solution was the third design iteration. The second design iteration has been considered as part of this EIAR and the outcome for environmental topics are summarised below.

Population and Human Health

This option would have a greater effect on the receiving human health environment, as this design would not be in line with FCC development Plan policy and objectives.

Landscape & Visual

This option would have had no likely significant effect on landscape character or visual amenity.

Noise & Vibration

This option would have had no likely significant effect on noise and vibration.

Land, Soils and Geology

This option would have had no likely significant effect on land, soil and geology.

Cultural Heritage

There would have no difference in this scenario as the Proposed Development will not have any effect on cultural heritage.

Biodiversity

This option would have had no likely significant effect on biodiversity.

Traffic & Transport

This option would have slightly negative effect on transport, as the FCC development policy and objectives were not implemented, therefore not crating for the appropriate number of PRM car park spaces.

Air Quality

This option would have had no likely significant effect on air quality.

Material Assets (Waste)

This option would have had no likely significant effect on material assets (waste).

Material Assets (Built Services)

This option would have had no likely significant effect on material assets (built services).

Water

This option would have had no likely significant effect on water.

Climate

There would be little difference in this scenario based on the findings of this assessment.

Major Accidents & Disasters

There would be little difference in this scenario based on the findings of this assessment.

3.4.3. Do Nothing Scenario

Do-nothing scenario would result in the subject lands remaining undeveloped. The supporting rationale for the proposed development is provided in Section 1.8. Doing nothing has therefore been rejected as an alternative. Notwithstanding this, the environmental effects of doing nothing have been assessed as part of this EIAR and the outcome for all environmental topics are summarised below.

Population and Human Health

The site is located within Dublin airport lands. The do-nothing scenario will have a long-term moderate adverse effect (with regards to Population and Human Health) on airport staff.

Biodiversity

In the absence of the proposed development in the short-term it is assumed that the proposed development site will remain as agricultural land. The proposed development site location near the Dublin Airport lands have few records of species within the proposed development site in recent years. The potential value of the Site to species such as nesting birds, foraging mammals and commuting bats would continue, provided that the linear landscape features (hedgerows/woodland) would not be lost due to other forms of development.

Landscape & Visual

There would be no difference in the 'do nothing' scenario, the facilities will remain as is and will not have any effect on landscape character or visual amenity.

Noise & Vibration

In the absence of the proposed development being constructed the baseline noise environment will remain unchanged. The current dominant noise sources are traffic noise and aircraft noise, these noise sources shall remain in the absence of the development being constructed.

Land & Soils

The Site is located within Dublin airport lands. In the do-nothing scenario the existing greenfield site will remain unchanged. The do-nothing scenario will have a neutral and imperceptible effect on the Site with regards to Land, Soils and Geology.

Cultural Heritage

A 'Do Nothing Scenario' would see the continued preservation of the recorded and potential cultural heritage resource within the study area.

Traffic & Transport

The proposed development site is a greenfield site. Therefore, no impact is expected on the surrounding road network for this scenario.

Air Quality

Under the Do-Nothing scenario the proposed development will not be constructed. In this scenario, ambient air quality at the site will remain as per the baseline and will change in accordance with trends within the wider area. As the site is zoned for development, in the absence of the proposed development it is likely that a development of a similar nature would be constructed in the future in line with national policy and the development plan objectives. Therefore, the construction and operational phase impacts outlined in this assessment are likely to occur in the future even in the absence of the proposed development.

Climate

Under the Do Nothing Scenario no construction works associated with the proposed development will take place and the identified impacts of particulate matter emissions and emissions from equipment and machinery will not occur. Impacts from increased traffic volumes and associated air emissions from the proposed development will also not occur. The climate baseline will continue to develop in line with the identified trends (see Section 8.3.2.1). This scenario is considered neutral in relation to climate.

Material Assets (Waste)

The disposal of excavation and other construction wastes associated with the proposed development would not occur.

Material Assets (Built Services)

The Material Assets Assessment assumes that under the 'Do-Nothing' scenario the proposed development would not be developed. Thus, there would be a neutral effect on built assets within the vicinity of the proposed development. There will be no likely significant effects regarding built services under the 'Do-Nothing' scenario. The environmental effects of this are negligible.

Water

The 'Do-nothing' scenario describes the circumstances where no development occurs. The baseline environment is unlikely to change in the absence of the development. Therefore, there will be no impact on the receiving water environments if the 'Do-nothing' scenario is followed.

Major Accidents & Disasters

There would be no difference in the 'do nothing' scenario as the proposed development will not have any effect with regards to major accidents and disasters.

4. Population and Human Health

4.1. Introduction

This chapter assesses the likely significant effects of the proposed development on the Population and Human Health setting in the general area of the proposed Remote Staff South Car Park at Dublin Airport, Co. Dublin. This assessment addresses the potential effects (both direct and indirect likely significant effects) of the demolition, construction and operation of the proposed development on Population and Human Health. A more complete description of the proposed development is presented in Chapter 2 – Project Description.

This chapter considers demographics, economic activity, tourism and recreation, community and amenities and human health.

4.2. Legislation, Policy, Guidance

The following legislation, policy and guidance are relevant to this chapter and were considered during the assessment process:

- Guidelines on the information to be contained in Environmental Impact Assessment Reports, Environmental Protection Agency (EPA), 2022 highlights the amendments to Article 3(1) of amended European Union (EU) Environmental Impact Assessment (EIA) Directive 2011/92/EU as amended by Directive 2014/52/EU (the "EIA Directive") which states that:

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

- The Guidelines on the information to be contained in Environmental Impact Assessment Reports, hereafter referred to as the EPA Guidelines 2022 state that: *'in an EIAR, the assessment of impacts on population and human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in this EIAR e.g. under the environmental factors of air, water, soil etc'*

- Moreover, Annex IV, paragraph 5(d) of the Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018) requires an EIAR to contain:

  "A description of the likely significant effects of the project on the environment resulting from, inter alia, "the risks to human health"

- When outlining the scope of environmental factors covered by the EIA Directive within Guidance on the Preparation of the Environmental Impact Assessment Report (European Commission, 2017), "population and human health" is defined as follows:

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

  - Planning and Development Regulations 2001-2023
  - Planning and Development Act, 2000, as amended 2017 (S.I. No. 20 of 2017), 2018 (S.I. No. 16 of 2018), 2020 (S.I. No. 92 of 2020), 2021 (S.I. No. 18 of 2021), 2022 (S.I. No. 75 of 2022) and 2023 (S.I. No. 250 of 2023).
  - Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018)

The following publications and data sources were consulted in the preparation of this Chapter:

- Central Statistics Office (CSO) data website (2011, 2016 data and 2022 results) (www.cso.ie);
- Department of Education data website (www.education.ie/en/find-a-school);
- Fingal County Development Plan (2023-2029);
- Dublin Airport Local Area Plan 2020;

- Eastern and Midlands Regional Assembly Regional Spatial and Economic Strategy (2019 -2031);
- Failte Ireland (www.failteireland.ie);
- Fingal Tourism Strategy[4] (2024-2029);
- Google Street Mapping;
- Health Service Executive data website (www.hse.ie);
- Project Ireland 2040 - National Planning Framework; and
- Regional Spatial and Economic Strategy for the Eastern and Midland Region 2019 – 2031;

All data sources were consulted the week ending 23rd November 2023 except where otherwise stated.

4.3. Assessment Methodology

This Population and Human Health Assessment has been undertaken in accordance with relevant Environmental Protection Agency's (EPA) Guidance, as follows:

- Assessment of baseline, including identification and assessment of receiving environment of receiving environment and relevant receptors;
- Identification of environmental design and mitigation measures included in the construction methodology;
- Identification of the potential impacts, and assessment of the magnitude of potential effects, and their significance;
- Consideration of mitigation measures; and,
- Assessment of residual effects.

Where relevant, assessment findings have been incorporated from the following chapters:

- Air Quality (Chapter 7);
- Climate (Chapter 8);
- Noise and Vibration (Chapter 9);
- Traffic (Chapter 10);
- Land, Soils and Geology (Chapter 11); and
- Water (including Hydrology and Hydrogeology) (Chapter 12)

4.3.1. Limitations and Assumptions

There are no limitations to the assessment of potential effects on Population and Human Health presented in this chapter.

4.4. Receiving Environment

The proposed development is located in Dublin Airport within the boundary of Fingal County Council (FCC). For the purpose of this chapter, the assessment of the receiving environment has been conducted with regard to the location of the site and has been assessed on a national, regional and local level.

4.4.1. Demographic Profile

The most recent Census of Population was undertaken in April 2022, with previous data dating from 2016. Demographic trends are analysed at national, regional and local levels for the purposes of the EIAR. ED's which are wholly or partially included within the site were examined. In this regard the site falls within one Electoral Division, Airport (CSO Area Code: 04001) in Fingal.

Given the nature of the proposed development it is considered the key areas associated with the site are the 'Local Area' (comprised of the Airport ED) and the County Area (consisting of Fingal). Population growth within the state, County Dublin, Fingal and the Airport ED is shown in Table 4.1 for the 2011 – 2022 period.

[4] https://www.fingal.ie/sites/default/files/2024-02/FCCTourismStrategy_2024_2029.pdf

Table 4.1 - Population Growth 2011-2022

Area	2011	2016	2022	% Change 2011 - 2022
State	4,581,269	4,761,865	5,149,139	+12%
County Dublin	1,273,069	1,347,359	1,458,154	+15%
Fingal	273,991	296,020	330,506	+21%
Airport ED	4,032	5,018	6,152	+53%

Source: cso.ie

There has been a consistently high level of population growth within the Irish state, Fingal and within the Airport ED over this period, with this growth anticipated to continue in the future. There has also been significant population growth in County Dublin with a growth of 15%, higher than the overall national population growth of 12%.

4.4.2. Tourism and Amenities

Dublin Airport connects Ireland to the rest of the world and helps to "fulfil the role as an economic enabler of trade, tourism and social connectivity"[5]. Over 1,877,900 passengers arrived in Ireland from overseas routes between May 2022 and May 2023, compared to 1,592,400 during the same period between 2021 and 2022, an increase of 17.9%. There were 6,589,570 passengers handled by Dublin airport between January and the end of March 2023 compared with 6,480,314 passengers during the same period in 2019, 2% higher than pre-pandemic figures.[6]

Of the 582,100 foreign visitors departing Ireland on overseas routes in September 2023, 47.4% were visiting Ireland for holiday or leisure purposes. 35.4% of these visitors travelled from Great Britain and 20.2% from the United States.

Within the wider context of Fingal County, stay-over visits in Fingal are largely concentrated around the Airport, where the demand is a mix of airport/aviation related travel and visitors to Dublin staying on the city periphery. For other overnighting visitors, the decision to choose Fingal is mainly for business meetings, social gatherings, staged festivals and events, and recreational pursuits[7].

4.4.3. Economic Profile

The 2022 Population Census was examined to determine trends in relation to employment including the number of persons at work, unemployment levels and the sectoral composition of the population, based upon principal economic status.

Table 4.2 shows the overall unemployment rate as measured by the responses from the 2016 and 2022 Census. The unemployment rate is calculated by adding the number of persons unemployed to first time job seekers, and then dividing the total by the overall labour force (i.e., total amount of unemployed persons and employed persons). The unemployment rate across the state, Dublin and Fingal has decreased significantly between 2016 and 2022, with the unemployment rate in Fingal decreasing from 11.2% in 2016 to 7.9% in 2022.

The industry is characterised by large numbers of Small to Medium-sized Enterprises (SME's), with almost two out of three enterprises employing less than 10 people, and only one in ten hospitality and tourism businesses in Fingal with more than 50 employees.

Dublin Airport is a key employment location for Fingal with more than 12,000 employees across some 200 companies. The Aviation cluster is the major employer with companies including daa, Aer Lingus, CityJet and Servisair having a combined workforce of approximately 7,500 people.

More recent data on employment is provided in the CSO Labour Force Survey published quarterly. This shows that in Q3-2023 the national unemployment rate was 4.6%[8].

[5] daa Annual Report 2021 (flippingbook.com)
6 https://www.cso.ie/en/releasesandpublications/ep/p-ast/airandseatravelstatisticsmay2023

[7] 585-Fingal Socio-Economic Profile r9.2

[8] https://www.cso.ie/en/releasesandpublications/ep/p-lfs/labourforcesurveyquarter32023/

Table 4.2: Principal Economic Status (Profile) 2016-2022[9]

Principal Economic Status	State 2016	State 2022	Fingal 2016	Fingal 2022	Dublin (other areas) 2016	Dublin (other areas) 2022
At work	2,006,641	2,320,297	133,971	138,436	480,805	471,887
Labour Force Participation rate (%)	61.4	61.2	66.9	65.6	62.3	62.6
Unemployment Rate (%)	12.9	8	10.3	7.8	11.2	7.9

4.4.4. Community

Dublin Airport has a very strong focus on community engagement. The St. Margaret's Community Liaison Group (CLG) has been focusing on many areas of interest to the local community including airport operations and future plans, since 2016. Where required, experts attend the meetings to provide an opportunity for a detailed discussion on a topic that is deemed to be of particular interest to the group. This is a beneficial forum that facilitates information exchange and provides a solid platform for bodies to communicate in an open and transparent manner.

The Dublin Airport Environmental Working Group (DAEWG) (formerly known as the Dublin Airport Stakeholder Forum) was established in 2004 and focuses on issues such as noise, air quality monitoring and the development of airport infrastructure. It is independently chaired and includes representatives from community groups across North Dublin including Portmarnock, Malahide, St. Margaret's, Swords and Santry, as well as representatives from Dublin Airport, Fingal County Council and the Irish Aviation Authority. The group was formed to ensure that all stakeholders could meet in a non-adversarial and information-exchanging format to focus on matters of business that were of ongoing concern to community representatives.[10]

4.4.5. Human Health

Overall life expectancy and self-assessed health statistics are included below.

The Department of Health's report 'Health in Ireland Key Trends 2022' provides statistical analysis on health in Ireland over the last ten years. Chapters 1 and 2 of the report deal specifically with life expectancy and health. According to this report the average life expectancy trends are as follows:

- Life expectancy for women (continual upward trend since 1996): 84.7 years; and,
- Life expectancy for men (continual trend since 2006): 81 years.

It is also noted in the report that the gap between male and female life expectancy has continued to narrow over the last decade. An upward trend is evident in the life expectancy of older age groups reflecting decreasing mortality rates from major diseases. Older Irish people's life expectancy (65 years of age) to be lived in good health, is higher for both men and women compared with the EU average.

The report also states that *"Ireland has the highest self-perceived status in the EU, with 82.1% of people rating their health as good or very good*". Overall population health at the national level shows decreasing mortality and a rise in life expectancy over the last ten years. The health in Ireland report also goes on to state, "*age-standardised mortality rates have declined for all causes over the past decade by 15.8%."*

According to the most recently published data from the CSO, the results of the Census in 2022 reported that the vast majority (ca. 82% and 84%) of people in Dublin and Fingal respectively reported that their health was good and very good.

4.5. Future Receiving Environment

The aforementioned baseline for public health is unlikely to change significantly from that outlined in the 'Receiving Environment' in the assessment period, most notably during the construction period. This is considering the short length of time between the preparation of this EIAR and the proposed construction stage. The full description of the development is described in Chapter 2 – Project Description.

9 Employment, Occupation, Industry and Commuting - CSO - Central Statistics Office

10 https://www.dublinairport.com/corporate/north-runway/engagement

The population growth (both in terms of demographic profile and employment) and an increase in tourism is expected to continually increase, which will necessitate the need for the development and the extension / reconfiguration of the airport.

4.6. Likely Effects on Population and Human Health during the Construction Phase

The potential construction likely significant effects on human health are described in Table 4.3. It identifies the potential source of the impact; potential impact pathways (route by which receptors can become impacted) and potential effects arising from the potential impact. For each of the potential effects identified, the likelihood of an effect has been considered to determine whether an assessment should be undertaken.

Table 4.3 -Potential Likely Significant Effects to Human Health during Construction

Potential Likely Effect	Potential Pathway	Potential Direct / Indirect Significant Effect	Significant Effect?
Noise from Construction Traffic	Noise impact on sensitive receptors	Indirect health effect on sensitive receptors	Discussed further in Chapter 9 – Noise and Vibration
Noise from Construction Works	Noise impact on sensitive receptors	Indirect health effect on sensitive receptors	Discussed further in Chapter 9 – Noise and Vibration
Vibration from Construction Works	Vibration impact on sensitive receptors	Indirect health on sensitive receptors	Discussed further in Chapter 9 – Noise and Vibration
Surface Water or Groundwater Impact during Construction Works	Contaminated water impact to sensitive receptors	Direct health effect on sensitive receptors	Discussed in Chapter 12 – Water
Soil Contamination during Construction Works	Soil contamination impact on sensitive receptors	Direct health effect to sensitive receptors due to direct contact, ingestion or inhalation of contaminated soils	Discussed further in Chapter 11 – Land, Soils and Geology
Employment from Construction Works	Economic impact on sensitive receptors	Increase in employment opportunities for sensitive receptors	Discussed further within this Chapter
Visual Impact from Construction Works	Visual impact on sensitive receptors	Temporary indirect health effect on sensitive receptors	Discussed further in Chapter 6 - Landscape and Visual
Dust generation from Construction Works	Air quality impact on sensitive receptors	Temporary direct health effect on sensitive receptors	Discussed further in Chapter 7 – Air Quality
Emissions from Construction Vehicles and Machinery	Air quality impact on sensitive receptors	Indirect health effect on sensitive receptors	Discussed Further in Chapter 7 -Air Quality, Chapter 8 - Climate

The demolition and construction phases of the development will lead to temporary traffic, noise and vibration, dust generation and visual impact within the site and the general vicinity. There will be no effects to existing connections or amenities as a result of the construction works associated with the proposed development, provided the mitigation measures proposed in this EIAR are followed. No significant effects are predicted, and any likely effects will be short term in nature, as determined by the assessments included in the aforementioned chapters. Further details of the construction phase mitigation measures are discussed in Chapter 6 – Landscape and Visual, Chapter 7: Air Quality, Chapter 8: Climate, Chapter 9: Noise and Vibration, Chapter 10: Traffic, Chapter 11: Land, Soils

and Geology and Chapter 12 - Water. As a result, the proposed development will result in temporary construction related Population and Human Health effects (minor adverse), but mitigation measures will be applied.

4.7. Likely Effects on Population and Human Health during Operational Phase

The potential likely significant operational effects on human health are described in Table 4.4. It identifies the potential source of the impact; potential impact pathways (route by which receptors can become impacted) and potential effects arising from the potential impact.

Table 4.4 -Likely Significant Effects on Population and Human Health during Operation

Potential Likely Effect	Potential Pathway	Potential Direct / Indirect Significant Effect	Significant Effect?
Noise from Operation Traffic	Noise impact on sensitive receptors	Indirect health effect on sensitive receptors	Discussed further in Chapter 9 – Noise and Vibration
Dust generation from Operation of the project	Air quality impact on sensitive receptors	Temporary direct health effect on sensitive receptors	Discussed further in Chapter 7 – Air Quality
Modified Land Use	Visual impact on sensitive receptors	Indirect health effect on sensitive receptors	Increased landscape and visual amenity but no significant impacts
Increased Mental Health	Wellbeing Impact on sensitive receptors	Indirect health effect on sensitive receptors	Increased mental health for staff due to a better parking facility

4.8. Cumulative Effects

The proposed development will not have any significant negative effects on population and human health and it is considered that the mitigation measures and monitoring requirements outlined in regard to the other environmental topics will ensure that the proposed development is unlikely to result in any significant cumulative effects in relation to population and human health.

4.9. Mitigation and Monitoring

The proposed development will have minor adverse effects during the demolition, construction and operation phases on population and human health as stated above in Table 4.3 and Table 4.4. However, mitigation measures as presented within the relevant technical chapters (Chapter 7 - Air Quality; Chapter 8 – Climate; Chapter 9 – Noise and Vibration; Chapter 11 – Land, Soils and Geology; and Chapter 12 – Water) and Chapter 16 - Schedule of Commitments, will be implemented as part of the proposed development.

4.10. Residual Effects

All construction phase activities are temporary in nature. No significant adverse residual effects are likely during the construction and demolition phases, and the operational phase of the proposed development.

There will be a permanent positive effect on mental health and wellbeing due to the provision of car parking facilities as a result of the proposed development.

4.11. Difficulties encountered during preparation of this chapter

No difficulties were encountered during preparation of this chapter.

5. Biodiversity

5.1. Introduction

This chapter details features of ecological interest in the area of the proposed Remote Staff/South Car Park. This assessment addresses the potential effects of the construction and operation of the proposed development on local biodiversity (both direct and indirect impact). A complete description of the proposed development is presented in Chapter 2 – Project Description. The proposed development site is located on the southern side of Dublin Airport lands and is largely comprised of improved agricultural land bordered by hedgerows and woodland habitat with a watercourse intersecting the greenfield site. There are potential suitable habitats for mammals or bird species within and surrounding the proposed development site.

5.2. Methodology

This assessment has been undertaken in accordance with and has regard to the following relevant guidelines, legislation, policies and plans:

- EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022);
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (European Commission, 2013);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Local Government and Heritage 2018);
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009);
- Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018; 2022 reprint);
- Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017);
- A Guide to Habitats in Ireland. The Heritage Council. The Heritage Council (Fossitt, 2000);
- Best Practice Guidance for Habitat Survey and Mapping. The Heritage Council, Church Lane, Kilkenny, Ireland (Smith et al., 2011);
- European Commission (EC) Habitats Directive 92/43/EEC;
- European Commission (EC) Birds Directive 2009/147/EC;
- European Communities (Birds and Natural Habitats) Regulations, 2011-2021, as amended;
- Flora (Protection) Order, 2022;
- EIA Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014;
- European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018);
- The Wildlife Act, 1976 (as amended);
- The Planning and Development Act, 2000 (as amended);
- Third National Biodiversity Action Plan 2017 – 2021 (Department of Culture, Heritage and the Gaeltacht, 2017);
- Fingal Development Plan 2023-2029[11]
- Draft Fingal Biodiversity Action Plan 2022-2030[12];
- Dublin Airport Local Area Plan 2020;
- National Biodiversity Action Plan 2023-2030[13];

[11] https://www.fingal.ie/development-plan-2023-2029

[12] https://consult.fingal.ie/en/consultation/draft-fingal-biodiversity-action-plan-2022-2030

[13] https://www.gov.ie/en/publication/93973-irelands-4th-national-biodiversity-action-plan-20232030/#:~:text=Ireland's%204th%20National%20Biodiversity%20Action%20Plan%20(NBAP)%20sets%20the%20national,we%20value%20and%20protect%20nature.

- Planning for Watercourses in the Urban Environment. Inland Fisheries Ireland 2020; and,
- All-Ireland Pollinator Plan 2021-2025. National Biodiversity Data Centre.

The methodology used to evaluate the ecological value and baseline ecological environment, and to prepare this impact assessment is outlined as follows.

5.2.1. Desk Study

The locations of conservation sites, protected species occurrences and areas of ecological interest were reviewed in the context of the proposed development using online sources such as Google Earth, Google maps[14] and Bing maps[15] (last accessed on 23/04/2024).

Sources of data including; published reports, records, datasets and on-line mapping, which were used to collate and compile information of ecological features of interest and importance within and around the proposed development include: -

- National Parks and Wildlife Service (NPWS) webpage / data;
  - Information on sites designated for nature conservation, including spatial data (NPWS);
  - Habitats and species data
  - Wildfowl Sanctuaries
  - Red List of Terrestrial Mammals (Marnell et al, 2019)
- National Biodiversity Data Centre (NBDC)
  - Protected species records
  - Invasive species records
- Environmental Protection Agency
  - Watercourses and lake spatial files
  - Water quality data
  - Corine land cover data
- Geological Survey of Ireland
  - Underlying geology, soils and hydrogeology
- Ordnance Survey Ireland (OSI) mapping and aerial photographs
- OSI Historic mapping
- Birdwatch Ireland
  - Bird count data from the Irish Wetland Bird Survey (I-WeBS)
  - Birds of Conservation Concern in Ireland (Gilbert et al. 2021)
- Bat Conservation Ireland
  - Bat monitoring data
- Wetland Survey Ireland
  - Information on identified wetland habitats within the study area
- Inland Fisheries Ireland (IFI) - Eastern River Basin District River Surveys[16]
- Aecom (2023) Dublin Airport Infrastructure Application, Environmental Impact Assessment Report
- Aecom (2023) Dublin Airport Infrastructure Application, Appropriate Assessment Screening and Natura Impact Statement
- Aecom (2023) Planning Application for Dublin Airport Infrastructure Application, Appendix 12-4, Baseline Report – Bird Technical Appendix

[14] http://www.google.ie/maps

[15] http://www.bing.com/maps/

[16] http://wfdfish.ie/index.php/eastern-river-basin-district-river-surveys-2019/

5.2.2. Site Surveys

A multidisciplinary ecological walkover and bat survey of the proposed development site was carried out by an AtkinsRealis appointed ecologist, Caroline Shiel, on 17th & 18th June 2022. The site was subject to resurveying on 1st August 2023 by AtkinsRealis ecologist Daniel Blake.

Site survey evidence is presented in this report. Site surveys were undertaken within seasonally appropriate windows, within suitable weather conditions and full access to the site was available. There were no limitations posed which would influence the site surveys. The site surveys are considered sufficient to assess the predominant habitats and ecological feature of interest within the proposed development site.

5.2.3. Zone of Influence

The 'zone of influence' for a development is the area over which ecological features may be subject to significant effects because of the proposed development and associated activities. This is likely to extend beyond the proposed development site, for example where there are ecological or hydrological links beyond the proposed development boundaries. The zone of influence will vary for different ecological features depending on their sensitivity to an environmental change (CIEEM, 2018).

It follows that given the nature of the proposed development works at Dublin Airport, the zone of influence will be limited to the proposed development site and immediate environs as well as areas connected via hydrological and hydrogeological pathways (surface or ground water) and landscape features such as hedgerows, treelines and watercourses.

Determining the potential for impacts and the zone of influence is based on the source-pathway-receptor chain principle and involves assessing likely significant effects on ecological receptors within the zone of influence in relation to three pathways:

- Surface water;
- Groundwater; and,
- Land & Air.

5.2.4. Evaluation of Ecological Receptors

Ecological features can be important for a variety of reasons. Importance may relate, for example, to the quality or extent of the site or habitats found within, or the rarity of the habitat and / or species, the extent to which such habitats and / or species are threatened throughout their range, or to their rate of decline.

The importance of an ecological feature was considered within a defined geographical context. The frame of reference used to determine ecological value relied on known and published accounts of the feature's ecological importance, rarity and distribution combined with professional judgement.

The following geographic frame of reference was used for evaluating the importance of ecological features within the proposed development:

- International importance;
- National importance;
- County importance;
- Local importance (higher value); and,
- Local importance (lower value).

The geographical context for determining the value of ecological receptors followed recommendations as outlined in the Guidelines for Assessment of Ecological Impacts of National Roads Scheme (NRA, 2009). This methodology is consistent with the Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018, 2022 reprint).

5.2.5. Determining Ecological Significant Effects

CIEEM (2022) defines an ecologically significant impact as an impact (negative or positive) on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographic area.

The integrity of a site is the coherence of its ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified (CIEEM 2018) The significance of predicted effects has been assessed in line with Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009) and best scientific knowledge in the field.

5.2.6. Mitigation & Overall Residual Ecological Impact

Where adverse significant impacts have been identified, the mitigation hierarchy has been considered, as per the 2018 CIEEM EcIA Guidelines and 2022 EPA Guidelines, which set out a sequential approach of avoidance of impacts where possible, application of mitigation measures to minimise unavoidable impacts and then compensation for any remaining impacts. Once avoidance and mitigation measures have been applied, along with any necessary compensation measures, and opportunities for enhancement incorporated, residual impacts have then been identified.

Overall residual, or mitigated, ecological effects are assessed by taking account of any expected beneficial ecological effects and those measures which have been integrated within the works proposals in order to avoid, eliminate or reduce the significance of ecological impacts (and any further recommended measures which attach a high probability of successful implementation). The following widely accepted strategy for mitigation (Chapter 6 of the CIEEM Guidelines) has been employed (see Table 5.1).

Table 5.1 - Approach to Mitigation

Avoidance	Where viable, the project has been re-designed to avoid adverse ecological effects.
Elimination	Where possible and feasible, measures which eliminate adverse ecological effects are employed.
Reduction	Measures intended to reduce the significance of adverse ecological effects are employed where options for avoidance or elimination have been exhausted or are deemed to be impractical.
Compensation	Where adverse ecological effects cannot be avoided or eliminated or reduced in significance to an acceptable level, consideration is given to compensating for residual adverse effects.
Remediation	Where adverse ecological effects are unavoidable, consideration is given to undertaking limiting remedial works.
Enhancement	Consideration is given to providing opportunities for ecological improvement, enhancement and the realisation of beneficial ecological effects.

5.2.7. Uncertainty in Assessment

In Impact Assessment, uncertainty is associated with both the prediction and assessment of environmental effects. The precautionary principle, a central feature of environmental legislation, planning policy and professional guidance, provides a mechanism for managing uncertainty in ecological assessment – the precautionary principle requires that where there is a lack of scientific certainty, the protection of the environment is prioritised.

Where confidence or uncertainty is expressed, an objectively defined scale, as detailed in Table 5.2 is employed. Decisions as to confidence in predictions are necessarily based primarily on expert judgement.

Table 5.2 - Confidence of Uncertainty

Confidence Level	Details
Certain	Probability estimated at 95% chance or higher.
Probable	Probability estimated at above 50% but below 95%.
Unlikely	Probability estimated at above 5% but below 50%.
Extremely Unlikely	Probability estimated at less than 5%.

5.3. Description of Existing Environment

The proposed development site is located south of the airport's southern runway in the townland of Harristown. The greenfield site is bounded to the north by the R108, to the east by the Holiday Blue Long Term Car Park, to the west by an access road serving three dwellings and to the south by the Horizon Logistics Park development. The Santry River (EPA code: 09S01) rises to the west of the site and discharges ca. 10.9km downstream to North Dublin Bay, this river is an open channel watercourse culverted in 2 no. locations which receives drainage from the southern sections of the airport lands. Figure 5-1 below illustrates the red line boundary of the proposed development.

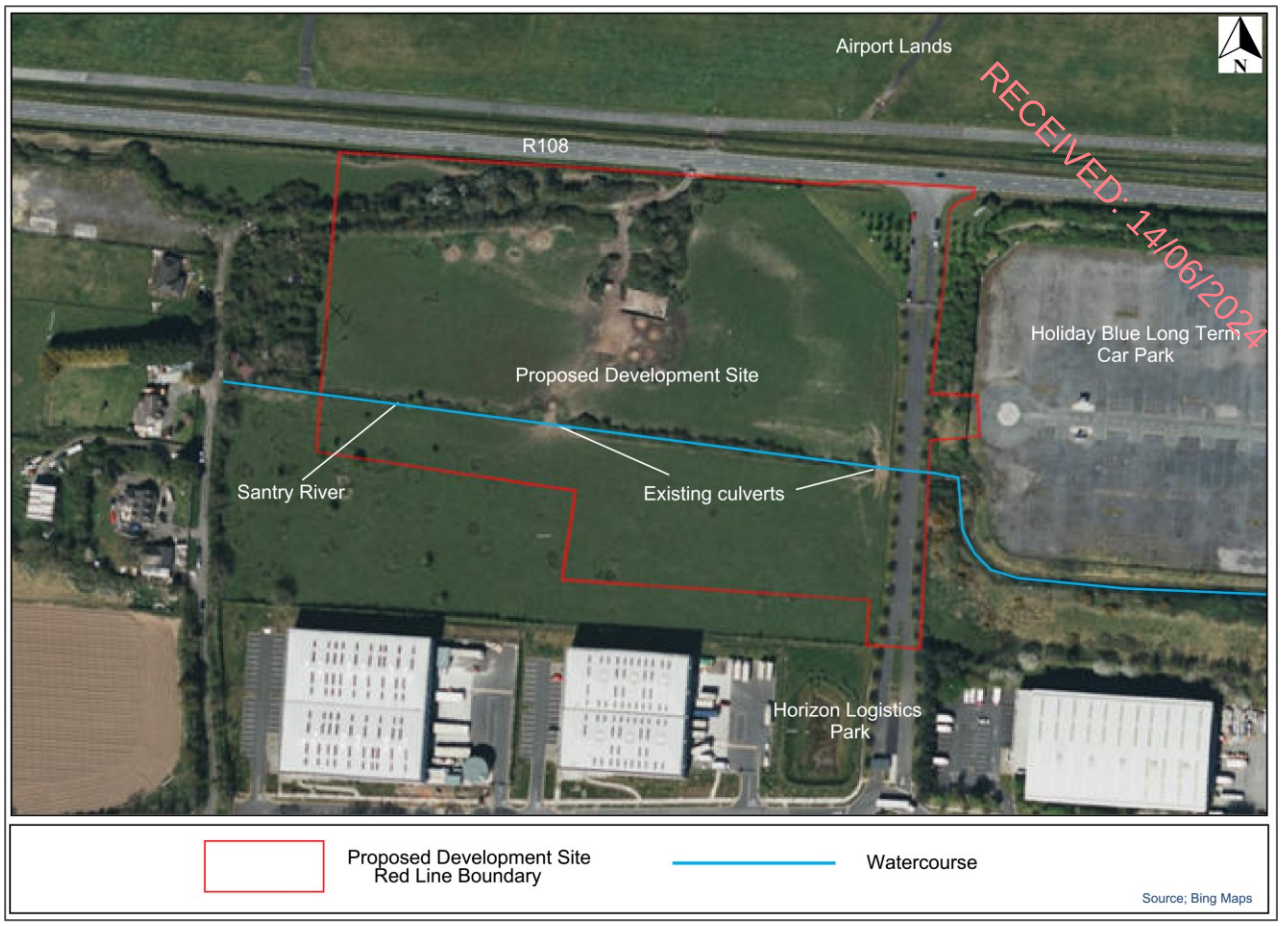


Figure 5-1 - Location of Proposed Development

5.3.1. Designated Conservation Areas

5.3.1.1. European Designated Sites

The potential for impacts on European sites within the 'zone of influence' (ZoI) of the proposed development has been considered.

NPWS guidance[17] advises that the ZoI must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, the sensitivities of the ecological receptors, and the potential for in-combination effects and this has been done in this case.

Thus, given the nature, scale and extent of the proposed development, the ZoI includes European sites with regard to the location of a European site, the Qualifying Interests of the site and their potential mobility outside that European site, the Cause-Pathway-Effect model and potential environment effects of the project.

The proposed development site does not lie within any European sites.

There are 2 no. European sites within the ZoI of the proposed development; North Dublin Bay SAC (Site code; 000206) and North Bull Island SPA (Site code; 004006). Other European sites within the potential zone of influence of the proposed development site were not considered further and were screened out in the Natura Impact Statement (presented in Appendix 5.1 in Volume 3 – Appendices) which accompanies this report.

[17] DoEHLG (2009, revised in 2010) *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities.* Department of the Environment, Heritage and Local Government, Dublin,.

Table 5.3 – European sites within the ZoI of the proposed development

European site	Qualifying Interest	Connectivity from the proposed development site
North Dublin Bay SAC (000206)[18]	• Mudflats and sandflats not covered by seawater at low tide [1140] • Annual vegetation of drift lines [1210] • Salicornia and other annuals colonising mud and sand [1310] • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] • Mediterranean salt meadows (*Juncetalia maritimi*) [1410] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • Humid dune slacks [2190] • *Petalophyllum ralfsii* (Petalwort) [1395]	c. 9.7km south east direct line distance / 10.9km downstream
North Bull Island SPA (004006)[19]	• Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] • Shelduck (*Tadorna tadorna*) [A048] • Teal (*Anas crecca*) [A052] • Pintail (*Anas acuta*) [A054] • Shoveler (*Anas clypeata*) [A056] • Oystercatcher (*Haematopus ostralegus*) [A130] • Golden Plover (*Pluvialis apricaria*) [A140] • Grey Plover (*Pluvialis squatarola*) [A141] • Knot (*Calidris canutus*) [A143] • Sanderling (*Calidris alba*) [A144] • Dunlin (*Calidris alpina*) [A149] • Black-tailed Godwit (*Limosa limosa*) [A156] • Bar-tailed Godwit (*Limosa lapponica*) [A157] • Curlew (*Numenius arquata*) [A160] • Redshank (*Tringa totanus*) [A162] • Turnstone (*Arenaria interpres*) [A169] • Black-headed Gull (*Chroicocephalus ridibundus*) [A179] • Wetland and Waterbirds [A999]	c. 9.7km south east direct line distance / 10.9km downstream

Figure 5-2 and Figure 5-3 below depict the locations of the European sites within a 15km radius of the proposed development.

The NIS submitted as part of this planning application has examined the details of the proposed Remote Staff South Car Park and the European sites within its ZoI. It has analysed the potential impacts of the proposed

[18] https://www.npws.ie/protected-sites/sac/000206

[19] https://www.npws.ie/protected-sites/spa/004006

development on the receiving natural environment and evaluated their effects, both individually and in combination with other plans and projects, in view of the conservation objectives of the relevant European sites. The NIS was prepared in line with the Habitats Directive, as transposed into Irish Law by the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended), relevant case law and guidance from the European Commission, the Department of the Environment, Heritage and Local Government and the Office of the Planning Regulator, on the basis of objective information and adhering to the precautionary principle.

As noted above, there is indirect connectivity from the proposed development site via the Santry River to North Dublin Bay SAC and North Bull Island SPA (located c. 10.8km downstream). Surface water from the proposed project site will outfall to the Santry River.

The NIS has assessed the potential for impacts on the downstream Qualifying Interest (QI) habitats of North Dublin Bay SAC and North Bull Island SPA from the construction phase of the proposed development, i.e. works proposed in the Santry River (1 no. new culvert installation and the widening of 1 no. existing culvert) and also from the operational phase of the proposed development, i.e. car park surface water drainage. Mitigation measures have been developed so as to negate impacts on the downstream QI Habitats of the European sites via the Santry River. The NIS has also examined the potential for the proposed development to result in impacts to ex-situ Special Conservation Interest (SCI) bird species associated with North Bull Island SPA, the NIS has assessed that the proposed development site is sufficiently remote from North Bull Island SPA so that indirect impacts to SCI bird species, such as displacement or disturbance from foraging or roosting areas, will not occur.

Full details of the screening for Appropriate Assessment for the proposed development are provided for in the accompanying NIS and are summarised in Section 5.4.5.1 below.

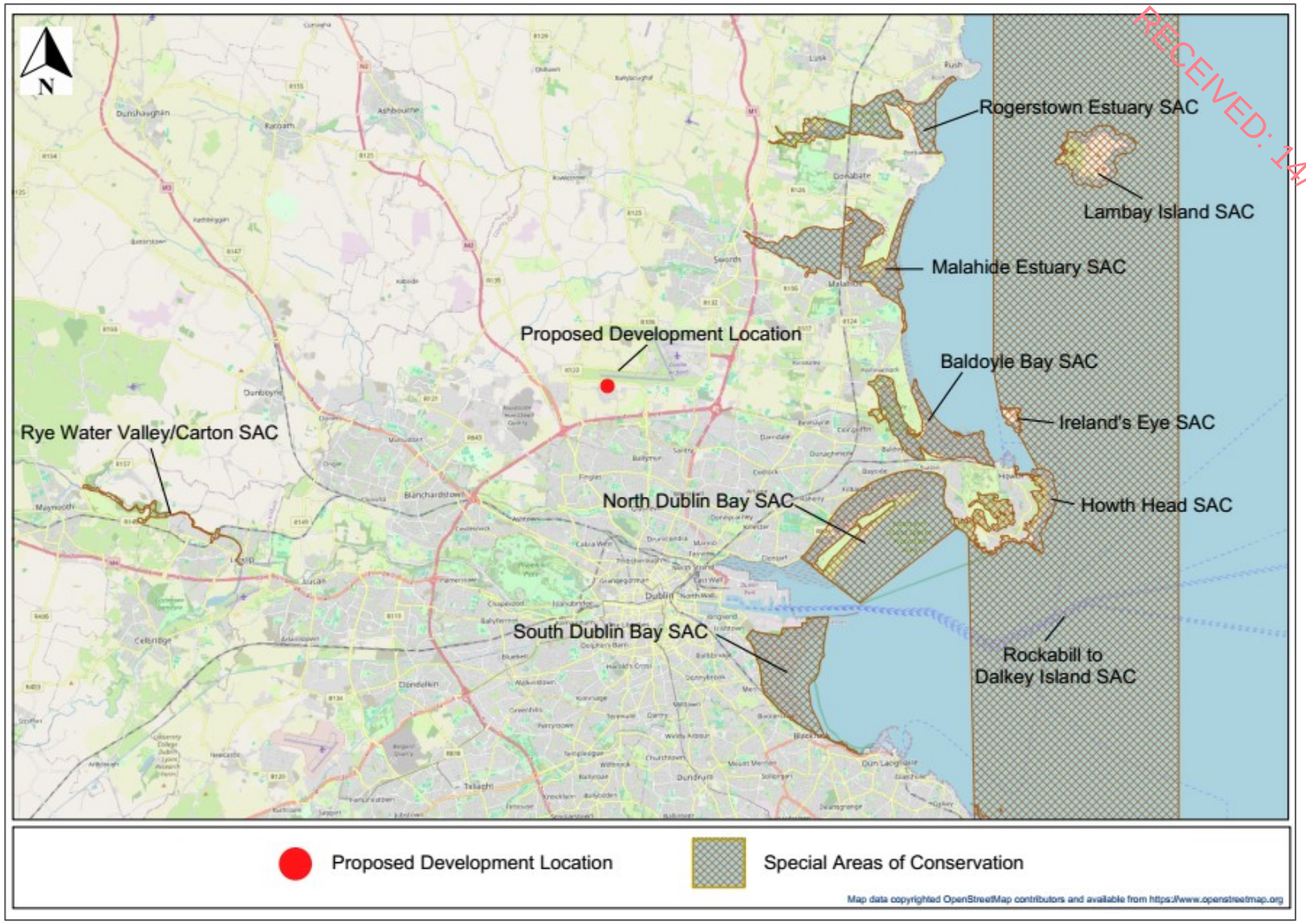


Figure 5-2 - SACs within the potential ZoI of the proposed development

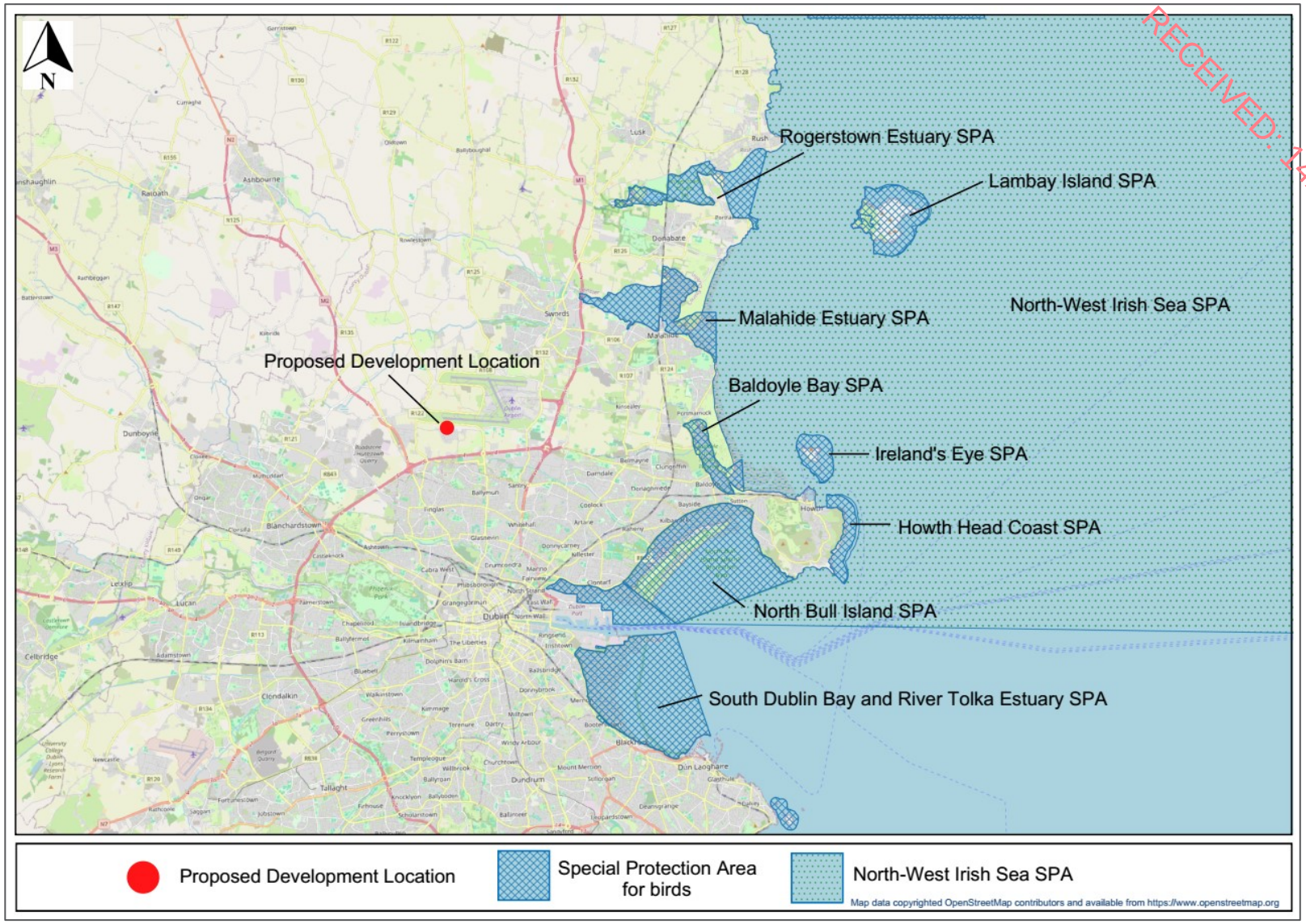


Figure 5-3 - SPAs within the potential ZoI of the proposed development

5.3.1.2. Natural Heritage Areas

Natural Heritage Areas (NHAs) are nationally designated sites, which are considered important for the habitat, species or geological heritage. NHAs are legally protected under the Wildlife Act, 1976 (as amended). Proposed Natural Heritage Areas (pNHAs) are sites that are of significance for wildlife and habitats, but which have not (as yet) been statutorily designated; however, their ecological value is recognised by Planning and Licencing Authorities.

The proposed development site does not lie within any NHA or pNHA site.

There are no NHAs and 14no. pNHAs located within 15km of the proposed development as outlined in Table 5.4 below.

Table 5.4 – proposed National Heritage Areas within 5km of the proposed development

proposed National Heritage Area (site code)	Distance from project
Santry Demesne pNHA (000178)	c. 2.6km / 3.2km downstream
Royal Canal pNHA (002103)	c. 5.2km
Feltrim Hill pNHA (001208)	c. 6.6km
North Dublin Bay pNHA (000206)	c. 8km / 10.8km downstream
Liffey Valley pNHA (000128)	c. 8.1km
Sluice River Marsh pNHA (000128)	c. 9.3km
Grand Canal pNHA (002104)	c. 9.6km
Baldoyle Bay pNHA (000199)	c. 10.5km
Rogerstown Estuary pNHA (000208)	c. 10.98km
Malahide Estuary pNHA (000205)	c. 11.1km
South Dublin Bay pNHA (000210)	c. 11.7km
Portraine Shore pNHA (001215)	c. 14.3km
Howth Head pNHA (000202)	c. 14.4km
Dodder Valley pNHA (001209)	c. 14.9km

A hydrological connection exists between the proposed development site and Santry Demesne pNHA via the Santry River which flows in an easterly direction from the project site through the pNHA. The NPWS site synopsis for Santry Demesne pNHA is as follows

> *This site is located immediately north of old Santry village, Co. Dublin.*
>
> *The site comprises the remnants of a former demesne woodland. The remaining woods are of generally good quality and include Beech (Fagus sylvatica), Wych Elm (Ulmus glabra), Ash (Fraxinus excelsior), Sycamore (Acer pseudoplatanus), Hawthorn (Crataegus monogyna) and Scots Pine (Pinus sylvatica).*
>
> *A wide range of herbaceous species were recorded from this woodland, including Wood Speedwell (Veronica montana), Sanicle (Sanicula europaea), Ramsons (Allium ursinum), Early Dog-violet (Viola reichenbachiana), Goldilocks Buttercup (Ranunculus auricomus), Giant Fescue (Festuca gigantea) and False Brome (Brachypodium sylvaticum).*
>
> *A species legally protected under the Flora Protection Order 1987, Hairy St. John's wort (Hypericum hirsutum), was recorded here in 1991. This downy-leaved perennial of river banks and shady places has been recorded from only five counties in eastern Ireland, concentrated in the River Liffey valley.*
>
> *The primary importance of this site is that it contains a legally protected plant species. The woodland, however, is of general ecological interest as it occurs in an area where little has survived of the original vegetation.*

In addition, there is also hydrological connectivity from the proposed development site, via the Santry river, to North Dublin Bay pNHA. This pNHA is designated for the same conservation interests as North Dublin Bay SAC and North Bull Island SPA.

Figure 5-4 illustrates the locations of the pNHAs within a 15km radius of the proposed development site.

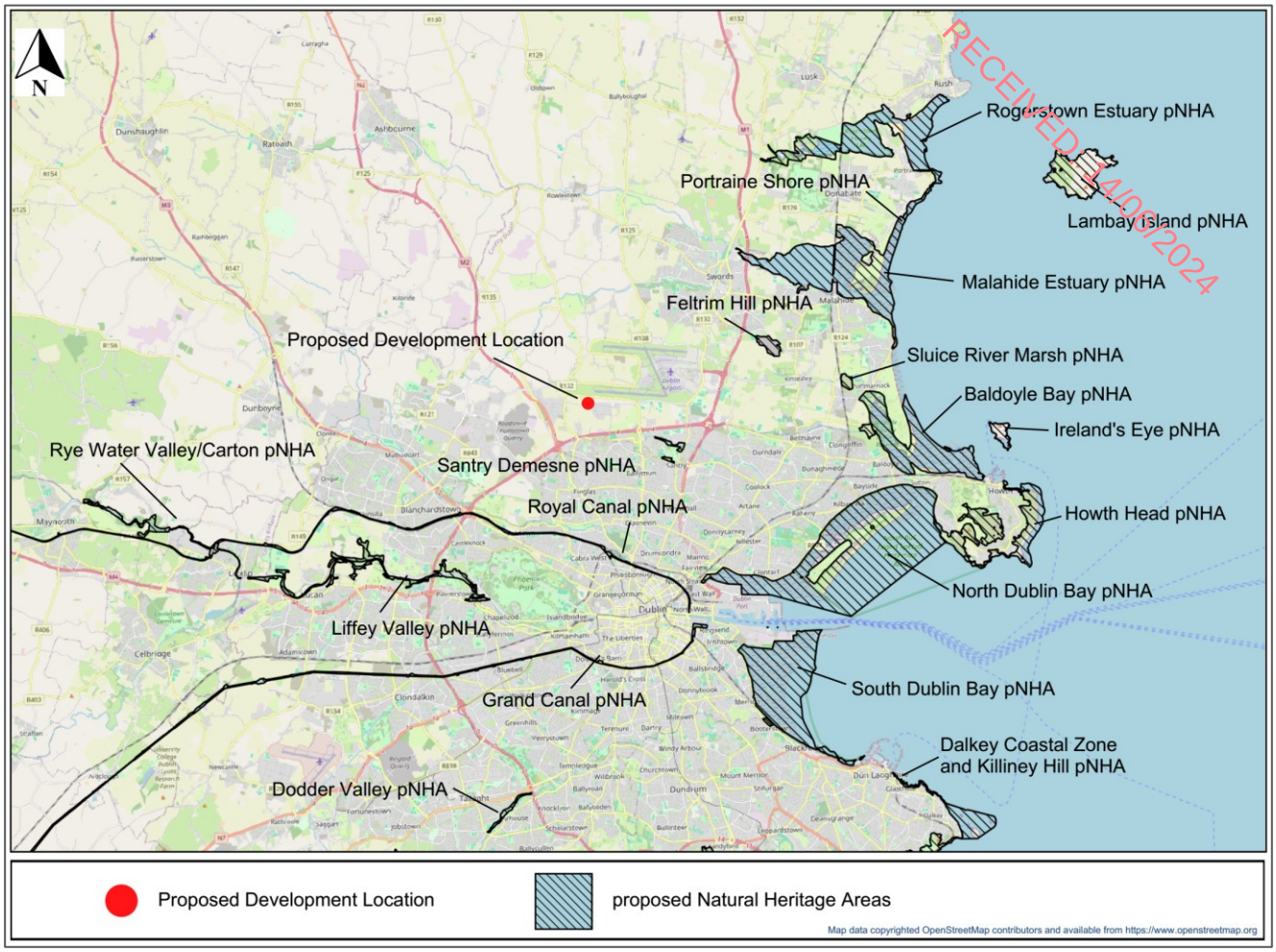


Figure 5-4 – proposed Natural Heritage Areas within 15km radius of the proposed development site.

5.3.1.3. Hydrology/ Aquatic Ecology

All stormwater drainage within Dublin airport lands is within the Water Framework Directive (WFD) Mayne subcatchment (SC_010 09_17). All surface hydrological features within the vicinity of the airport follow topography and flow in an easterly direction towards the coast. The surface water drainage network of the airport is further subdivided into seven distinct drainage catchment units, identified as; the Cuckoo Stream, the Wad Stream, Forrest Little Stream, the Mayne River, Kealy's Stream, the Santry River and the Ward River

The seven watercourses are detailed as follows:

- The Cuckoo Stream rises to the west of the Airfield and flows in an easterly direction to join with the Mayne River before discharging to Mayne Estuary in the area of Baldoyle (part of the Mayne catchment);
- The Wad Stream is located to the north east of the Airport Lands which rises beneath the Halpenny Golf Driving Range before flowing in an easterly direction towards Mayne Estuary (part of the Sluice catchment);
- Forrest Little Stream rises to the north of Runway 11/29 before flowing in an easterly direction to join with the Sluice Stream subsequently discharging to Baldoyle Bay (part of the Sluice catchment);
- Kealey's Stream is located to the east of the airport before continuing in an easterly direction towards Baldoyle Bay (part of the Sluice catchment);
- The Santry River is located to the south west of the airport which discharges to Dublin Bay in the area of North Bull Island;
- Ward River is located to the west of the airport and flows in a north easterly direction to discharge into the Malahide Estuary; and,
- The Mayne River rises to the south of Runway 10/28 which flows in an easterly direction to discharge to Mayne Estuary/Baldoyle Bay.

The Santry River centrally bisects the proposed development site. The stream starts on the western boundary of the site flowing east where reaching the eastern boundary of the site it is then flows underneath a local road and into the nearby industrial estate where it is culverted underground and subsequently continues eastwards before discharging to North Bull Island Transitional Waterbody north of the causeway (i.e. within North Dublin Bay).

EPA datasets indicate that this watercourse rises / begins within the proposed development site, however, the Santry River in this area receives surface water / storm water drainage from the southwest section of Dublin Airport lands which is comprised of the hardstanding areas of the southern runway and associated grassland verges (Amenity Grassland GA2, as defined by Fossitt, 2000).

Site surveys undertaken in 2022 and 2023 identify the watercourse as being more akin to a drain in character (FW4). The Santry River is a relatively short watercourse (ca. 10.9km). The stream is between ca. 1.5-2m in width with some areas of hedgerow (hawthorn, willow and dense bramble) and 4no. individual trees (young hawthorn, young ash, early mature willow) along its banks and with other areas where bankside vegetation resembles the surrounding grassland. Stream banks across the entirety of the proposed development site are noted to be shallow. There are areas of cattle poached ground created by the cattle both crossing and drinking from the stream. On the eastern side of the site instream vegetation is quite dense covering the water.

The accessible areas demonstrated a silty substrate and the water in the stream at time of survey appeared to have a very slow flow (with no area of the water being stagnant). The depth of the water was approximately 6-10cm. No cattle were present at the time of this survey and the water appeared quite clear in appearance and did not display any physical evidence of turbidity. No aquatic species were noted in the accessible areas. The Santry River in this area is of low fisheries value and has resemblance to a drainage ditch with low flow.

Details of the water quality status of the Santry River is detailed in Chapter 12 Water. Plate 5-1 below shows the Santry River within the proposed development site. Figure 5-5 below illustrates the alignment of the Santry River.

Plate 5-1 – Santry River crossing the proposed development site

Figure 5-5 – Santry River location

5.3.1.4. Other known sites of ecological value

Habitats outside of Natura 2000 Sites but which conform to types listed on Annex I to the Habitats Directive were examined using the Article 1720 reports (2019) and spatial data from the NPWS. There are no annexed habitats within or in the vicinity of the proposed development site.

There are no Ramsar Sites[21] within the proposed development site. Ramsar wetland sites located on the east coast; Sandymount Strand/Tolka Estuary, North Bull Island, Baldoyle Bay, Broadmeadow Estuary and Rogerstown Estuary are within a 12km radius of the site. There is hydrological connectivity to Ramsar site; North Bull Island via the Santry River, this Ramsar site covers the same geographical area as North Bull Island SPA.

A review of wetland sites, as provided by Wetland Survey Ireland datasets[22], did not identify any wetlands within proposed development site and identified 3 no. wetland sites; Coldwinters Pond (WMI_DU185), Coldwinters (WMI_DU113) and Part of Huntstown Quarry Pond (WMI_DU112) are all located within 2 km of the proposed development site. The nearest wetland habitat is Coldwinters Pond (WMI_DU185) , which is located ca. 1.05km south west of the proposed development site. There is no hydrological connection from the proposed development site to this or any other wetland habitat.

A review of datasets for the Inventory of Long Established and Ancient Woodlands of Ireland[23] and the National Survey of Native Woodlands[24] did not identify any protected or long-established/ancient woodlands within or adjacent to the proposed development site. The nearest woodland identified by the National Survey of Native Woodlands is the within the Santry Demesne 2.6km south east of the site.

Datasets were reviewed of the Irish Semi-natural Grassland Survey 2007-2012, published by Department of Culture, Heritage and the Gaeltacht[25]. There are no semi-natural grasslands within the proposed development site.

[20] Under Article 17 of the Habitats Directive each member state is obliged to report to the EC every 6 years on the status of the natural habitats and species in the Annexes and on the implementation of the measures taken under the Directive.

[21] https://www.ramsar.org/wetland/ireland

[22] http://www.wetlandsurveysireland.com/wetlands/map-of-irish-wetlands--/map-of-irish-wetlands---map/index.html

[23] Perrin, P.M. & Daly, O.H. (2010) A provisional inventory of ancient and long-established woodland in Ireland. Irish Wildlife Manuals, No. 46. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.

[24] https://maps.biodiversityireland.ie/Map

[25] https://data.gov.ie/dataset/irish-semi-natural-grassland-survey-2007-2012

The Irish Wetland Bird Survey (I-WeBS) has 1 no. waterbird count sites located ca. 5.3km southeast of the proposed development site. I-WeBS count site – *Grassland at Beaumont* (college pitches site code: 0UG01). This site is the closest waterbird count sites to the proposed development. Other I-WeBS sites are present within the listed SPAs located ca.10km east from the proposed development site.

5.3.2. Habitats - Site Survey Evidence

The following section details the predominant habitats found within the proposed development site as noted during site surveys undertaken in June 2022 and August 2023.

The site is located on the southern side of the R108 regional road and east of Harristown Lane. Large warehouses in Horizon Logistics Park are located directly south of the site and a roadway and car park is located to the east of the site.

The proposed development area is a greenfield site predominantly consisting of Improved Agricultural Grassland (GA1) with thistles (*Cirsium* spp.) and ragwort (*Jacobaea vulgaris*) throughout the field.

There is a ca. 180m laneway comprised of hardstanding artificial surfaces (BL3) and a large concrete formed cattle crush / cattle pen along the northern section of the site, the total area of hardstanding surfaces is ca. 911m^2. The entrance gate and laneway from Harristown Lane (west side of site) is overgrown and impassable. Each side of the laneway is flanked with a treeline (WL2) which transitions into a hedgerow (WL1) comprised of early mature elder (*Sambucus nigra*), hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), ash (*Fraxinus excelsior*) with dense bramble throughout. Ash die back disease was noted on the ash trees.

A small section of scrub habitat (WS1) is present at the eastern end of the laneway. This small section of scrub with semi mature sycamore (Acer pseudoplatanus), goat willow (Salix caprea), elder, blackthorn, hawthorn and ash with dense bramble (*Rubus fruticosus*) present and predominantly bare ground around the scrubland due to repeated cattle encroachment.

Along the northern boundary of the proposed development (alongside R2108) is a young hedgerow comprised of hazel and field maple (*Acer campestre*)

There is a mature treeline (WL2) between the western boundary of the field along Harristown lane and trees include hazel, ash and hawthorn. This treeline is outside the red line boundary of the proposed development.

A surface water feature (akin to a drainage ditch) crosses the centre of the site from west to east which is the beginning of the Santry River (FW2). A heavily poached area of grass beside the watercourse indicates it is used as a water source for cattle. Along the eastern side of the watercourse is a predominantly bramble hedgerow with young hawthorn present. Along the watercourse there are occasional semi-mature hawthorn and ash trees. The main channel of the watercourse is mostly overgrown along its length with bramble, dog rose (*Rosa candida*), bittersweet (*Solanum dulcamara*), vetch (*Vica* spp.), nettle (*Urtica dioica*) and willow herb (*Epilobium angustifolium*) noted. Occasional areas of Juncus grass (*Juncus effusus*) are found within the grassland areas near the watercourse bisecting the proposed development site.

There is an area of deciduous woodland (WD1) in the north west corner of the site comprised of ash, hazel, blackthorn, sycamore, hawthorn and willow which lies outside the redline boundary of the proposed development site. Some of the ash trees displayed signs of ash die-back disease (2022). Within this woodland there is a derelict house (BL3) with dilapidated wooden kennels to the rear of the house. There is a small brick shed to the south east of the house on the northern side of the watercourse. These aforementioned woodland and house are outside of the proposed development site.

The southern boundary of the site is a metal security fence with immature native species planted on the southern side of the fence, species include birch (*Betula Pendula*), oak (*Quercus* spp.), elder, hawthorn. There is a single mature willow tree on the northern side of the southern boundary fence close to the south western corner of the site.

The eastern boundary is marked with a metal security fence along the western side of a private road leading from the R108 to Horizon Logistics Park. The borders of the roadway are comprised of mown grass verges (GA2) and standard sized landscape feature lime trees (*Tilia* spp.). At the entrance way to this private road is a group of 20no. standard sized landscape feature trees planted on a mound all noted to be horse chestnut (*Aesculus hippocastanum*). There is a small section of landscape hedgerow on the eastern side of the private road (western boundary of the Holiday Blue Long Term Car Park) which is within the proposed development site, this section is within the red lie boundary so as to provide access from the proposed development to the Holiday Blue Car Park.

Plates 5-2 – 5-7 below present site photographs taken during walkover surveys in August 2023 and Figure 5-6 below illustrates the predominant habitats found within the greenfield site.

Plate 5-2 – Agricultural grassland (GA1) and Treeline (WL2) along laneway.

Plate 5-3 – Agricultural grassland (GA1) and Hedgerow (WL1) along laneway.

Plate 5-4 – South side of site.

Plate 5-5 – East side of site.

Plate 5-6 – Agricultural grassland (GA1) central site with ragwort and thistle.

Plate 5-7 – Silted, cattle poached watercourse (FW2).

Figure 5-6 – Predominant habitat within the proposed development site

5.3.3. Species – Documented Records and Site Survey Evidence

5.3.3.1. Documented Rare and Protected Flora and Fauna

This section of the report outlines species that have been previously recorded within and around the proposed development site. NBDC datasets of rare and protected species records[26] for the OSI 1km grid square; O1342, which covers/encompasses the entire proposed development site, were examined to provide a detailed account of species previously recorded within the proposed development site within the last 10 years (2013-2023). NBDC species records for the wider area were also reviewed.

This section of the report also details any evidence of species noted during site walkover surveys and the bat detector survey.

In addition, as part of the Dublin Airport Infrastructure Application (Planning Ref; F23A/0781) field surveys were conducted between 2018-2023 to establish the non-breeding and breeding bird assemblage at the Dublin Airport and within the wider ZoI of the airport lands, and to identify areas of importance to bird species. The proposed development site lies within the bird survey area and species sightings are detailed below.

Birds

The proposed development is in an agricultural field. Within the OSI 1km grid square O1342, there is 1 no. sighting of bird species; Buzzard (*Buteo buteo*) within NBDC datasets recorded in 2021.

Site surveys undertaken in 2022 and 2023 for the proposed development noted; buzzard, mistle thrush (pair) (*Turdus viscivorus)*, starlings (*Sturnus vulgaris)*, wren (*Troglodytes troglodytes)*, blackcap (*Sylvia atricapilla)*, blackbird (2 pairs) (*Turdus merula)*, dunnock (*Prunella modularis*) and magpie (*Pica pica).* A remnant Blackbird/thrush nest was recorded in the brick shed south of the derelict house.

Bird surveys undertaken as part of the daa Infrastructure Application noted a flock of starlings, 2 no. doves (*Columba oenas*) and herring gulls (*Larus argentatus*) within the vicinity off the proposed development site.

Badger

Badger (*Meles meles*) is protected under the Wildlife Acts and although not recorded within the 1km grid square within which the proposed development site lies, badger sightings have been reported within the general wider area of the Site; i.e. within 10km, the latest sighting of which was in 2015 according to NBDC datasets (2023). Given the suitable habitat for badger in the proposed development site there is potential for the species to utilize the site. No badger sett or evidence of badger has been recorded within the site during the 2022 and 2023 surveys.

Bats

All bat species in Ireland are protected under Wildlife Acts and all bats, and their breeding and resting places, are strictly protected under Section 51 of the Habitats Regulations (SI No. 477/2011, as amended), pursuant to Article 12 of the Habitats Directive. A review of NBDC (2023) datasets indicate that no bat species have been recorded within the proposed development site within the last 10 years. Historically, within the 1km grid square within which the proposed development is located, Lesser Noctule (*Nyctalus leislen*) has been recorded once in 2007.

A review of the wider area surrounding the proposed development site indicates that historically the following species have been recorded; Lesser Noctule (*Nyctalus leisleri*), Common Pipistrelle (*Pipistrellus sensu lato*), Brown Long-eared Bat (*Plecotus auritus*), Daubenton's Bat (*Myotis daubentonii*), Natterer's Bat (*Myotis nattereri*) and Soprano Pipistrelle (*Pipistrellus pygmaeus*). Given that the proposed development is agricultural grassland with treelines and hedgerows, the proposed development site has potential to provide for suitable foraging habitat or commuting routes for bats.

Bat Survey Evidence

A hand-held bat detector survey was conducted on site at dusk on 17/06/22 and at dawn on 18/06/22 within the proposed development site. Two surveyors conducted the surveys. Equipment included Pettersson D240X time expansion and Pettersson D200 bat detectors in conjunction with Echometer Touch Pro bat detector units plugged into iPad minis.

As noted there is a small area of woodland, within which are located a number of derelict properties, just outside the north-western boundary of the proposed development site. While outside the site this area was considered as part of the baseline ecological survey work.

26 https://maps.biodiversityireland.ie/Map

The emergence survey was conducted at the derelict house (located outside the redline boundary) from 20 minutes before sunset until 23.30hrs (2 surveyors). No bats were recorded emerging from the house. From 22:05hrs Leisler's bats (*Nyctalus leisleri*) were continuously recorded foraging over the field. The field contains a herd of approximately 12 cows. Large numbers of yellow dung flies (*Scatophaga stercoraria*) were recorded on fresh cow dung in the field. During the maternity/lactation period (i.e. June/July 2022) female Leisler's bats are known to switch their diet from small flies to the larger, more calorific yellow dung fly. It is noted that during 2023 surveys there was no usage of the field by cattle and as such the feeding prey abundance (dung flies) would naturally be reduced.

Several Common pipistrelles (*Pipistrellus pipistrellus*) were also recorded foraging in open spaces in the wooded area close to the drain from 22.20hrs onwards.

Upon completion of the emergence survey, walking transects were conducted by walking around the perimeter of the proposed development site. There was no bat activity along the southern and eastern boundaries of the site. Both Common and Soprano pipistrelles (*Pipistrellus pygmaeus*) were detected foraging along treelines on the north and west boundaries of the site.

The dawn survey commenced at 03:30. Three calls of Leisler's bat were detected over the open field during the dawn survey. Two calls of Soprano pipistrelle were recorded along the western treeline boundary with Harristown Lane.

Static Bat Detector Surveys

Two Songmeter 4 bat detectors were deployed on site over the course of three consecutive nights – 17/06/22 – 20/06/22. One unit was placed in the derelict house immediately below the trapdoor to the attic space. The second unit was mounted on a branch in a treeline on the northern boundary of the site.

1. Songmeter 1 – in house – No bat calls detected.
2. Results from Songmeter 2 – in hedgerow – are presented in Table 5.5.

Table 5.5 – Results of static monitoring along northern treeline on site.

Date	Species	No. of Calls	Total No. of Calls
17/06/22	Leisler's bat	33	61
	Common pipistrelle	18	
	Soprano pipistrelle	10	
18/06/22	Leisler's bat	18	30
	Common pipistrelle	7	
	Soprano pipistrelle	5	
19/06/22	Leisler's bat	42	62
	Common pipistrelle	10	
	Soprano pipistrelle	10	

Results

The derelict house, in the woodland just outside the site, was not being used as a roost site by bats. No bats emerged from the house during the dusk survey using hand-held bat detectors. No bats were recorded flying in the house over the period of the static monitoring. The house was considered to have moderate potential as a bat roost. Bats roosting in the house would have limited foraging opportunities and would be mainly confined to the area of this site. No bats emerged from the brick shed to the south of the house.

The majority of bats foraging on site were Leisler's bats which fed continuously throughout the night but especially during the dusk period. Common and Soprano pipistrelles were recorded foraging along the edge of the wooded area to the north west corner of the site and along the treeline on the western boundary with Harristown Lane.

Conclusions

Leisler's bats will lose foraging areas on part of the site of the proposed car park development. The bats are exploiting this area due to the presence of the cattle which attract yellow dung flies. The wooded area in the north west corner of (and outside) the site will not be impacted. Lighting schemes on site have been designed to ensure

that no light falls on this wooded area (refer to the accompanying Lighting Report which accompanies this application). The treeline between the site and Harristown Lane is also an important foraging area for bats. Lighting will be directed away from this treeline, with no light spillage onto Harristown Lane.

The Bat Survey Report is included in Volume 3 Appendix 5.2 of this EIAR.

Otter

Otter (*Lutra lutra*) is listed on Annex II and Annex IV to the Habitats Directive and is also protected under the Wildlife Acts. Otter feeds on aquatic prey (e.g. salmonids, eels and sticklebacks) and requires refugia (holts) along or near watercourses and associated riparian habitats. There are no records of otter within the reviewed grid square surrounding the proposed development site. The watercourse within the proposed development site is not deep enough for otters and does not accommodate aquatic species suitable as otter prey.

Other mammals

The only other mammal species recorded within the proposed development site is Irish Hare (*Lepus timidus subsp. Hibernicus)* recorded in 2017.

Flora

The NBDC database were consulted to determine the presence of rare plant species and species protected under the Flora Protection Order (2022). There have been no recordings of protected floral species within the immediate vicinity of the proposed development site.

Butterfly-bush (*Buddleja davidii*) a low impact invasive plant species not subject to legal restrictions has been recorded within the proposed development site during site surveys in 2022 and 2023. No other invasive species were noted within the proposed development site. The ecological evaluation of the various habitats found within the Site is detailed in Table 5.6 below.

Table 5.6 - Ecological evaluation of habitats within the proposed development site

Habitats	Evaluation
Agricultural grassland (GA1) Amenity grassland (GA2) Scrub (WS1)	Local Importance (Lower Value)
Hedgerows (WL1) Treelines (WL2) Watercourse (FW2)	Local Importance (Higher Value)
Artificial surfaces (BL3)	No ecological importance

5.3.4. Overall Evaluation of the Proposed Works Site

In summary, the proposed development site does not lie within any area that has been designated for nature conservation at an international or national level. There are no habitats listed on Annex I of the Habitats Directive or records of rare or protected flora and fauna within the proposed development site. There are no plants which are listed as legally restricted alien invasive species[27] within the proposed development site. There is indirect hydrological connectivity to Santry Demesne pNHA and the designated conservation sites within North Dublin Bay; North Dublin Bay SAC, North Bull island SPA, North Dublin Bay Ramsar Site and North Dublin Bay pNHA.

The proposed development site is predominantly comprised of agricultural grassland, treelines, hedgerows with a small watercourse bisecting the site.

There is suitable habitat for protected fauna species; bats and breeding birds within the proposed development site, however no bat roosts or other mammal refugia was found within the proposed development site.

5.4. Predicted Effects

The potential effects arising from the construction and operation of the proposed development are discussed in the following sections.

[27] As listed on the third schedule of the EC (Birds and Natural Habitats) Regulations 2011 S.I. No. 477/ 2011.

5.4.1. Characteristics of Proposed Works

The proposed development will consist of:

1. the demolition of existing cattle pen and hard standing area (total 911m2) and the removal of 1 no. existing gated site entrance from the South Parallel Road (R108), and the construction of a westwards extension to the existing Holiday Blue Long-Term Car Park to provide an extended surface car park which will comprise 950 no. airport staff car parking spaces, of which 48 no. will be provided for Persons with Reduced Mobility (PRM) and 96 no. will be serviced by Electric Vehicle (EV) charging points, to be accessed off the South Parallel Road (R108) via an upgraded existing former temporary construction access/egress, with an emergency access also to be provided through the existing Holiday Blue Long-Term Car Park immediately east of the proposed development site via a tie in, with security barriers, to the existing internal roundabout;
2. 30 no. bicycle spaces;
3. 1 no. new bus shelter;
4. new internal road layout, with set down areas for buses and footpaths, incorporating 2 no. existing culverts (one of which is to be extended) and 1no. new culvert over the Santry River;
5. proposed riparian corridor either side of the Santry River;
6. 1 no. single-storey substation;
7. 1 no. new single storey welfare building;
8. 1 no. new single-storey security hut with security barriers;
9. new foul and surface water drainage system works incorporating attenuation;
10. the erection of CCTV equipment, security fencing, electrical enclosure, lighting, signage, and boundary fencing; and,
11. all other associated site development works, including temporary construction compound, and all hard and soft landscaping.

5.4.2. Potential Effects Assessed

In the absence of mitigation measures the proposed development could have a range of potential effects on the ecological receptors within the zone of influence of the proposed development during the construction and operational phases. The categories below describe the possible impacts which may occur through development onsite. These impacts are further assessed considering desktop and field survey data in Sections 5.3.1 - 5.3.3.

5.4.2.1. Physical Damage/ Habitats Loss

Physical damage includes the degradation to, modification, fragmentation or loss of habitats. Direct physical damage of habitats could occur within working areas of the proposed project and along access routes where construction works are undertaken. Physical damage of habitats can also be an indirect impact and could occur, for example, through the introduction of fine sediments into an aquatic system, causing changes to the particle composition of the benthic habitats. Physical damage may be temporary or permanent in nature.

5.4.2.2. Disturbance

Disturbance can cause sensitive species to deviate from their normal and preferred behaviour, resulting in stress and increased energy expenditure. Disturbance can result in species being displaced from suitable habitat areas that provide areas for feeding and foraging, commuting routes, and resting and breeding sites. Physical disturbance of species can also result in direct mortalities of species and thus, disturbance impacts can be both direct and indirect and may be temporary or permanent in nature. Examples of direct disturbance includes activities such as damage to a breeding or resting site of a protected species, e.g. a bat roost or badger sett. Indirect disturbance may result from the presence of works crews and personnel on site during construction, noise emanating from a construction site or artificial lighting of a bat foraging area, causing bats to avoid the area.

5.4.2.3. Changes in Water Quality

The release of pollutants to water can impact upon the relevant waterbodies and the species they support. This can result in impacts such as increased turbidity of the water column, a reduction in photosynthesis, contribution to eutrophication and changes to the species composition of the system as a result. The degree of impact depends on the type of pollutant released and the nature of the receiving receptor. For example, the release of fine sediments to a stream or river is likely to cause siltation of the riverbed and interrupt the functioning of species, from aquatic plants to macroinvertebrates to fish, and larger predators that depend on these biotic groups as a food supply, e.g. otter. Impacts to water quality could be temporary in the form of surface water runoff during construction, or permanent in the form of a continued discharge impacting negatively on the receiving

environment during the operation of the development. In this case, surface water run-off will discharge to the Santry River which flows into North Dublin Bay.

5.4.2.4. Changes in Air Quality

Transport Infrastructure Ireland (TII) guidance (2022a) states that impacts to sensitive ecological receptors as a result of traffic emissions should be considered. Consideration should be given to designated sites within 2km of the proposed development; however, a detailed assessment is only required at a local level, where there is a designated site within 200m of impacted road links.

5.4.2.5. Dispersal of Invasive Services

Non-native invasive species can have negative impacts on biodiversity. Negative impacts of non-native invasive species on native biota occur through competition, predation, herbivory, habitat alteration, disease and genetic effects such as hybridisation. In the cases of non-native invasive species such as Japanese knotweed or Giant Hogweed, the main impacts are a reduction in species diversity due to dense plant growth, heavy shading and disruption of trophic levels. These species can potentially be spread via plant fragments and soil containing plant material, and by vectors such as machinery and personnel.

5.4.3. Project Design

Where possible the design of the proposed development has been informed on an iterative basis by the findings of the baseline ecological assessment. The following design principles and “designed-in” mitigation have informed the assessment of impacts.

5.4.3.1. Landscape Design

There will be a loss of ca. 3.19 hectares of improved agricultural grassland, a section of double treeline along the laneway (ca. 170m combined length), a section of double hedgerow (ca. 90m combined length) and ca. 0.073 hectares of scrub habitat within the proposed development site during the construction phase. However, potential effects have been minimised where possible via ecological input, including bat specialist recommendations, into the landscape design plan prepared by Eammon Byrne Landscape Architects (included within the design documents for the proposed development submitted as part of this planning application and presented in Appendix 6.4 – Volume 3).

The existing hedgerow to the northern boundary of the site will be retained. Additional hedgerows will be planted to the eastern, southern, and western boundaries. Additional screen planting will be provided behind the existing and proposed hedgerow to the north of the site. The existing and proposed hedgerows in combination with proposed screen planting will, as they mature, provide for suitable habitat for breeding birds and foraging/commuting bats.

Additional specimen tree planting will be provided within and to all site boundaries. The specimen trees to the eastern side of the site will be predominately lime trees to augment the existing lime tree avenue in this location.

Where feasible existing trees and stream side vegetation will be retained. A dense layer of woodland planting of native species is proposed for the central area of open space either side of the Santry River (width of riparian planting; 10-15m, length ca. 200m). A verge of mown grass will frame the margins of the woodland planting and also adjacent to footpaths and roads. Throughout the central area of open space specimen tree planting will be provided.

The tree and shrub species selected for planting are primarily native or naturalised species and in the northern section of the proposed development site the proportion of species with berries has been reduced to lessen the attraction of the planting to birds considering the location of the northern section of the proposed development site to the southern runway.

The landscape design has also considered the needs of bats, with a combination dense woodland and grassland provided to the central open space, additional lengths of hedgerow and specimen trees to provide opportunity for foraging/ commuting and landscape connectivity.

The detailed landscape design includes for the following tree, shrub and climber species; birch, hawthorn, sycamore, spindle, beech, holly, oak, willow, lime, yew, hazel, blackthorn, St, John’s wort and honeysuckle. Within the landscape design there are 3,228 no. ‘whip’ sized trees and 91 no. larger standard sized trees, 2,750 no. shrubs and 170 no. climbers to be planted within the riparian corridor and boundary areas of the proposed development site.

Overall, the detailed landscape design calls for 4,448m^2 of woodland mix and 562m linear length of new hedgerow with ca. 3,076m^2 of grassed area also included within the design.

The landscape design for the proposed development site is included in Appendix 6.4 – Volume 3.

5.4.3.2. Drainage Design

The surface water drainage infrastructure for the site will mimic the natural drainage catchments of the existing site. The proposed car park drainage system has been split into two catchments, a northern catchment and a southern catchment which are separated by the Santry River which intersects the centre of the proposed development site:

- The Northern catchment will have SuDS porous surfacing parking bays that will comprise of porous asphalt. The stormwater runoff will discharge into the permeable surface prior to collection by filter drains. The filter drains allow for adequate drainage of the permeable granular stone material into the proposed carrier drainage network.
- The Southern catchment will have SuDS porous surfacing parking bays that will comprise of porous asphalt. The stormwater runoff will discharge into the permeable surface prior to collection by filter drains. The filter drains allow for adequate drainage of the permeable granular stone material into the proposed carrier drainage network.
- It should be noted that internal circulation roads within the car park areas will be constructed of non-permeable asphalt but will be graded such that stormwater runoff drains from the surface to the adjacent porous car-parking bays.
- The main car park access circulation road will have an impermeable Stone Mastic Asphalt (SMA) surface which will be drained via the use of traditional road gullies.
- A vortex flow control device will be located downstream of the proposed carrier drainage network limiting flows to a maximum discharge rate specified below. Prior to discharge into the Santry River a bypass separator will ensure silts and oil is removed.
- Attenuation for both catchments is provided through the use of a proprietary modular geocellular structure with a maintenance/inspection tunnel for providing underground surface water attenuation storage and infiltration to manage storm water runoff.
- A petrol interceptor will be provided on each outfall from the site. Petrol interceptors work on the premise that some hydrocarbons such as petroleum and diesel float on the top of water. Class I bypass separators are proposed which enable the main collection chamber to be by-passed at times of heavy rainfall which prevents any collected oil from being flushed out. Class I bypass separators are designed to achieve a concentration of less than 5mg/l of oil. Kingspan Klargester Class 1 Bypass Petrol Interceptors or equal approved will be used prior to the discharge points north and south of the Santry River and will be NSBE010 and NSBP003 at the north and south catchments respectively.
- The site will incorporate a riparian strip along the length of the section of the Santry River in accordance with FCC Development Plan. The riparian strip, on either side of the stream, it will be a minimum of 10m in width from the stream and a maximum of 15m in width from the stream. The riparian strip will have a number of crossing points for the access road and pedestrian crossing locations. Culverts will be constructed at these crossing points and sized in accordance with final Section 50 approval from the OPW.

5.4.3.3. Lighting Design

The lighting design for the proposed development has been developed with cognisance of the findings of the bat survey. Bat survey evidence indicates that the west side of the proposed development site (i.e. around the woodland and western treeline along Harristown Lane) were the main areas of bat activity and lighting has been developed in this area to be ‘bat friendly’. The design of the lighting within and around the proposed development has also been designed to be cognisant of minimising effects on local nocturnal species, such as bats and badgers, and has been developed so as to allow for a darker area around the western boundary of the proposed development site and also along the riparian corridor of the Santry River. The lighting scheme for the proposed development site has been developed with the following principals to the fore; only illuminating what needs to be illuminated (e.g. light directed to the car park area only), reducing night time light levels, reducing the height of the luminaires, shielding of luminaires and correct choice of light (e.g. a warm white spectrum <2700 Kelvins).

Project specific lighting designs include for:

The lighting design follows Institute Lighting Professionals (ILP) Guidance Note 08/18 Bats and artificial lighting scheme for key bats area aims to minimise disturbance or disruption in key bats areas through the following design principles:

- LED luminaires shall be used due to the fact that they are highly directional, have lower intensity, have good colour rendition and dimming capability;
- On the western sections of the proposed development site a warm white spectrum <2700 Kelvins shall be used to reduce the blue light component of the LED spectrum;
- Luminaires shall feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats;
- On the western sections of the proposed development site column heights shall be carefully considered to minimise light spill. The shortest column height allowed shall be used where possible (6m).
- All luminaires shall lack UV/IR elements to reduce impact;
- Only illuminating what needs to be illuminated (e.g. light directed to the car park area only); and,
- Reducing night time light levels

The amber white with a narrow band of light (with no blue light emission) will be proposed in certain areas to reduce light impacts outside of pathways along areas highlighted with bat activity. The lighting factors considered which will minimise the effect on bats are as follows:

- Minimising or prevent light spill to any areas forming part of the bats commuting corridors, for instance lighting a pathway; the light ideally will be at the path only with no uplight or illumination of nearby trees, bushes, river, waters, buildings, etc. Lighting schemes have been designed with luminaires that provide no uplight, or have narrow downward beams of light, and will have optics or shields that prevent back spill etc.
- Reflectance's downward lighting can be reflected from bright surfaces, so using Black Tarmac instead of bright gravel or concrete for the pathway is considered. The same applies to other materials such as the colour finish on the lights, poles, walls, street furniture etc.
- Shielding of Luminaires & Light – it is proposed to add shields / baffles or natural objects (hedges, flowers etc) to block the luminaire / light from the flight paths of bats.
- Type of Light Proposed – principally LED lighting which has no UV with exact cut-off optics will be used.
- Lighting Controls – One of the peak-time for foraging for bats is during dusk. Lighting controls have also to be taken into consideration to reduce light and/or switch off luminaires.

5.4.4. Construction Phase

The potential effects likely to arise during construction of the proposed development are discussed in the following sections.

5.4.4.1. Impact on Sites Designated for Nature Conservation

As noted, the proposed development site is not located within the boundaries of any European site. There will be no direct effects on European sites.

Given that the Santry River outfalls to North Dublin Bay SAC and The North Bull Island SPA (ca. 10.9km downstream), hydrological connectivity exists from the proposed development site to these European sites. The proposed development requires in-stream works in the form of the installation of a new culvert and the extension of 1no. existing culvert. As such, without adequate mitigation, there is the potential for significant adverse effects to the water quality of the Santry River from for example construction related pollutants or silt laden run-off. In the absence of mitigation measures these effects would be short term, significant adverse at a local geographical level. Given the downstream distance and the dilution, assimilation and attenuation that would occur within such a length of watercourse, the potential for significant effects to the downstream European site within North Dublin Bay is considered to be extremely low. Notwithstanding this, following a highly precautionary approach, surface water protection measures have been developed to avoid significant adverse effects on the aquatic environment and subsequently the qualifying interest habitats of the two downstream European sites via the Santry River. Mitigation measures to ensure surface water protection are outlined in detail in the accompanying NIS and are also detailed in Chapter 12 Water of this document.

Potential effects on the Special Conservation Interest birds of SPAs have also been considered. The closest SPA to the proposed development site is The North Bull Island SPA, ca. 9.7km via straight line distance. The project is sufficiently remote that there is no risk of disturbance to waders and wildfowl within this or any other any SPA. The proposed development will not have any effect on the migratory flight paths of SPA species nor restrict their mobility between wetland sites. The proposed development site is not a terrestrial site known for supporting roosting or foraging waterbirds. Site surveys only noted common breeding birds within the proposed development

site and no SCI bird species (from any SPA) are noted within surveys or NBDC records. As such no effects, such as displacement or disturbance, will occur to ex-situ SCI birds as a result of the construction of the proposed development.

The NIS concludes that;

> *'The proposed development has been subject to Appropriate Assessment Screening which determined, following a precautionary principle, the risk of likely significant effects to North Dublin Bay SAC and North Bull Island SPA Qualifying Interest Habitats could not entirely be ruled out. The NIS has examined the potential impacts of the proposed development on the integrity of North Dublin Bay SAC and North Bull Island SPA alone and in combination with other plans and projects, considering each European site's structure, function and conservation objectives. Where potential likely effects were identified, mitigation measures were identified to mitigate effects. Following a comprehensive evaluation of the potential direct, indirect and in-combination effects on the qualifying interests of North Dublin Bay SAC and North Bull Island SPA and the implementation of the prescribed mitigation measures, it has been concluded by the authors of this report that there will be no adverse effects on the integrity of European sites as a result of the proposed development, either alone, or in combination with other plans or projects'*

Santry Demesne pNHA is also located downstream of the proposed development site via the Santry River (3.2km distance). This site is designated for the protection of terrestrial floral species and woodland habitats. The conservation interests of this pNHA cannot be affected via hydrological pathways given the terrestrial nature of the ecological features of interest. The proposed development will not result in any short term, long term adverse effects to Santry Demesne pNHA. Effects on this pNHA are considered to be neutral for the construction phase and long term operational phase of the proposed development.

5.4.4.2. Impacts on Habitats

As detailed above, the proposed development will result in a permeant loss of ca. 3.19 hectares of improved agricultural grassland, ca. 170m of treelines, ca. 90m of hedgerow and ca. 0.073 hectares of scrub habitat during the construction phase. These habitats range in value from Local Importance (Lower Value) (e.g. grassland) to Local Importance (Higher Value) (e.g. treeline and hedgerow). A small group of poor condition standard sized landscape feature Horse Chestnut trees will also be removed at the entrance way to the private road to the east of the proposed development site.

There are no habitats on the proposed development site of greater than local value. No ecological features of regional, national or European importance will be directly impacted by the proposed development. Semi-natural habitat of similar ecological value will be replaced as part of the landscape strategy and there will be a net gain in terms of tree numbers and thus the habitat loss impact will be temporary.

Negative effects to semi-natural habitats would be restricted to within the development site. The habitats would therefore be assessed overall as important at a Site level and the effect of the habitat loss during the construction phase of the development would be adverse temporary significant at Site level only.

There will be no long-term significant effects as a result of this habitat loss, however the agricultural grasslands of the development site are of importance for local bats as a foraging area. These potential impacts are discussed below.

Indirect habitat/species loss/damage via spread of invasive species

No high impact invasive plant species have been recorded within the proposed development site. There is the potential, in the absence of mitigation measures, for adverse, not significant, short term effect from imported material containing invasive plant species.

5.4.4.3. Impacts on bats

This section details the principle potential impacts of the proposed development during the construction phase on bats.

Loss of Foraging and Commuting Habitat

The results of the bat activity survey undertaken for the proposed development indicate that the Site supports 3 no. species of foraging and commuting bat (Leisler's bat, common pipistrelle and soprano pipistrelle). The majority of bats foraging on site were Leisler's bats which fed within the greenfield site. Common and Soprano pipistrelles were recorded foraging along the edge of the wooded area to the north west corner of the site and along the treeline on the boundary of Harristown Lane (outside of the Site).

In 2022 Leisler's bats were exploiting the greenfield area due to the presence of the cattle which attract yellow dung flies, however, no cattle grazing is currently occurring in this field so this prey source for Leisler bats will have diminished in the immediate environs of the proposed development. Notwithstanding this, bats will lose an

area of foraging habitat as a result of this proposed car park development. The loss of grassland and trees during construction will impact on commuting and foraging bats and may reduce the available insect prey species and also reduce the feeding area available for bats in some locations. In the absence of mitigation, it is considered that the removal of foraging and commuting habitat would be a long-term significant adverse effect at the local scale.

Loss of Bat Roosts

The site was surveyed for the presence of bat roost and trees and building with bat roost features. No mature trees with bat roost features will be removed as part of the proposed development. No bat roosts were recorded during the surveys of the proposed development site. Given the lack of bat roots or trees with roost features, it is considered that the proposed development will have no effect on any local bat refugia.

Lighting

Lighting can cause avoidance of an area for commuting bats and can prevent or reduce foraging for some species, including *Myotis* species[28]. Studies have also found that pipistrelle and Leisler's bat can congregate around white mercury street lights and white metal halide lamps feeding on the insects attracted to the light, however, even bat species that have been shown to opportunistically forage in lit conditions have subsequently been recorded being impacted by artificial lighting. In cities, for example, common pipistrelles have been recorded avoiding gaps that are well illuminated, thereby creating a barrier effect[29]. Temporary lighting measures which may be required during the construction phase may affect bats commuting through or feeding within the proposed Site.

In the absence of mitigation, disturbance to bats from lighting during the construction phase would have short-term significant adverse effect at the local geographic scale.

5.4.4.4. Impacts on birds

Bird species recorded during site surveys (2022 and 2023) are common and no rare or uncommon species or species of high conservation value were recorded (Herring gull noted during Dublin Airport bird surveys was adjacent to the proposed development site). Historic records of protected bird species are limited to one sighting of a buzzard. The proposed development site is not of value as a roosting or feeding area for waterbirds associated with the coastal waters located ca. 8km to the east. Given the location of the Site in relation to areas of high avian usage, there will be no impact upon the migratory flight paths of waterbirds or wildfowl nor restrict their mobility between wetland sites.

There will be a net loss of semi-natural habitats within the proposed development area (grassland, treeline, hedgerow) and the loss of treeline and hedgerow in particular will have a localised effect on nesting and feeding resources for local passerine species.

In the absence of mitigation, the loss of habitat for breeding birds within the development site is considered a negative, slight and permanent effect on passerine bird species at a local geographic scale. No effect on wintering and native waterbirds and wildfowl are anticipated.

5.4.4.5. Impacts on water quality

Impacts to watercourses from instream works and/or via surface-water run-off

The Santry River is located within the proposed development site. During the construction phase instream construction activities will occur. Instream works will include the installation of one new culvert and the widening of one existing culvert and will involve the impounding of the watercourse at these three separate locations and over pumping via a settlement tank to downstream of each works area. These works, in the absence of mitigation measures, have the potential to affect the water quality of the Santry River and subsequently the aquatic environment (potential impacts via the Santry River to downstream habitats is noted above).

In addition, during wet conditions sediment can mobilise in the form of over-ground run-off during excavations and/or movement of heavy machinery through the proposed development site. Sediment is of particular concern for aquatic species within receiving water bodies. In addition it is possible for pollutants such as concrete, hydrocarbons and chemicals from machinery to enter the watercourse during the construction phase.

In the absence of mitigation measures, any impacts as a result of sediment or construction related pollutants in the Santry River would be adverse moderate and likely temporary in nature at a local level. The potential for sediments or pollutants to reach the ca. 10.8km downstream habitats in Dublin Bay is not likely.

[28] Stone E.L. (2013). Bats and Lighting: Overview of current evidence and mitigation.
[29] Bat Conservation Trust and Institute of Lighting Professionals (2018) Guidance Note 08/18: Bats and artificial lighting in the UK. ILP, Rugby.

Construction compounds are not located within 100m of the Santry River and as such there will be no storage of plant, machinery, equipment, fuels or chemicals near the watercourse. No impacts on surface water quality are likely from the proposed site compound activities.

Indirect impacts during construction phase via groundwater (hydrogeological pathway)

Chapter 12 - Water details the potential impacts on the water quality of the Santry River via groundwater pathways and outlines mitigation factors and measures for the control of pollution and protection of surface water and groundwater quality. The hydrological assessment anticipates any adverse effects on surface water or groundwater will be adverse, slight and temporary during the construction phase of the proposed development, given the mitigation measures proposed.

During the construction phase the effects on aquatic species accommodated within the Santry River will be adverse short term imperceptible.

5.4.4.6. Disturbance and/or displacement of faunal species

Whilst there are no confirmed bat roosts recorded within the proposed development site, the reduction in treeline, hedgerow and grassland habitats during the construction phase can lead to reduced insect abundance in the short term.

The alteration and removal of treeline, hedgerow and grasslands will have a temporary slight adverse effect to local bat species. In the absence of mitigation this will be a permanent moderate adverse effect.

Nesting Birds

Some disturbance/displacement of passerine birds may occur during construction due to increased noise and disturbance. The loss of treelines and hedgerows will also cause a reduction in bird nesting and feeding sites. In the absence of mitigation this will be a permanent moderate adverse effect at a local scale.

Terrestrial mammals

No evidence of activity, signs of mammals or mammals refugia were recorded during 2022 and 2023 Site surveys. Other mammal species historically recorded within the proposed development lands include Irish Hare. During construction activities there is the potential for disturbance and disruption to the foraging habits, in particular to local badgers which have been recorded within the wider area.

The development site is currently heavily fenced (security fencing) on three sides with developed lands to the north, east and south and given this setting the proposed development site does not allow for an ecological corridor providing connectivity to sites of ecological value. Moreover, the greenfield site can currently be assessed as a ‘dead end’ area for any terrestrial mammals. As such, the proposed development will not result in the disruption of any ecological corridors for terrestrial mammals.

It is considered that the disruption to foraging for terrestrial mammals would be a short-term slight adverse effect at the local geographic scale.

5.4.5. Operational Phase

5.4.5.1. Impact on Sites Designated for Nature Conservation

There is no direct connectivity from the proposed development site to any internationally or nationally designated sites and as such during the operational phase of the development there will be no direct effects, and therefore no likely significant effect, on European sites or nationally designated conservation sites.

During the operational phase, storm water / surface water from the development will outfall to the Santry River and as such there is indirect hydrological connectivity to North Dublin Bay SAC and the North Bull Island SPA which are ca. 10.9km downstream of the proposed development site. The proposed drainage works being incorporated into the development, which will include filter drains (removing silt), interceptors and attenuation tanks, will mitigate any effects occurring on the quality of water within the Santry River from the usage of the car park.

No significant effects to aquatic species accommodated within the Santry River, and ultimately North Dublin Bay are likely during the operational phase of the development. Furthermore, given the distance from the proposed development to these European sites and the dilution, dispersal and attenuation that would occur in the immediate environs this indirect hydrological connectivity is not considered a viable pathway through which North Dublin Bay SAC and the North Bull Island SPA, or habitats or species associated with the designated sites, could be impacted. As such there will be no effects to the downstream European sites when the proposed car park is in use. Full details of the screening for Appropriate Assessment for the proposed development are provided for in the accompanying NIS (presented in Appendix 5.1 in Volume 3 – Appendices).

There are no European sensitive designated sites within 2km of the proposed development and therefore a detailed assessment of NO_X concentrations and nitrogen deposition has been screened out as there is no potential for significant impacts to designated sites as a result of changes in air quality as a result of usage of the proposed car park.

No direct or indirect effects are likely on internationally or nationally designated conservation areas during the operational phase of the proposed development.

5.4.5.2. Impacts on Habitats

No further impacts on terrestrial habitats are predicted during operation of the proposed development. Landscaping proposals are discussed under Section 5-5 Mitigation below.

Impacts on aquatic environment

The proposed surface water drainage system for the development has been designed in accordance with the Greater Dublin Regional Code of Practice for Drainage Works and Sewers (GDSDS). As detailed above, the SuDS features to be used in the drainage design include filter drains (removing silt), interceptors and attenuation tanks. For areas of soft landscaping, e.g. woodland mix planting and grassland areas the rainfall will drain to ground mimicking nature and managing rainfall close to where it falls. The permeable in the car parking areas paving similarly allows for localised management of rainfall where during low rainfall events surface water will infiltrate to ground. For larger rainfall events the permeable paving will have an outlet to allow storm water to discharge into the proposed surface water network. The SuDS drainage design allows for opportunities for using runoff rainfall where it falls which will ultimately allow for greatly reduced surface water outfall to the Santry River. The drainage design also includes for underground attenuation systems and flow controls to slow and manage surface water drainage before final outfall to the Santry River which will ensure there is protection to the natural flow regimes of the watercourse. Surface water runoff from the development will be attenuated to greenfield rates in accordance with GDSDS using a hydrobrake on the surface water outlet from each catchment.

There is the potential for the water quality of the Santry River to be at risk of becoming contaminated through routine site maintenance activity during the operational phase of the proposed development. Maintenance of the access road, paved areas, car park surface, utilities, foul, watermain and the storm water drainage system, may result in small quantities of lubricant oils, fuel and chemicals being brought to the car park site. In the absence of mitigation measures and in the highly unlikely event of a spill this could result in adverse slight and temporary effects, directly to the surface water quality of the Santry River.

It is therefore considered that the operational phase of the proposed development will not result in significant effects, directly or indirectly, any of the habitats or species accommodated within the aquatic environments of the Santry River.

5.4.5.3. Impacts on bats

Lighting

The car park lighting proposed for the development will increase light levels within the proposed development area. In the absence of mitigatory measures, increased lighting may reduce the availability of feeding sites for bats and would be a long-term significant adverse effect at the local geographic scale.

Foraging and commuting routes

The connectivity of the habitats located within and around the proposed development site is of importance to local bat populations. In the absence of landscaping mitigatory measures, the loss of connecting features, such as hedgerows and treelines, would have a long-term significant adverse effect at the local geographic scale.

5.4.5.4. Impacts on badgers and other large mammals

There will be a loss of mammal foraging habitat associated with the construction of the development in the form of grassland areas and sections of treelines and hedgerows. The car park, once constructed, will not provide for a site suitable for foraging mammals. Security fencing is currently in-situ on the northern boundary (runway and R108 side), southern boundary (industrial complex) and eastern side (car park) and once the proposed car park is constructed there will be security fencing on the western boundary. The proposed development will therefore likely restrict mammalian access to any landscaped areas of the proposed development. Given that no evidence of terrestrial mammal activity was noted within the greenfield site during site surveys and given the wide availability of undeveloped (agricultural) lands to the south and west of the proposed development, the loss of ca. 4.56 hectares of potential mammal foraging habitat is considered slight adverse effect over the long term at a local level.

5.4.5.5. Impacts on birds

There will be a loss of treelines (ca. 170m) and hedgerows (ca. 90m) which provide for habitats suitable for local passerine species for both nesting and foraging. The landscaping design calls for the planting of over 6,000 trees, shrubs and climbers and extensive grassland areas which could lead to an increase in insect availability for birds.

There will be a slight adverse effect on local bird populations following the construction of the car park as a result of treeline and hedgerows loss. In the long term, once the landscaping has established, the site will provide for a net gain in terms of habitats suitable for nesting and foraging birds.

Once works have finalised and landscaping becomes established common bird species will use the area again. During the operational phase, the levels of activity will stabilise and birds in the surrounding landscape will be expected to habituate to the volume of activity proposed. As such, over the long term, there will be imperceptible effect to birds at a local level.

5.5. Mitigation Measures

5.5.1. Construction Phase Mitigation

Construction phase ecological mitigation measures shall be developed and undertaken in relation to sensitive receptors (e.g. the Santry River) in close proximity to the proposed development site.

5.5.1.1. Protection of Sites Designated for Nature Conservation

Protection of sites designated for conservation, and the features of interests associated with designated sites, is through prevention of potential impacts to the aquatic environment during the construction phase.

Mitigation measures as set out in Chapter 11 – Land, Soils and Geology; and Chapter 12 – Water will be implemented during the Construction phase, ensuring water quality of the Santry River is not negatively affected during the construction phase of the proposed development. These mitigation measures will ensure that instream works do not negatively impact the Santry River and also that surface water run-off quality is appropriately treated and ensured before it discharges to the river.

Works will follow best practice guidance as outlined in *Guidelines on the Protection of Fisheries during Construction Works in and Adjacent to Waters* (IFI, 2016).

With the implementation of mitigation measures, effects on sites designated for nature conservation will imperceptible.

5.5.1.2. Mitigation of habitat loss/damage during construction

Boundary hedgerows are to be retained on-site. Site boundaries will be protected from any accidental damage during construction by means of exclusion through use of fencing. Measures will be taken by the Contractor to ensure that trees and hedges being retained are incorporated into the development without being impacted upon. With the implementation of mitigation measures the effects to retained habitats will be imperceptible.

Site clearance of potential bird nesting habitat is detailed below.

To compensate for the loss of treeline and hedgerow habitat substantial native tree and hedgerow planting will be planted on the Site and existing hedges which are to be retained will be reinforced with native planting. This will reduce the impact of the proposed development upon habitats in the area and there will be no significant long term effect upon habitats due to the provision of substantial native and pollinator friendly habitats proposed for the Site (refer to Landscape Planting Plan). Landscape enhancement measures are outlined in greater detail below in Section 5.5.1.9.

5.5.1.3. Prevention of pollution to surface waters

Mitigation measures as set out in Chapter 11 – Land, Soils and Geology; and Chapter 12 – Water will be implemented during the Construction phase to avoid any impacts to the water quality of the Santry River.

An Ecological Clerk of Works (ECoW) will be appointed by the Contractor in advance of construction. All in-stream works carried out within the ecologically sensitive area of the Santry River will be supervised by a suitably qualified ECoW.

The ECoW will: -

- be a full member of a relevant environmental institute, such as the Chartered Institute of Ecology and Environmental Management (CIEEM), the Institute of Environmental Management, or equivalent; and
- have demonstrable experience with overseeing construction sites.

In the detailed CEMP, which the Contractor will be required to prepare and adhere to, the Contractor will provide all necessary method statements to the ECoW to demonstrate how mitigation measures within this EIAR will be implemented. Such method statements will include the installation and removal of silt control measures (silt fences).

The ECoW will be responsible for monitoring the Contractor, and (importantly) identifying to the Contractor any additional or refined mitigation measures (i.e. adaptive management measures required). The ECoW will concisely report the findings of monitoring, including any adaptive management measures recommended to the Contractor, and the effectiveness of same.

The ECoW will have the authority to ensure all mitigation measures are being implemented effectively and will have the authority to stop works activities if required.

The ECoW and Site Manager will deliver site induction and training to all construction personnel prior to commencement of construction activities. The Contractor will maintain a record of training completed.

The ECoW will monitor Met Éireann's weather forecast and will instruct the Contractor that works within the Santry River will not be permitted within 24hrs of Met Éireann issuing a yellow, orange or red weather warning.

The ECoW will monitor all construction works within the Santry River features which has connectivity to European sites.

The Contractor (following ECoW advice and recommendations) will be responsible for the implementation of mitigation measures. In the unlikely event that the implemented measures are not performing effectively, emergency measures will be put in place e.g. bunding or spill kits and all works will cease immediately. Such measures are included in an Emergency Response Plan (ERP) which is included in the submitted Outline CEMP (AtkinsRéalis, 2024) which the Contractor will be required to adhere to. This will ensure that mitigation measures are responsive to unexpected issues that may arise on-site during the construction works.

With the implementation of mitigation measures, effects on the water quality of the surface water feature within the proposed development site (and subsequently the aquatic environment), will be temporary and slight adverse at a localised level.

5.5.1.4. Bats

Loss of Foraging and Commuting Habitat

Loss of commuting and foraging habitat at the proposed development site will be mitigated by the landscaping proposals, which include hedgerow planting and woodland mix planting. Boundary treelines and hedgerows are to be retained and in addition the specific landscaping design incorporates additional planting of an ecological buffer zone along the riparian corridor of the Santry River. These measures are included in the design so as to ensure connectivity between habitats and will ensure important bat flight lines, foraging areas and commuting routes are provided for to avoid impact on foraging and commuting bats. Planting schemes should ensure connectivity to linear/ woodland habitats in the wider landscape. It is noted that the landscaping proposals also include retention of hedgerow and boundary treeline and the planting of hedgerow where none is currently in situ. In the long term, once landscaping has established, the effects on local foraging bats will be imperceptible.

Lighting

To minimise disturbance to bats that are active at night, no construction operations will be undertaken during the hours of darkness. If construction lighting is required during the bat activity period (dusk April to September), lighting shall be directed away from all hedgerow/ treeline habitats to be retained. This can be achieved by using directional lighting (i.e. lighting which only shines on the proposed works and not nearby countryside) to prevent overspill.

With the aforementioned construction phase lighting measures, significant adverse effects to bats are not anticipated. Effects to bats from construction phase lighting are considered to slight adverse over the short term at a local level.

5.5.1.5. Birds

Removal of nesting habitat (hedgerows, treelines utilised by local and common bird species) will be carried out outside the breeding bird season from 1st March to 31st August inclusive. Where nesting habitat clearance cannot be avoided during this period the NPWS will be consulted in advance and if, in consultation, it is deemed necessary then a suitably qualified ecologist will be appointed by the Contractor to oversee clearance of nesting habitat and ensure the area is free of nesting birds. The appointed ecologist will develop a method statement for the nesting habitat clearance in consultation with local NPWS staff. The comprehensive landscaping design calls for the planting of native trees and plant species suitable for pollinating insect species. The landscape design provides for a net gain in suitable bird nesting and foraging habitat.

Given there will be a loss of hedgerow and treeline habitats there will be a slight adverse effects to local bird populations over the medium term until landscaping has established.

5.5.1.6. Terrestrial mammals

During the construction phase the Contractor will adhere to the '*Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes*' (NRA 2006). The Site and all areas within 150m around the perimeter of the Site will be resurveyed for badger activity and the presence of setts by a suitably qualified ecologist (appointed by the Contractor) prior to the commencement of construction activities. Should an active sett be noted within the Site or survey area, NPWS will be informed and consulted. The suitably qualified ecologist will develop a method statement in agreement with NPWS for construction activities near an active badger sett.

During the construction phase no works will be undertaken during night time hours and as such the construction activities will not take place whilst local badgers are foraging.

During the construction phase the following standard management and protection measures will be implemented during the construction works and monitored by the project ecologist:

- No excavations are to be left uncovered overnight or without a means of egress (e.g. a ramp or sloped plank) to prevent badgers from falling in or entering in search of food and becoming trapped;
- No storage units are to be left open overnight to prevent badgers from entering in search of food and becoming trapped;
- All food waste is to be properly secured and disposed of to avoid attracting badgers to the Site;
- No toxic, poisonous or potentially harmful substances or materials are to be left unsecured overnight; and,
- Should any new badger setts or mammal burrows be discovered within the Site or immediately adjoining areas the project ecologist is to be contacted for immediate inspection, advice and liaison with NPWS as necessary.

There will be a loss of a small area of potential badger foraging habitat, however, given the wide availability of lands to the south and east of the proposed development site and the fact that no evidence of badgers (or other terrestrial mammals) has been recorded in the proposed development site, the effects to local foraging badgers will be slight adverse over the long term.

The proposed development site is fenced in on three sides with the runway to the north, car park to the east and industrial buildings to the south, as such the proposed development site does not provide for an ecological corridor for local terrestrial mammals. As such, the proposed development will have no adverse effect on the commuting routes of terrestrial mammals.

5.5.1.7. Invasive species prevention

No legally restricted invasive species, such as Japanese knotweed, have been recorded within the proposed development site. Strict bio-security protocols will be implemented during the construction phase so as to ensure no imported materials potentially contaminated with invasive plant species are brought to site. The Contractor will source materials from reputable sources and all materials will be visually inspected for any evidence of invasive species.

Given the inclusion of biosecurity measures the effects from invasive species will be imperceptible.

5.5.1.8. Additional Construction Phase Ecological Mitigation Measures

With regard to potential effects on ecological features the following mitigation measures are proposed:

- The Contractor shall employ good practice environmental and pollution control measures with regard to current best practice guidance such as Environmental Good Practice On-site Guide (CIRIA, 2018);
- The construction management of the Site will take account of the recommendations of the Construction Industry Research and Information Association (CIRIA) guides 'Control of Water Pollution from Construction Sites' and 'Groundwater control - design and practice' to minimise as far as possible the risk of pollution;
- All of the mitigation measures for the protection of soils listed in Chapter 11 Land, Soils and Geology will be implemented onsite during the construction phase;
- The Contractor shall take all necessary precautions to potential impact upon aquatic species of the Santry River from construction activities. The mitigation measures for prevention of potential surface water impacts as detailed in Chapter 12 Water shall be implemented;
- The Contractor shall take all necessary precautions to prevent potential impact upon aquatic species of the Santry River via the local groundwater body. All groundwater mitigation measures as outlined in Chapter 12 - Water shall be implemented; and,

- The Contractor shall take all necessary precautions to prevent potential impact upon habitats and species from dust generated during the construction phase. All air quality mitigation measures as outlined in Chapter 7- Air Quality shall be implemented.

The above mitigation measures will form part of the Outline Construction Environmental Management Plan (CEMP) submitted as part of this planning application, and which will be further added to by the Contractor within the project-specific Detailed CEMP which will be in operation during the construction phase.

5.5.1.9. Design Measure Mitigation

Landscaping

A comprehensive landscaping design has been developed for the Site which will include for additional boundary planting and the creation of an ecological zone along the riparian corridor of the Santry River. In line with FCC Biodiversity Action Plan and the All Ireland National Pollinator Plan and in order to create a biodiversity net grain at the Site the landscaping plan will include areas of ecological enhancement such as substantial areas of native tree planting.

There are 91 no. standard sized trees included within the proposal including oaks, alders and sycamores. The soft landscaping design includes for 4,448m^2 of woodland mix and 562m linear length of new hedgerow including only native species.

This planting is comprised of an appropriate mixture of native trees and shrubs, preferably of local provenance, and includes species attractive to pollinators. The planting will incorporate a range of species that will attract feeding invertebrates, including moths, butterflies and bees. The mixtures of flowering plants, trees and shrubs will encourage a diversity of insects to sustain bats and other wildlife throughout the year.

The landscape planting design provides for a net gain in number of trees within the Site. Refer to Landscape Planting Plans for details of the landscaping design (Appendix 6.4 – Volume 3 Appendices).

5.5.2. Operational Phase Mitigation

The following operational mitigation measures will be implemented through the design of the proposed development (e.g. lighting, drainage, landscaping etc.), or by those in charge of maintenance and management of the development.

5.5.2.1. Lighting

The design of the lighting within and around the proposed development has been designed to be cognisant of minimising effects on local nocturnal species, such as bats and badgers, and has been developed so as to allow for a darker area on the western side of the Site. The lighting scheme for the Site has been developed with the following principals; only illuminating what needs to be illuminated (e.g. light directed to the car park only), reducing night time light levels, reducing the height of the luminaires, shielding of luminaires and correct choice of light (e.g. a warm white spectrum <2700 Kelvins).

Project specific lighting designs include for:

- All luminaires shall lack UV/IR elements to reduce impact;
- LED luminaires shall be used due to the fact that they are highly directional, have lower intensity, have good colour rendition and dimming capability;
- A warm white spectrum <2700 Kelvins shall be used to reduce the blue light component of the LED spectrum;
- Luminaires shall feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats;
- Column heights have been carefully considered to minimise light spill. The shortest column height allowed (6m) shall be used on the western side of the Site;
- Only luminaires with an upward light ratio of 0% and with good optical control shall be used;
- Luminaires shall be mounted on the horizontal, i.e. no upward tilt;
- The lighting scheme has been designed in accordance with guidance contained in; *Institution of Lighting Professionals; Guidance Note 08/18; Bats and artificial lighting in the UK* (ILP 2018).
- Whilst the lighting design has been developed with cognisance of the prime bat foraging areas within the proposed development site there will areas of the proposed development site which are subject to more illumination that currently exists. As such, during the operational phase of the proposed development effects on foraging bats from lighting of the proposed development will be slight adverse on the long term.

5.5.2.2. Surface water drainage

Stormwater management for the proposed development is designed to comply with the Greater Dublin Strategic Drainage Study (GDSDS) and CIRIA Design Report C753 'The SuDS Manual'. In addition, the storm drainage system has been designed in accordance with the key documents and standards as listed below;

- Fingal County Council Development Plan, 2023 – 2029
- Dublin Airport Local Area Plan, 2020; and,
- Dublin Airport Sustainable Drainage Policy Document.

Sustainable drainage (SuDS) is a key focus for the entire design of the development. Along with porous paving for parking areas, the design calls for the inclusion of filter drains, interceptors and underground attenuation.

Refer to drainage design details in the Engineering Report accompanying this report (Document Ref; 21081-ATK-SCS-01-XXX-RP-C-XXX-0002).

During the operational phase of the proposed development routine maintenance of the car park will be required. Section 12.7.2 in Chapter 12 Water outlines mitigation measures to be implemented during routine maintenance of the proposed car park. The residual impact on surface water quality of the Santry River, resulting from routine site maintenance activity during the operational phase, is adverse, imperceptible and temporary, taking account of the relevant mitigation measures.

5.5.2.3. Landscaping Establishment

The landscape design calls for an ecological zone along the riparian corridor of the Santry River. This planted buffer zone will ensure the area provides for future bat flight lines. Once operational the implementation of the landscape plan and compensatory habitat such as additional planting will be inspected by the Contractor within one year post planting. If measures have failed due to lack of management an alternative solution will be proposed by the Contractor. Operational phase monitoring (in order to ensure the continued success of the landscape features) shall be undertaken by those in charge of the maintenance and management of the development site.

Given the inclusion of the comprehensive landscape measures, following establishment of planting, there will be a net gain in terms of the number of trees within the proposed development site. The creation of the riparian ecological corridor along the watercourse, and also the removal of cattle (poaching) from the watercourse, will also increase the ecological value of the watercourse and riverbanks within the proposed development site. As such, once landscaping has established, there will be a long term positive effect as a result of the landscaping measures.

5.6. Cumulative Effects

Given the inclusion of design, construction phase and operational phase mitigation measures, no significant effects will occur on sites designated for conservation value, protected habitats, protected species or features of high ecological value as a result of the construction and/or operation of the proposed development.

Other plans and projects within Dublin Airport Lands and also within the wider environs of the airport were reviewed in context with the proposed development and have been assessed for their potential to act in-combination with the proposed development to give rise to cumulative effects on local biodiversity. Refer to Chapter 17 and 18 for details of the other plans and projects which have been assessed.

No cumulative or in-combination effects on sites designated for conservation value, protected habitats, protected species or features of high ecological value will occur as a result of the proposed development.

5.7. Residual Effects

The proposed development will result in the loss of grassland, hedgerow and treelines. Mitigation by avoidance is proposed for breeding birds, bats, trees, hedgerows and to prevent the spread of invasive species. Measures to reduce the effects of artificial lighting and loss of habitats are also proposed. Planting of native woody species is also proposed as mitigation in the Landscape Design.

Enhancement proposals incorporated into the Site landscape plan will improve the Site potential for foraging bats and birds and will increase the potential for nesting and roosting opportunities for both on the long term. There will be a loss of foraging area for badgers but no loss of habitat connectivity between foraging areas. The introduction of landscape features will lead to an increased availability for pollinating insects and food source for local bat and passerine bird populations.

This assessment has demonstrated that through iterative project design and assessment, and the identification of appropriate ecological mitigation measures, the residual ecological impacts of the development proposals are

not expected to be significant and are expected to be localised to the Site and immediate environs. Local populations of bats and birds may suffer some disruption and habitat loss in the short term but, as the greater part of the Site is of low ecological value, habitat losses to development are not significant. Some minor beneficial effects are expected on the long term and some opportunities for enhancement measures are presented.

Provided ecological mitigation measures and monitoring are implemented correctly no cumulative impacts are expected.

The overall residual effect of the proposed development on biodiversity will be neutral over the long term at a local level.

5.8. Difficulties encountered during preparation of this chapter

No difficulties were encountered in completing this chapter nor during survey work to inform this ecological assessment. Habitat surveys and protected and species surveys were undertaken during the seasonally appropriate times of year.

5.0. Risk of Major Accidents and/or Disasters

The risk of a major accident onsite is low and would be confined to the construction phase of the development (e.g. there will be no oil storage tanks on site, removing the risk of oil spills associated with the finished development). Events such as a large hydrocarbon spill or release of high volumes of contaminants during the construction phase could potentially have a negative impact on ecological features such as the Santry River's downstream habitats. However, given the location of the Site relative to features of high ecological value, and given the surface water mitigation measures as outlined in Water Chapter 12, it is unlikely that an accident of sufficient scale would occur that would negatively impact on surface water features or aquatic habitats. While impacts to local soil and groundwater could conceivably occur, the preventative measures and emergency response measures will limit the potential scale of this impact (refer to Chapter 11 Land, Soils & Geology and Chapter 12 Water for mitigation measures). Thus, allowing for the above, the magnitude of a major accident is likely to be imperceptible in relation to ecologically important features.

6. Landscape & Visual

6.1. Introduction

This Landscape and Visual Impact Assessment (LVIA) has been prepared by Eamonn Byrne Landscape Architects Ltd (EBLA), a Registered Practice of the Landscape Institute. It relates to the proposals for the Remote Staff South Car Park to be constructed south of the South Parallel Road (R108) at Dublin Airport with associated infrastructure, auxiliary buildings and landscaping. Refer to Chapter 2 for the project description.

6.2. Methodology

LVIA is used to identify and assess the likely significance of the effects of change resulting from a development. The two components of LVIA are:

- Assessment of landscape effects: assessing effects on the landscape as a resource in its own right; and,
- Assessment of visual effects: assessing effects on specific views and on the general visual amenity experienced by people.

The assessment was carried out with reference to the following:

- Guidelines for Landscape and Visual Impact Assessment (3rd Edition, 2013);
- EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports 2022; and,
- Fingal Development Plan 2023-2029.

The study was carried out in November 2023 through a combination of desk studies and field survey within the study area. The methodology for undertaking the assessment is detailed below.

Study Area

The extent of the study area is within ca.1km of the proposed development site and is also delimited by the likely Visual Envelope (VE) of the proposals in combination with the proposed development site itself. The VE is defined in this case as the area within which the effects of the removal of vegetation and the presence of new structures on the site are likely to be visible. Refer also to Methodology within this section 6.2 below and to the Visibility drawing in Appendix 6.1.

Study Constraints

There were no study constraints. The field study was undertaken in November 2023 when most deciduous vegetation was not in leaf, hence providing a good indication of maximum visibility.

Project description/ specification

The proposals are summarised in terms of their physical appearance at Chapter 2 of the Environmental Impact Assessment Report. Please also refer to the drawing pack for drawings including landscape design proposals and tree survey (Appendix 6.3). The project description sets out the essential aspects of the development considered in this landscape and visual impact assessment, which include:

- The removal of an existing belt of trees and scrub from within the proposed development site;
- The removal of existing semi-mature trees located at the junction of the entrance road with the South Parallel Road in the north-eastern corner of the proposed development site;
- The removal of artificial mounding at the junction of the entrance road with the South Parallel Road in the north-eastern corner of the proposed development site;
- The removal of existing grassland within the proposed development site;
- The removal of existing secure fencing from the north-eastern corner of the proposed development site;
- The culverting of three short sections of the existing field ditch crossing the proposed development site;
- The creation of hardstanding across the majority of the proposed development site;
- The creation of small structures and single storey buildings including welfare facilities, security hut, sub-station and shelters;
- The provision of lighting;
- The creation of a belt of green space including woodland planting to either side of the existing Santry River;

- The planting of numerous standard trees around the periphery of the proposed development site; and,
- The planting of hedgerow/ woodland planting to the periphery of the proposed development site.

Baseline studies

The baseline landscape and visual conditions were established through a combination of desk study and surveys in November 2023.

Landscape Baseline

The aim of the landscape baseline is 'to provide an understanding of the landscape in the area that may be affected, its constituent elements, its character and way it varies spatially, its geographic extent, its history, its condition and the way the landscape is experienced, and the value attached to it' (Landscape Institute and Institute of Environmental Management and Assessment, 2013). The baseline study was undertaken by a mix of desktop study and fieldwork to identify and record the character of the landscape and the elements, features and aesthetic and perceptual factors which contribute to it. The baseline study also considered the landscape condition and the value attached to landscape. Sources of information included for the desktop study included; ordnance survey maps, aerial maps of the site and surrounding area, existing landscape character assessments and relevant planning policy.

Visual Baseline

The aim of the visual baseline is '*to establish the area in which the development may be visible, the different groups of people who may experience views of the development, the places where they will be affected and the nature of the views and visual amenity at those point*s' (Landscape Institute and Institute of Environmental Management and Assessment, 2013). The baseline study was undertaken by desktop study followed by a field survey to establish the 'Visual Envelope' of the proposals and to identify a number of viewpoints representative of views experienced by people, or 'visual receptors'. The Visual Envelope was estimated using a manual approach using map interpretation, and visual envelope mapping on site to establish the outer limit of land that may be visually connected with the proposal. There are areas within the Visual Envelope which do not have views of the scheme due to local variations in vegetation, topography and built development. The Visual Envelope is not always precise and is an indication only of the area within which the most significant visual effects may be expected.

Landscape Assessment Criteria

The overall significance of effects is established by combining the separate judgements about sensitivity and magnitude of effects.

Sensitivity includes an assessment of landscape receptors' susceptibility to change and their value.

Magnitude includes an assessment of the impact on landscape receptors in terms of size or scale, geographical extent of the area influenced. The criteria for assessing sensitivity of landscape effects are described in Table 6.1 below. The criteria for assessing the magnitude of impact are described in Table 6.2 below. The separate assessments of sensitivity and magnitude are then combined to determine the significance of effect on each receptor. The results of sensitivity and magnitude are compared against the matrix at Table 6.3 which in combination with professional judgement guides the assessment of overall significance. These levels of significance can either be beneficial or adverse and are described in Table 6.4. Effects that are categorised as neutral or slight would not be considered as significant.

Visual Assessment Criteria

The overall significance of effects is established by combining the separate judgements about sensitivity and magnitude of effects. Sensitivity includes an assessment of the visual receptors susceptibility to change and the value attached to views. Magnitude includes an evaluation of the visual impact identified in terms of size or scale and geographical extent of the area influenced. The criteria for assessing sensitivity of visual effects are shown at Table 6.1 below. The criteria for assessing the magnitude of impact are shown at Table 6.2 below. The separate assessments of sensitivity and magnitude are then combined to determine the significance of effect on each receptor. The results of sensitivity and magnitude are compared against the matrix at Table 6.3 which in combination with professional judgement guides the assessment of overall significance. These levels of significance can either be beneficial or adverse and are described in Table 6.4. Effects that are categorised as neutral or slight would not be considered as significant.

Table 6.1 - Criteria for assessing sensitivity of landscape and visual receptors

Sensitivity	Landscape	Visual
High	Key features and characteristics of landscape of distinctive character, susceptible to relatively small changes. Likely to be designated such as National Parks.	-Residential properties with views towards the proposals from ground floor and first floor windows, -Public footpaths or other recreational trails (e.g. national trails, footpaths, bridleways, etc.) with open views of the scheme proposals, -Users of recreational facilities where the purpose of that recreation is enjoyment of the countryside (e.g., National Parks or other access land etc.). Highly valued views (e.g., from heritage assets, views featured in art and literature).
Medium	Moderately significant features and characteristics in a distinctive landscape or a landscape of moderately distinctive character reasonably tolerant of changes.	-Residential properties with limited views due to partial obstruction towards the proposed scheme, -Public footpaths or other recreational trails (e.g., national trails, footpaths, etc.) with restricted views of the scheme proposals, -Outdoor workers, -Users of lower speed passenger railways, -Users of scenic roads, railways or waterways or users of designated tourist routes, -Schools and other institutional buildings, and their outdoor areas.
Low	Unimportant features or characteristics or indistinct landscape character types potentially tolerant of substantial change	-Indoor workers, -Users of main roads (e.g., motorway or national routes) or passengers in public transport on main arterial routes, -Users of higher speed passenger or freight railways, -Users of recreational facilities where the purpose of the recreation is not related to the view (e.g., sports facilities).

Table 6.2 - Magnitude of Impact Criteria

Magnitude	Landscape	Visual
Major	Total loss or large-scale damage to existing character or distinctive features and elements, and/ or the addition of new but uncharacteristic conspicuous features and elements.	The project, or a part of it, would become the dominant feature or focal point of the view. Majority of viewers affected. Major alteration of baseline view.

Magnitude	Landscape	Visual
	Large scale improvement of character by the restoration of features and elements, and/or the removal of uncharacteristic and conspicuous features and elements, or by the addition of new distinctive features.	
Moderate	Partial loss or noticeable damage to existing character or distinctive features and elements, and/ or the addition of new but uncharacteristic noticeable features and elements. Partial or noticeable improvement of character by the restoration of existing features and elements, and/ or the removal of uncharacteristic and noticeable features and elements, or by the additional of new characteristic features.	The project, or a part of it, would form a noticeable feature or element of the view which is readily apparent to the receptor. Many/some viewers affected. Partial alteration of baseline view.
Minor	Slight loss or damage to existing character or features and elements, and/or the addition of new but uncharacteristic features and elements. Slight improvement of character by the restoration of existing features and elements, and/or the removal of uncharacteristic features and elements, or by the addition of new characteristic elements.	The project, or a part of it, would be perceptible but not alter the overall balance of features and elements that comprise the existing view. Few viewers affected. Minor alteration of baseline view.
Negligible	Barely noticeable loss or damage to existing character or features and elements, and/or the addition of new but uncharacteristic features and elements. Barely noticeable improvement of character by the restoration of existing features and elements, and/or the removal of uncharacteristic features and elements, or by the addition of new characteristic elements.	Only a very small part of the project would be discernible, or it is at such a distance that it would form a barely noticeable feature or element of the view. Few viewers affected. Very minor alteration of baseline view.
No Change	No noticeable loss, damage or alternation to character or features or elements.	No part of the project, or work or activity associated with it, is discernible. No viewers affected.

Table 6.3 - Significance of effect categories

Landscape/ Visual Sensitivity	Magnitude of impact				
	No change	Negligible	Minor	Moderate	Major
High	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate

Table 6.4 - Typical descriptions of significance of effect categories

Category	Landscape	Visual
Very Large Beneficial Effect	The project would greatly enhance the character (including quality and value) of the landscape; create an iconic high-quality feature and/or series of elements; enable a sense of place to be created or greatly enhanced.	The project would create an iconic new feature that would greatly enhance the view.
Large Beneficial Effect	The project would enhance the character (including quality and value) of the landscape; enable the restoration of characteristic features and elements lost as a result of changes from inappropriate management or development; enable a sense of place to be enhanced.	The project would lead to a major improvement in a view from a highly sensitive receptor.
Moderate Beneficial Effect	The project would improve the character (including quality and value) of the landscape; enable the restoration of characteristic features and elements partially lost or diminished as a result of changes from inappropriate management or development; enable a sense of place to be restored.	The proposals would cause obvious improvement to a view from a moderately sensitive receptor, or perceptible improvement to a view from a more sensitive receptor.
Slight Beneficial Effect	The project would complement the character (including quality and value) of the landscape; maintain or enhance characteristic features and elements; enable some sense of place to be restored.	The project would cause limited improvement to a view from a receptor of medium sensitivity or would cause greater improvement to a view from a receptor of low sensitivity.
Neutral Effect	The project would maintain the character (including quality and value) of the landscape; blend in with characteristic features and elements; enable a sense of place to be retained.	Difficult to distinguish. Barely perceptible change in view. No perceptible change in view
Slight Adverse Effect	The project would not quite fit the character (including quality and value) of the landscape; be at variance with characteristic features and elements; detract from a sense of place.	The project would cause limited deterioration to a view from a receptor of medium sensitivity or cause greater deterioration to a view from a receptor of high sensitivity.
Moderate Adverse Effect	The project would conflict with the character (including quality and value) of the landscape; have an adverse impact on characteristic features or elements; diminish a sense of place	The project would cause obvious deterioration to a view from a moderately sensitive receptor, perceptible damage to a view from a more sensitive receptor.
Large Adverse Effect	The project would be at considerable variance with the character (including quality and value) of the landscape; degrade or diminish the integrity of a range of characteristic features and elements; damage a sense of place.	The project would cause major deterioration to a view from a highly sensitive receptor and would constitute a major discordant element in the view.
Very Large Adverse Effect	The project would be at complete variance with the character (including quality and value) of the	The project would cause the loss of views from a highly sensitive receptor and would constitute a

Category	Landscape	Visual
	landscape; cause the integrity of characteristic features, elements and sense of place to be lost.	dominant discordant feature in the view.

6.3. Planning Context

This section summarises local planning policy relevant to landscape and views, drawing on the Fingal Development Plan 2023-2029. Information on landscape character and landscape designations is described under the 'landscape baseline' at Section 6.4 below.

Policy GINHP3 – Greening of Developments

Includes reference to the following.

Encourage measures for the "greening" of new developments including the use of green roofs, brown roofs, green walls and water harvesting.

The proposed development includes a planted green corridor and tree, woodland and hedgerow planting to the periphery of the site.

Policy GINHP5 – Green Infrastructure Network

This policy calls for the development of *'the green infrastructure network to ensure the conservation and enhancement of biodiversity, including the protection of European Sites, the provision of accessible parks, open spaces and recreational facilities (including allotments and community gardens), the sustainable management of water [and] the maintenance of landscape character…'*

The proposed development incorporates green space around the central existing watercourse.

Objective GINHO15 – SuDs

The requirements of this policy are:

Limit surface water run-off from new developments through the use of appropriate Sustainable Urban Drainage Systems (SuDS) using nature-based solutions and ensure that SuDS is integrated into all new development in the County.

The proposed development incorporates SuDs measures within the drainage design. The section of the Santry River within the site will be retained including a planted riparian zone.

Policy GINHP9 – Landscape Character

The requirements of this policy are:

Ensure green infrastructure provision responds to and reflects landscape character including historic landscape character, conserving, enhancing and augmenting the existing landscapes and townscapes of Fingal which contribute to a distinctive sense of place.

The proposed development include green infrastructure in the form of a green corridor crossing the centre of the site and peripheral tree, woodland and hedge planting.

Policy GINHP10 – Green Infrastructure and Development

This policy calls for '*a net gain in green infrastructure*' through a combination of protection of existing assets and creation of new green infrastructure.

Whilst the proposed development will result in the removal of some mature tree cover, it also includes the creation of green space, meadow, woodland, hedgerow and tree planting contributing to green infrastructure within the area.

Policy GINHP21 – Protection of Trees and Hedgerows

This policy refers to the protection *'of existing woodlands, trees and hedgerows which are of amenity or biodiversity value.'*

Whilst the proposed development will result in the removal of some mature tree cover, it also includes the creation of green space, meadow, woodland, hedgerow and tree planting contributing to green infrastructure within the area.

Policy GINHP22 – Tree Planting

This policy refers to the following *'provide for appropriate protection of trees and hedgerows, recognising their value to our natural heritage, biodiversity and climate action and encourage tree planting in appropriate locations.'*

Existing hedgerows to the site boundary will be mostly retained. Whilst the proposed development will result in the removal of some mature tree cover, it also includes the creation of green space, meadow, woodland, hedgerow and tree planting contributing to green infrastructure within the area.

Policy GINHP10 – Green Infrastructure and Development

This policy calls for '*a net gain in green infrastructure*' through a combination of protection of existing assets and creation of new green infrastructure.

Whilst the proposed development will result in the removal of some mature tree cover, it also includes the creation of green space, meadow, woodland, hedgerow and tree planting contributing to green infrastructure within the area.

Policy GINHP25 – Preservation of Landscape Types

Includes reference to the following.

Ensure the preservation of the uniqueness of a landscape character type by having regard to the character, value and sensitivity of a landscape when determining a planning application.

Objective GINHO57 – Development and Landscape – enlarges on this by requiring that '*development reflects and, where possible, reinforces the distinctiveness and sense of place of the landscape character types, including the retention of important features or characteristics, taking into account the various elements which contribute to their distinctiveness…*' As noted below, the site and Study Area are to a certain extent atypical of the character type identified by the local Landscape Character Assessment. Hence, whilst the policy requires preservation of the characteristics contributing to character within the type, insofar as the proposed development affect those characteristics, the effects are highly limited and compensated. This is discussed at Section 6.4 below.

6.4. Receiving Environment- Landscape

The aim of the landscape baseline is '*to provide an understanding of the landscape in the area that may be affected, its constituent elements, its character and way it varies spatially, its geographic extent, its history, its condition and the way the landscape is experienced, and the value attached it'* (Landscape Institute and Institute of Environmental Management and Assessment, 2013).

Local Landscape Character Assessment

The study area lies within the 'Low Lying Character Type' described within the Fingal County Council Landscape Character Assessment included in the Fingal Development Plan 2023-2029. This character type is described as follows:

Low Lying Character Type has an open character combined with large field patterns, few tree belts and low roadside hedges. The main settlements located within the area include Oldtown, Ballyboghil and Lusk and parts of Malahide and Donabate. Dublin Airport is located in this area. This low-lying area is dominated by agriculture and a number of settlements. The area is categorised as having a modest value. It contains pockets of important value areas requiring particular attention such as important archaeological monuments and demesnes and also the Feltrim Hill and Santry Demesne proposed Natural Heritage Areas. The Fingal County Council Landscape Character Assessment character assessment also categorises this character type as low sensitivity.

The site and study area display the following characteristics in common with this description:

- open character
- few tree belts and low roadside hedges
- Dublin Airport located in the area
- low-lying area
- modest in value

From the site study it was observed that the character of the landscape within the study area is atypical of the description of the Low Lying Character Type. The local landscape is a combination of agricultural, airport, road infrastructure and large scale industrial/ commercial land use. Forces for changes include the expansion of industrial and airport related infrastructure.

Landscape Designations

The site and Study Area do not coincide with any landscape designations. There are no protected views within the study area.

Study Area Description

Table 6.5 below sets out the attributes contributing to character within the Study Area together with their likely condition, and value and is summarised below.

The proposed development site lies to the south of the South Parallel Road south of the Dublin Airport complex, and adjacent to existing commercial and parking facilities. It is bounded to the north by a closely maintained low hedge, to the west by the remaining area of grazed field, to the south by commercial development and to the east by a private access road serving these facilities. An unmaintained, tall native hedgerow runs north-south along a narrow lane slightly further to the west. A narrow ditch lined by scrubby vegetation crosses the site on an east-west axis. A bulkier, albeit patchy belt of trees and scrub crosses part of the proposed development site in the north. This belt is attractively diverse, comprising a variety of native tree and shrub species and with a scalloped, naturalistic edge. The remainder of the site comprises grazed areas to either side of this tree and scrub belt.

Beyond the proposed development site, the study area incorporates part of the runway system and outfields of Dublin Airport, the South Parallel Road, fields, commercial and industrial premises, large areas of car parking and a small number of residential dwellings to the immediate west of the proposed development site. The topography is flat and tree cover minimal, so that wide ranging views are possible across the area, with relatively low buildings and structures forming key features on the skyline in any direction. The southern boundary fencing of the airfield makes a strong impression, dividing the rural agricultural landscape south of the airport from the simple, extensive plain of the airfield. Roadside and field ditches form the only surface water.

Table 6.5 – Condition and value of attributes of landscape character within the study area

Attribute	Description	Condition	Value
Topography	Mostly flat area (as suited to an airfield), with some artificial mounding around entrance roads.	N/A	Low
Vegetation	Managed and unmanaged hedgerows, patchy tree/ woodland / scrub belts, grazed fields (including the site), arable farmland, maintained mown grassland (airfield).	Good	Medium
Surface water	Drainage ditches and streams.	Good	Low
Land-use	Agriculture, airport, commercial development, residential, road infrastructure.	Good	Medium
Spatial pattern	Combination of large open space (airfield, car parking), medium scale semi-regular fields (agricultural areas) and highly organised linear spaces between built development (commercial areas).	N/A	Low
Materials	(Aside from vegetation) Concrete, glass, metal and tarmac.	Good	Low
Features	Airfield and fencing, commercial/ industrial buildings, moving aircraft, roadside hedgerows.	Good	Medium
Aesthetic qualities	Industrial, modernist and contemporary architecture set within a plain, weakly structured landscape albeit with some positive aspects.	Poor	Low

Landscape Value

The proposed development site and Study Area do not coincide with any landscape designations. The value attributed to landscape within the Study Area is likely to be *low*, in keeping with the 'modest' attribution given in the council's Landscape Character Assessment for the Low Lying Character Type.' Attributes of landscape character such as vegetation (includes trees and woodland) are likely to have medium local value.

6.5. Receiving Environment- Visual

The aim of the visual baseline is '*to establish the area in which the development may be visible, the different groups of people who may experience views of the development, the places where they will be affected and the nature of the views and visual amenity at those points'* (Landscape Institute and Institute of Environmental Management and Assessment, 2013).

Visual Envelope

The Visual Envelope or areas of public accessible land from which the development may be potentially visible was estimated using a manual approach using map interpretation, and visual envelope mapping on site to establish the outer limit of land that may be visually connected with the proposals.

The areas identified are predominately located within 1km from the proposed development site and includes the South Parallel Road (R108), both near the site and on its return section north of the southern runway, the southern runway and Harristown Lane. Views from the south are limited by intervening buildings located within Horizon Logistics Park which restrict views to the site from the south.

Following the desktop assessment and field survey, nine viewpoint locations were selected based on professional judgement to represent the experience of visual receptors. The viewpoints chosen, do not cover every view but have been selected to represent the different receptors from a range of directions and distances from the proposed development site. The viewpoint locations are illustrated on the Visibility drawing, in Appendix 6.1. The viewpoint images are illustrated in Appendix 6.2.

Visual Amenity Designations

There are no protected views within the study area.

Visual Receptors

Roads

The Visual Envelope suggests the site and the proposals would be visible from users of the section of the South Parallel Road (R108), both near the proposed development site and on its return section north of the southern runway (refer to Viewpoints, 1,2,3, 4, 5, 6 & 9). The proposed development site and the proposals would not be visible from Harristown Lane due to dense intervening vegetation, except where there may be short, glimpsed views towards the development from the limited section of Harristown Lane immediately located west of the site (refer to Viewpoints 7 & 8).

Residential Areas

There may be some views from upper storey windows from dwellings located immediately to the west of the proposed development site at Harristown Lane. Views to the site from these dwellings at ground level would be limited by dense intervening vegetation (refer to Viewpoint 7).

Industrial areas

Horizon Logistics Park is located to the south of the proposed development site. There would be some views to the proposed development site from buildings and external areas located immediately opposite to the proposed development site's southern boundary. As Horizon Business Park including it associated roads infrastructure is not accessible to the public, it was excluded from this assessment.

Representative Viewpoints

The nature and characteristics of the baseline view from representative viewpoints is described at Table 6.6 below.

Table 6.6 – Representative viewpoints-nature and characteristic of the baseline view

Viewpoint	Nature and Characteristics of the Baseline View
1	From the R108 Road looking south west, approximately 53m from the proposed development site. The existing junction to Horizon Logistics Park is visible, including signage, grass mounding and semi-mature trees. Behind the mounding, existing security fencing and woodland vegetation within the site are visible. A mature hedgerow is visible in the distance fronting the boundary of the proposed development site with the R108 Road. Receptors at this viewpoint would include users of the R108 Road.
2	From the R108 Road looking south west, approximately 250m from the proposed development site. The existing junction to Horizon Logistics Park is partially visible, including signage and grass mounding. Behind the mounding, woodland vegetation within the proposed development site is visible in the distance. A mature hedgerow is visible in the distance fronting the boundary of the site with the R108 Road. Receptors at this viewpoint would include users of the R108 Road.

Viewpoint	Nature and Characteristics of the Baseline View
3	From the R108 Road looking south west, approximately 530m from the proposed development site. The existing junction to Horizon Logistics Park is barely perceptible. Woodland vegetation within the site is visible in the distance. A mature hedgerow is visible in the distance fronting the boundary of the site with the R108 Road. Receptors at this viewpoint would include users of the R108 Road.
4	From the R108 Road looking south east, approximately 60m from the proposed development site. The junction to Horizon Logistics Park is not visible. The existing hedgerow along the R106 Road is visible in the view and screens the site. Behind the hedgerow a line of woodland vegetation within the site is visible. Receptors at this viewpoint would include users of the R108 Road.
5	From the R108 Road looking south east, approximately 215m from the proposed development site. The junction to Horizon Logistics Park is not visible. The existing hedgerow along the R106 Road is visible in the view and screens the site. Behind the hedgerow a line of woodland vegetation within the proposed development site is visible. Receptors at this viewpoint would include users of the R108 Road.
6	From the R108 Road looking south east, approximately 520m from the proposed development site. The junction to Horizon Logistics Park is not visible. Existing security fencing along the airfield is visible. The existing hedgerow along the R106 Road is visible in the view and screens the site. Behind the hedgerow a line of woodland vegetation both within and outside the proposed development site is visible. Buildings within Horizon Logistics Park are partially visible in the view. Receptors at this viewpoint would include users of the R108 Road.
7	From Harristown Lane looking north east, approximately 86m from the proposed development site. There are views of roadside side vegetation. The proposed development site itself is not visible and is screened by dense roadside and intervening vegetation. Receptors at this viewpoint would include adjacent residents in dwellings and users of Harristown Lane.
8	From a gap in the hedgerow at Harristown Lane looking north east, approximately 478m from the proposed development site. There are views of arable farmland, hedgerows, woodland and a building at Horizon Logistics Park. The proposed development site itself is not visible and is screened by dense intervening vegetation. Receptors at this viewpoint would include users of Harristown Lane.
9	From the R108 Road looking south east, approximately 478m from the proposed development site. There are distant views through security fencing towards buildings within Horizon Logistics Park, a water tower, woodland, and the Dublin Mountains in the background of the view. The proposed development site itself is barely perceptible, and woodland within the proposed development site itself forms a very small part of woodland within the view. Receptors at this viewpoint would include users of the R108 Road including people parking at lay-bys to view the airfield and aircraft.

6.6. Potential Landscape Effects during Construction Phase

This section describes the effects of the proposed development on landscape receptors during the construction phase and assesses the significance of the effects identified.

Landscape Value and Susceptibility

The proposed development site and Study Area do not coincide with any landscape designations. The value attributed to landscape within the Study Area is likely to be *low*, in keeping with the 'modest' attribution given in the council's Landscape Character Assessment for the Low Lying Character Type.' The local landscape is judged to have *low* susceptibility to change as a result of the proposed development. The combination of low susceptibility and low value mean that the sensitivity of overall local landscape character is judged to be low.

Attributes of landscape character such as vegetation (includes trees and woodland) are likely to have medium local value and medium susceptibility to the proposed development and are judged to be medium sensitivity. The value and susceptibility of attributes of landscape character are listed at Table 6.7 below.

Table 6.7 – Value and susceptibility of attributes of landscape character within the study area

Attribute	Description	Condition	Value	Susceptibility
Topography	Mostly flat area (as suited to an airfield), with some artificial mounding around entrance roads.	N/A	Low	Low
Vegetation	Managed and unmanaged hedgerows, patchy tree/ woodland / scrub belts, grazed fields (including the site), arable farmland, maintained mown grassland (airfield).	Good	Medium	Medium
Surface water	Drainage ditches and streams.	Good	Low	Medium
Land-use	Agriculture, airport, commercial development, residential, road infrastructure.	Good	Medium	Low
Spatial pattern	Combination of large open space (airfield, car parking), medium scale semi-regular fields (agricultural areas) and highly organised linear spaces between built development (commercial areas).	N/A	Low	Low
Materials	(Aside from vegetation) Concrete, glass, metal and tarmac.	Good	Low	Low
Features	Airfield and fencing, commercial/ industrial buildings, moving aircraft, roadside hedgerows.	Good	Medium	Low
Aesthetic qualities	Industrial, modernist and contemporary architecture set within a plain, weakly structured landscape albeit with some positive aspects.	Poor	Low	Low

Landscape Effects

Table 6.8 below lists the effects of construction upon the attributes of character previously identified.

Table 6.8 – Effects upon landscape character during the construction phase

Attribute	Effects	Sensitivity	Magnitude	Significance
Topography	Removal of small area of artificial mounding at entrance to service road exiting R108.	Low	Minor Adverse	Slight adverse effect
Vegetation	Loss of linear tree and scrub belt in north of the proposed development site. Loss of semi-mature trees planted near to entrance. Loss of grassland through most of site.	Medium	Moderate Adverse	Moderate adverse effect
Surface water	Culverting of short minor sections of existing stream.	Medium	Negligible Adverse	Neutral
Land-use	Change of proposed development site use to construction.	Low	Negligible Adverse	Neutral
Spatial pattern	Closing off of previously open area.	Low	Minor Adverse	Neutral
Materials	Presence of building materials stored and in use.	Low	Minor Adverse	Slight adverse effect

Features	No effect on any noted features.	Medium	No Change	Neutral
Aesthetic qualities	Introduction of disruptive features (construction machinery, bare earth etc.) reducing aesthetic appeal.	Low	Negligible Adverse	Slight adverse effect

The combination of the above attributes, suggest that the overall significance of the effect on landscape character in the study area during construction would be slight adverse effect and of temporary to short term duration.

6.7. Potential Landscape Effects during Operational Phase

This section describes the effects of the proposed development on landscape receptors and assesses the significance of the effects identified.

Landscape Value and Susceptibility

This has already been discussed at Section 6.6 above.

Landscape Effects

Table 6.9 below lists the effects of the proposals upon the attributes of character previously identified.

Table 6.9 – Effects upon landscape character during the operational phase

Attribute	Effects	Sensitivity	Magnitude	Significance
Topography	Removal of small area of artificial mounding at entrance to service road exiting R108, and replacement with car parking and new boundary landscaping.	Low	Minor Adverse	Slight adverse effect
Vegetation	Loss of tree and scrub belt in north of the proposed development site. Loss of semi-mature trees near to entrance. Loss of grassland through most of proposed development site. Addition of native woodland belt to north of site, including frequent standard trees. Addition of standard trees and woodland to either side of existing field ditch crossing proposed development site; addition of native hedgerow with standard trees to southern boundary of proposed development site; addition of native hedgerow and standard street trees to entrance road into commercial area passing through proposed development site; addition of wildflower meadow.	Medium	Moderate at opening year reducing to No Change once proposed planting matures.	Moderate Adverse effect at opening year. This would reduce to Neutral effect once the proposed planting matures.
Surface water	Minor culverting of sections of existing stream.	Medium	Negligible	Neutral effect
Land-use	Change of site use to car parking.	Low	Minor Adverse	Neutral effect

Attribute	Effects	Sensitivity	Magnitude	Significance
Spatial pattern	No overall change.	Low	No Change	Neutral effect
Materials	Increase in tarmac, concrete, metal and other building materials within study area.	Low	Minor Adverse	Slight adverse effect
Features	No effect on any noted features.	Medium	No Change	Neutral effect
Aesthetic qualities	Replacement of agricultural aesthetic with parking including planting in a small part of the study area.	Low	Negligible	Neutral effect

The combination of the above attributes, suggest that the overall significance of the effect on landscape character in the study area would be a neutral effect.

6.8. Potential Visual Effects during Construction Phase

This section describes the effects of the proposed development on visual receptors during the construction phase and assesses the significance of the effects identified.

Value and Susceptibility of views

Users of the R108 Road would mostly be travelling at speed and their attention or interest would not primarily be to be focused on the landscape and are judged to have low susceptibility. There are no designated viewpoints from the R108 road within the study and the value of views is therefore judged to be low. The combination low susceptibility and low value of the view the sensitivity of these receptors would be low.

Users of the residential area at Harristown Lane to the west of the site would have high susceptibility, however the value of their existing views within the context of the adjacent airport runways and industrial development is judged to be low. The combination high susceptibility and low value the sensitivity of these receptors would be medium.

Table 6.10 below lists the visual effects of construction upon receptors represented by viewpoints 1-9. These effects would be at most moderate in magnitude.

Table 6.10– Visual Effects during Construction Phase

Viewpoint	Effects	Sensitivity	Magnitude	Significance
1	Removal of artificial earth mounding and some vegetation from the view and replacement with view to surface car parking under construction. Short term views of construction activities.	Low	Moderate	Moderate adverse
2	Removal of earth mounding and some vegetation from small part of the view and replacement with partial limited view of surface car parking under construction. Short term views of construction activities.	Low	Minor	Slight adverse
3	Removal of some vegetation from small part of the view and replacement with barely noticeable view of surface car	Low	Negligible	Neutral

Viewpoint	Effects	Sensitivity	Magnitude	Significance
	parking under construction. Short term views of construction activities.			
4	Removal of line of mature woodland from the view. Existing hedgerow retained will screen most construction activities.	Low	Moderate	Moderate adverse
5	Removal of part of line of mature woodland from the view. Existing hedgerow retained will screen most construction activities.	Low	Minor	Slight adverse
6	Removal of part of line of mature woodland from the view. Existing hedgerow retained and intervening woodland will screen most construction activities. Partial limited distant view of surface car parking under construction	Low	Minor	Slight adverse
7	The proposals would be screened by dense intervening vegetation. Only a small part of the proposals may be discernible through gaps in vegetation.	Medium	Negligible	Neutral
8	No part of the works would be discernible.	Low	No Change	Neutral
9	The works would be at such a distance that they would be barely noticeable in the view.	Low	Negligible	Neutral

The significance of the visual effect of the proposed development during construction was judged neutral from 4 viewpoints. This means the proposed development would be difficult to distinguish and/ or there would be barely perceptible change in view. The significance of the visual effect of the development during construction was judged as slight adverse from 3 viewpoints. This means the proposed development would cause limited deterioration to the view. The significance of the visual effect of the development during construction was judged as moderate adverse from 2 viewpoints. This means the proposed development would cause obvious deterioration to a view. The duration of effects during construction would be temporary to short term.

6.9. Potential Visual Effects during Operational Phase

This section describes the effects of the proposed development on visual receptors during the operational phase and assesses the significance of the effects identified.

Value and Susceptibility of views

This has already been discussed at Section 6.8 above.

Effects on Visual Receptors

Roads

Users of the R108 Road passing in close proximity to the site would experience slight to moderate adverse effect on views on opening year (refer to Viewpoints 1, 2, 4, 5 & 6). Once proposed planting to the proposed development site matures any Slight to Moderate Adverse effects would reduce to neutral. Further away from

the proposed development site the effects on users of the R108 Road would reduce to Neutral due to the effect of distance and intervening vegetation (refer to Viewpoints 3 & 9). The proposed development site would not be visible form Harristown Lane (refer to Viewpoints 7 & 8).

Residential Areas

Users of a group of dwellings located to the west of the proposed development site at Harristown Lane are screened by dense intervening vegetation, the effect is judged to be Neutral for ground level views (refer to Viewpoint 7).

Table 6.11 below lists the visual effects of the completed proposals upon receptors represented by Viewpoints 1-9.

Table 6.11 – Visual Effects during Operational Phase

Viewpoint	Effects	Sensitivity	Magnitude	Significance
1	Removal of earth mounding and some vegetation from the view and replacement with boundary fencing and planting. There will be partial views to surface car parking, lighting and structures within the car park. Views to the surface car parking and structures will be screened once boundary screen planting matures.	Low	Moderate	Moderate adverse on opening year and will reduce to Neutral once proposed screen planting matures.
2	Removal of artificial earth mounding and some vegetation from the view and replacement with partial limited view of surface car parking and structures. Views to the surface car parking and structures will be screened once boundary screen planting matures.	Low	Minor	Slight adverse on opening year and will reduce to Neutral once proposed screen planting matures.
3	Removal of some vegetation from the view and replacement with barely noticeable view of surface car parking.	Low	Negligible	Neutral
4	Removal of line of mature woodland from the view. Existing hedgerow retained will mostly screen proposed surface car parking and structures. Views will improve as proposed woodland planting to the site matures.	Low	Moderate	Moderate adverse on opening year and will reduce to Neutral once proposed screen planting matures.
5	Removal of part of line of mature woodland from the view. Existing hedgerow retained will mostly screen proposed surface car parking and structures. Views will improve as proposed woodland planting to the	Low	Minor	Slight adverse on opening year and will reduce to Neutral once proposed screen planting matures.

Viewpoint	Effects	Sensitivity	Magnitude	Significance
	proposed development site matures.			
6	Removal of part of line of mature woodland from the view. Existing hedgerow retained and intervening woodland will mostly screen proposed surface car parking and structures. Partial limited distant view of surface car parking. Views will improve as proposed woodland planting to the proposed development site matures.	Low	Minor	Slight adverse on opening year and will reduce to Neutral once proposed screen planting matures.
7	The proposals would be screened by dense intervening vegetation. Only a small part of the proposals may be discernible through gaps in vegetation.	Medium	Negligible	Neutral
8	No part of the works would be discernible.	Low	No Change	Neutral
9	The works would be at such a distance that they would be barely noticeable in the view.	Low	Negligible	Neutral

The significance of the visual effect of the development during operation was judged as neutral from 4 viewpoints in opening year. This means the proposed development would be difficult to distinguish and/ or there would be barely perceptible change in view.

The significance of the visual effect of the development during operation was judged as slight adverse from 3 viewpoints on opening year. This means the proposed development would cause limited deterioration to the view in the medium term. However once proposed screen planting matures (after 15 years) the significance of effect would reduce to neutral.

The significance of the visual effect of the development during operation was judged as moderate adverse from 2 viewpoints. This means the proposed development would cause obvious deterioration to a view in the medium term. However once proposed screen planting matures (after 15 years) the significance of effect would reduce to neutral.

6.10. Cumulative Effects

Chapter 17 and Chapter 18 of the Environmental Impact Assessment Report identifies cumulative effects intra project and with other proposed schemes.

The following development has been identified within the study area in consideration of cumulative landscape and visual effects with other projects.

Ground mounted solar photovoltaic (PV) array

A ground mounted solar photovoltaic (PV) array (Fingal County Council Planning Reference number FW22A/0021) is currently under construction. The site is located west of the proposed development and visually separated from the proposed development by intervening vegetation. The proposed solar photovoltaic (PV) array development includes a 10m wide buffer of screen planting along the R108 Road. There would be no additional significant cumulative landscape and visual effects arising from the proposed development in combination with the ground mounted solar photovoltaic (PV) array.

There would be no additional cumulative landscape and visual effects arising from the proposed development and in combination with other development within the study area.

6.11. Mitigation Measures

There would be no significant residual landscape and visual effects as a result of the proposed development. Therefore, no further mitigation measures are recommended to avoid, reduce or offset significant effects.

6.12. Residual Effects

There would be no significant residual landscape and visual effects as a result of the proposed development.

6.13. Difficulties encountered during preparation of this chapter

No difficulties were encountered during preparation of this chapter.

7. Air Quality

This chapter assesses the likely air quality effects associated with the proposed Remote South Staff Car Park. The Remote South Staff Car Park is a proposed new car park to provide parking for airport staff located to the west of the existing Holiday Blue Car Park at Dublin Airport, with an independent access. A full description of the development can be found in Chapter 2 – Project Description.

This chapter was completed by Aisling Cashell, an Environmental Consultant in the air quality section of AWN Consulting Ltd. She holds a BA and an MAI in Civil, Structural and Environmental Engineering from Trinity College Dublin. She is a member of Engineers Ireland. She has experience in mapping software, primarily in ArcGIS and she specialises in the area of air quality, climate and sustainability.

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7.1. Methodology

The principal guidance and best practice documents used to inform the assessment of potential impacts on air quality are summarised below. The assessment has made reference to national guidelines where available, in addition to international standards and guidelines relating to the assessment of air quality impacts:

- Guidance on the Assessment of Dust from Demolition and Construction V1. (Institute of Air Quality Management (IAQM) (hereafter referred to as the IAQM Guidelines) (IAQM, 2016);
- A Guide To The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1) (IAQM, 2020);
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (EC, 2013);
- PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects (Transport Infrastructure Ireland (TII), 2022a); and
- TII Road Emissions Model (REM): Model Development Report – GE-ENV-01107 (TII, 2022b).

In addition to specific air quality guidance documents, the following guidelines were considered and consulted in the preparation of this chapter:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the Environmental Protection Agency (EPA) Guidelines) (EPA, 2022);
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Environment, Community and Local Government, August 2018); and
- Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017).

7.1.1. Criteria for Rating Impacts

7.1.1.1. Ambient Air Quality Standards

In order to reduce the risk to health from poor air quality, national and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limit values or “Air Quality Standards” are health or environmental-based levels for which additional factors may be considered. For example, natural background levels, environmental conditions and socio-economic factors may all play a part in the limit value which is set.

Air quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values. The applicable standards in Ireland include the Air Quality Standards Regulations 2022 (S.I. No. 739 of 2022), which incorporate EU Directive 2008/50/EC, which has set limit values for a number of pollutants. The limit values for NO_2, PM_{10} and $PM_{2.5}$, are relevant to this assessment (see Table 7.1).

Table 7.1 - Air Quality Standards Regulations and TA Luft

Pollutant	Regulation Note 1	Limit Type	Value
Dust Deposition	TA Luft (German VDI 2002)	Annual average limit for nuisance dust	350 mg/m^2/day
NO_x	2008/50/EC	Annual limit value for the protection of vegetation	30 µg/m^3 NO + NO_2
Nitrogen Dioxide (NO_2)	2008/50/EC	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 µg/m^3
		Annual limit for protection of human health	40 µg/m^3
Particulate Matter (as PM_{10})	2008/50/EC	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m^3 PM_{10}
		Annual limit for protection of human health	40 µg/m^3 PM_{10}
Particulate Matter (as $PM_{2.5}$) - Stage 1	2008/50/EC	Annual limit for protection of human health	25 µg/m^3 $PM_{2.5}$
Particulate Matter (as $PM_{2.5}$) - Stage 2 Note 2	2008/50/EC	Annual limit for protection of human health	20 µg/m^3 $PM_{2.5}$

Note 1 EU 2008/50/EC – Clean Air For Europe (CAFÉ) Directive replaces the previous Air Framework Directive (1996/30/EC) and daughter directives 1999/30/EC and 2000/69/EC

Note 2 Stage 2 indicative limit value for $PM_{2.5}$ to be applied from 1 January 2020 after review by the European Commission

In April 2023, the Government of Ireland published the Clean Air Strategy for Ireland (Government of Ireland, 2023), which provides a high-level strategic policy framework needed to reduce air pollution. The strategy commits Ireland to achieving the 2021 World Health Organisation (WHO) Air Quality Guidelines Interim Target 3 (IT3) by 2026 (shown in Table 7.2), the IT4 targets by 2030 and the final targets by 2040 (shown in Table 7.1). The strategy notes that a significant number of Environmental Protection Agency (EPA) monitoring stations observed air pollution levels in 2021 above the WHO targets; 80% of these stations would fail to meet the final $PM_{2.5}$ target of 5 µg/m^3. The strategy also acknowledges that "meeting the WHO targets will be challenging and will require legislative and societal change, especially with regard to both $PM_{2.5}$ and NO_2". Ireland will revise its air quality legislation in line with the proposed EU revisions to the EU 2008/50/EC – Clean Air For Europe (CAFE) Directive, which will set interim 2030 air quality standards and align the EU more closely with the WHO targets. At present, the applicable air quality assessment criteria for the proposed development are the Ambient Air Quality Standards set under Directive 2008/50/EC and shown in Table 7.1.

Table 7.2 - WHO Air Quality Guidelines 2021

Pollutant	Regulation	Limit Type	IT3 (2026)	IT4 (2030)	Final Target (2040)
NO_2	WHO Air Quality Guidelines	24-hour limit for protection of human health	50µg/m³ NO_2	50µg/m³ NO_2	25µg/m³ NO_2
		Annual limit for protection of human health	30µg/ m³ NO_2	20µg/ m³ NO_2	10µg/m³ NO_2
PM (as PM_{10})		24-hour limit for protection of human health	75µg/ m³ PM_{10}	50µg/m³ PM_{10}	45µg/m³ PM_{10}
		Annual limit for protection of human health	30µg/ m³ PM_{10}	20µg/m³ PM_{10}	15µg/m³ PM_{10}
PM (as $PM_{2.5}$)		24-hour limit for protection of human health	37.5µg/m³ $PM_{2.5}$	25µg/m³ $PM_{2.5}$	15µg/m³ $PM_{2.5}$
		Annual limit for protection of human health	15µg/m³ $PM_{2.5}$	10µg/m³ $PM_{2.5}$	5µg/m³ $PM_{2.5}$

7.1.1.2. Dust Deposition Guidelines

The concern from a health perspective is focused on particles of dust which are less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$) and the EU ambient air quality standards outlined in Table 7.1 have set ambient air quality limit values for PM_{10} and $PM_{2.5}$.

With regards to larger dust particles that can give rise to nuisance dust, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland. Furthermore, no specific criteria have been stipulated for nuisance dust in respect of this development.

With regard to dust deposition, the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/m^2/day averaged over a one year period at any receptors outside the site boundary. Recommendations from the Department of the Environment, Heritage & Local Government (DEHLG, 2004) apply the TA Luft limit of 350 mg/m^2/day to the site boundary of quarries. This limit value can also be implemented with regard to dust effects from construction of the proposed development.

7.1.1.3. Air Quality & Traffic Impact Significance Criteria

The TII document Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022a) details a methodology for determining air quality impact significance criteria for road schemes which can be applied to any project that causes a change in traffic. The degree of impact is determined based on the percentage change in pollutant concentrations relative to the Do Nothing scenario. The TII significance criteria are outlined in Table 4.9 of Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022a) and reproduced in Table 7.3. These criteria have been adopted for the proposed development to predict the effects of NO_2, PM_{10} and $PM_{2.5}$ emissions as a result of the proposed development.

Table 7.3 - Air Quality Significance Criteria

Long Term Average Concentration at Receptor in Assessment Year	% Change in Concentration Relative to Air Quality Standard Value (AQLV)			
	1%	2-5%	6-10%	>10%
75% or less of AQLV	Neutral	Neutral	Slight	Moderate
76 – 94% of AQLV	Neutral	Slight	Moderate	Moderate
95 – 102% of AQLV	Slight	Moderate	Moderate	Substantial
103 – 109% of AQLV	Moderate	Moderate	Substantial	Substantial
110% or more of AQLV	Moderate	Substantial	Substantial	Substantial

Source: TII (2022a) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106

7.1.2. Construction Phase Methodology

7.1.2.1. Construction Traffic Assessment

Construction phase traffic has the potential to impact air quality. The TII guidance Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022a), states that road links meeting one or more of the following criteria can be defined as being 'affected' by a proposed development and should be included in the local air quality assessment. While the guidance is specific to infrastructure projects, the approach can be applied to any development that causes a change in traffic:

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5m or greater.

AECOM have provided the traffic data required for this assessment (Refer to Appendix 2 'AECOM (2023) Traffic Impact Assessment' within Appendix 10.1 -Volume 3). AtkinsRéalis have prepared Chapter 10 (Traffic and Transportation) in this EIAR. As per the TII scoping criteria detailed above, it has been determined by AECOM that the construction stage traffic will not increase by 1,000 AADT, or 200 HDV AADT. In addition, the proposed development will not result in speed changes or changes in road alignment. Therefore, the traffic does not meet the above scoping criteria. A detailed air quality assessment of construction stage traffic emissions has been scoped out from any further assessment as there is no potential for significant impacts to air quality.

7.1.2.2. Construction Dust Assessment

The Institute of Air Quality Management in the UK (IAQM) guidance document 'Guidance on the Assessment of Dust from Demolition and Construction' (2024) outlines an assessment method for predicting the impact of dust emissions from demolition, earthworks, construction and haulage activities based on the scale and nature of the works and the sensitivity of the area to dust impacts. The IAQM methodology has been applied to the construction phase of this development to predict the likely risk of dust impacts in the absence of mitigation measures and to determine the level of site-specific mitigation required. Transport Infrastructure Ireland (TII) recommends the use of the IAQM guidance (2024) in the TII guidance document Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022a).

The major dust generating activities are divided into four types within the IAQM guidance (2024) to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (transport of dust and dirt from the construction site onto the public road network).

The magnitude of each of the four categories is divided into large, medium or small scale depending on the nature of the activities involved. The magnitude of each activity is combined with the overall sensitivity of the area to

determine the risk of dust impacts from site activities. This allows the level of site-specific mitigation to be determined.

7.1.3. Operational Phase Methodology

7.1.3.1. Operational Phase Traffic Assessment

Operational phase traffic has the potential to affect local air quality as a result of increased vehicle movements associated with the proposed development. The TII scoping criteria detailed in Section 7.1.2.1 were used to determine if any road links are affected by the proposed development and require inclusion in a detailed air dispersion modelling assessment. The proposed development will result in the operational phase traffic increasing by more than 1,000 AADT on three road links. Therefore, a detailed air dispersion modelling assessment of operational phase traffic emissions was conducted.

The impact to air quality as a result of changes in traffic is assessed at sensitive receptors in the vicinity of affected roads. The TII guidance (2022a) states a proportionate number of representative receptors which are located in areas which will experience the highest concentrations or greatest improvements as a result of the proposed development are to be included in the modelling. The TII criteria state that receptors within 200m of impacted road links should be assessed; roads which are greater than 200m from receptors will not impact pollutant concentrations at that receptor. The TII guidance (2022a) defines sensitive receptor locations with relevant exposure to annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations as residential properties, schools, hospitals, care homes, hotels and B&Bs i.e., locations where members of the public are likely to be regularly present. A total of 1 no. high sensitivity residential receptor (R1) and 1. no medium sensitivity receptor (R2) was included in the modelling assessment (as shown in Figure 7-1.). There were very few high sensitivity receptors (houses, schools, or hospitals etc.) in the area and even fewer within 200m of the affected road links. The GAA club (R2) was therefore modelled as a conservative receptor, as this is a sports centre where people are unlikely to be present continuously and do not have relevant exposure to annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations.

The TII guidance (2022a) states that modelling should be conducted for NO_2, PM_{10} and $PM_{2.5}$ for the Base Year, Opening Year and Design Year for both the Do Minimum (Do Nothing) and Do Something scenarios. Modelling of operational NO_2, PM_{10} and $PM_{2.5}$ concentrations has been conducted for the Do Nothing and Do Something scenarios using the TII Road Emissions Model (REM) online calculator tool (TII, 2022b).

The following inputs are required for the REM tool: receptor locations, light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type, project county location and pollutant background concentrations. The Default fleet mix option was selected along with the Intermediate Case fleet data base selection, as per TII Guidance (TII, 2022b). The Intermediate Case assumes a linear interpolation between the Business as Usual case – where current trends in vehicle ownership continue and the Climate Action Plan (CAP) case – where adoption of low emission light duty vehicles occurs.

Using this input data, the model predicts the road traffic contribution to ambient ground level concentrations at the identified sensitive receptors using generic meteorological data. The TII REM uses county-based Irish fleet composition for different road types, for different European emission standards from pre-Euro to Euro 6/VI with scaling factors to reflect improvements in fuel quality, retrofitting, and technology conversions. The TII REM also includes emission factors for PM_{10} emissions associated with brake and tyre wear (TII, 2022b). The predicted road contributions are then added to the existing background concentrations to give the predicted ambient concentrations. The ambient concentrations are then compared with the relevant ambient air quality standards to assess the compliance of the proposed development with these ambient air quality standards.

The TII guidance (2022a) also states that impacts to sensitive ecology as a result of traffic emissions should be considered. Consideration should be given to designated sites within 2 km of the proposed development; however, a detailed assessment is only required at a local level, where there is a designated site within 200 m of impacted road links. There are no European sensitive designated sites within 2 km of the proposed development and therefore a detailed assessment of NO_X concentrations and nitrogen deposition has been screened out as there is no potential for significant impacts to designated sites as a result of changes in air quality.

7.1.3.2. Traffic Data used in Modelling Assessment

Traffic flow information was obtained from AECOM for the purposes of this assessment. Data for the Base Year 2023 and the Do Nothing and Do Something scenarios for the Opening Year 2028 and Design Year 2038 were provided. In order to assess the full cumulative impact of the development, the traffic data has included specific cumulative developments within the area (see Traffic Impact Assessment for further details - Refer to Appendix 2 ‘AECOM (2023) Traffic Impact Assessment’ within Appendix 10.1).

The traffic data are detailed in Table 7.4. Only road links that met the TII scoping criteria and that were within 200 m of receptors were included in the modelling assessment. Background concentrations have been included as per Section 7.2.2 of this chapter based on available EPA background monitoring data (EPA, 2023a). Figure 7-1 shows the location of sensitive receptors used in the operational phase air quality assessment.

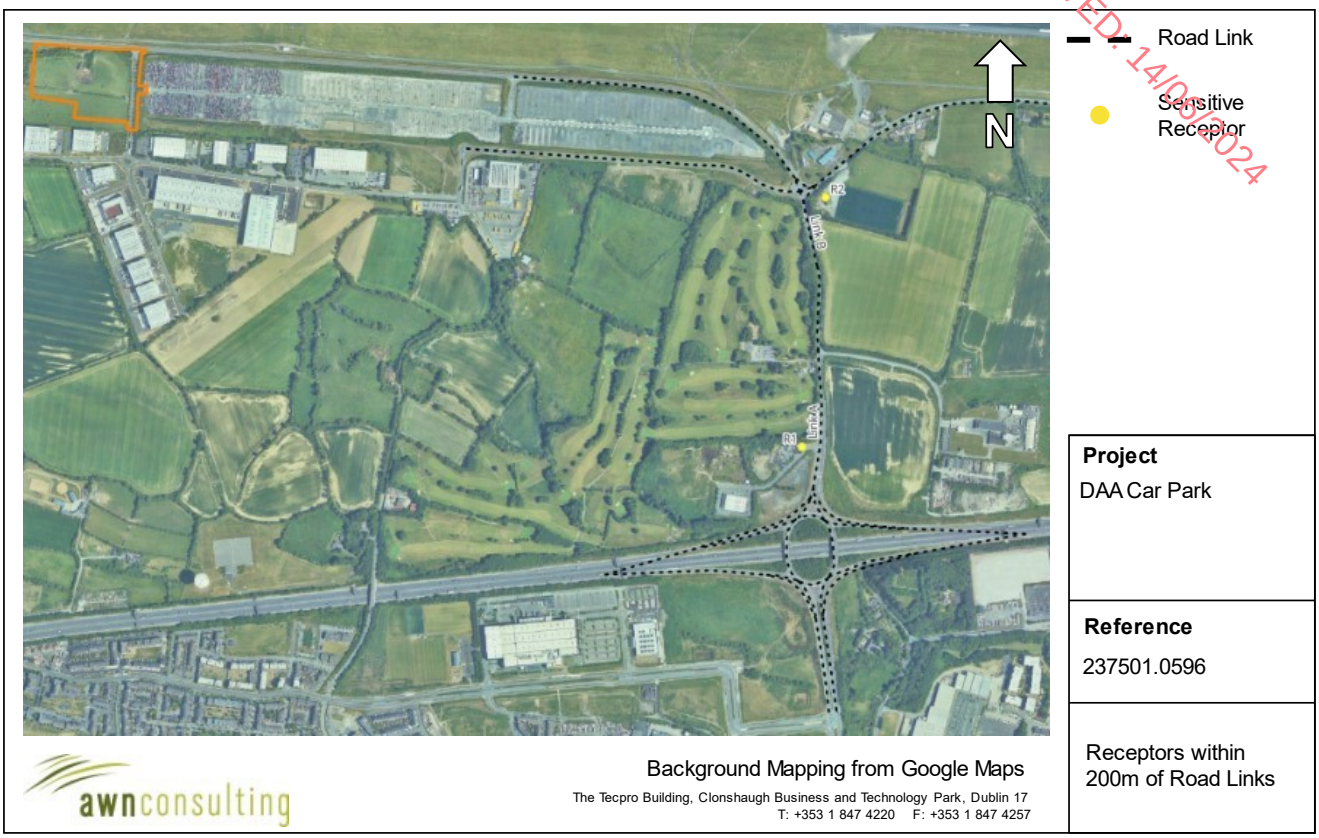

Figure 7-1 - Approximate Location of Receptors used in Local Air Quality Modelling Assessment

Table 7.4 - Traffic Data Used in Air & Climate Modelling Assessments

Road Name	Speed (kph)	Base Year 2023	Opening Year 2028		Design Year 2038	
			Do Minimum	Do Something	Do Minimum	Do Something
		LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)
Naul Road (Link A)	60	17099 (1408)	17830 (1476)	19720 (1476)	19293 (1612)	21183 (1612)
Naul Road (Link B)	60	17099 (1377)	17830 (1445)	19720 (1445)	19293 (1581)	21183 (1581)

Source: Traffic data provided by AECOM (Refer to Appendix 2 'AECOM (2023) Traffic Impact Assessment' within Appendix 10.1).

7.2. Receiving Environment

7.2.1. Meteorological Data

A key factor in assessing temporal and spatial variations in air quality is the prevailing meteorological conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutant levels under the same source strength (i.e., traffic levels) (WHO, 2006). Wind is of key importance in dispersing air pollutants and for ground level sources, such as traffic emissions, pollutant concentrations are generally inversely related to wind speed. Thus, concentrations of pollutants derived from traffic sources will generally be greatest under very calm conditions and low wind speeds when the movement of air is restricted. In relation to PM_{10}, the situation is more complex due to the range of sources of this pollutant. Smaller particles

(less than $PM_{2.5}$) from traffic sources will be dispersed more rapidly at higher wind speeds. However, fugitive emissions of coarse particles ($PM_{2.5}$–- PM_{10}) will actually increase at higher wind speeds. Thus, measured levels of PM_{10} will be a non-linear function of wind speed.

The nearest representative weather station collating detailed weather records is Dublin Airport meteorological station, which is located approximately 3.5 km east of the site. Dublin Airport meteorological data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (see Figure 7-2). For data collated during five representative years (2019 – 2023), the predominant wind direction is westerly to south-westerly with a mean wind speed of 5.4 m/s over the 30-year period 1991–- 2020 (Met Eireann, 2024).

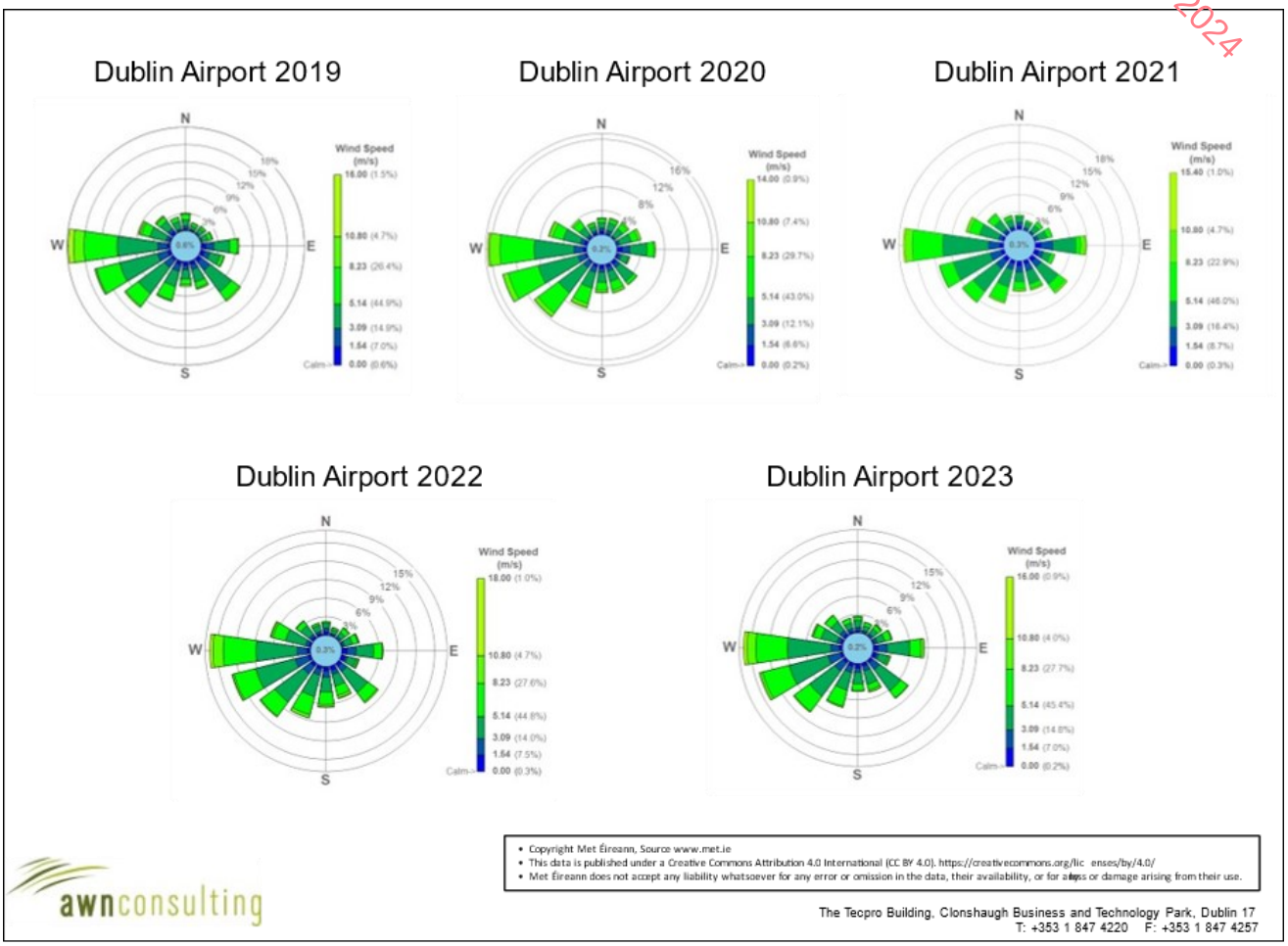

Figure 7-2 - Dublin Airport Windrose 2019 – 2023

7.2.2. Air Quality Baseline

Air quality monitoring programs have been undertaken in recent years by the EPA. The most recent annual report on air quality in Ireland is “Air Quality In Ireland 2022” (EPA, 2023a). The EPA website details the range and scope of monitoring undertaken throughout Ireland and provides both monitoring data and the results of previous air quality assessments (EPA, 2024).

As part of the implementation of the Framework Directive on Air Quality (1996/62/EC), as amended, four air quality zones have been defined in Ireland for air quality management and assessment purposes (EPA, 2024). Dublin is defined as Zone A and Cork as Zone B. Zone C is composed of 23 towns with a population of greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population of less than 15,000, is defined as Zone D.

In terms of air monitoring and assessment, the proposed development is within Zone A (EPA, 2024). The long-term monitoring data has been used to determine background concentrations for the key pollutants in the region of the proposed development. The background concentration accounts for all non-traffic derived emissions (e.g., natural sources, industry, home heating etc.). Data for 2020 has been included for indicative purposes only, it

has not been used in determining background pollutant levels as the data is not considered representative due to the COVID-19 restrictions that were in place at the time.

7.2.2.1. NO_2

Long-term NO_2 monitoring was carried out at the representative Zone A locations of Dublin Airport, Dún Laoghaire, Swords and Ballyfermot for the period 2018 – 2022 (EPA, 2023a). Long term average concentrations are significantly below the annual average limit of 40 µg/m^3, average results range from 13 – 20 µg/m^3 for the suburban background locations. The NO_2 annual average for this five-year period suggests an upper average limit of no more than 20 µg/m^3 (Table 7.5). The monitoring site at Dublin Airport is considered most representative of the proposed development location due to its close proximity to the site. Concentrations of NO_2 at this site ranged from 19 – 23 µg/m^3 over the period 2018 – 2022. Based on the above information, a conservative estimate of the current background NO_2 concentration for the region of the proposed development is 19 µg/m^3.

Table 7.5 - Trends In Zone A Air Quality: Nitrogen Dioxide (NO_2)

Station	Averaging Period Note 1	Year				
		2018	2019	2020	2021	2022
Dublin Airport	Annual Mean NO_2 (µg/m^3)	-	-	23	19	20
	Max 1-hr NO_2 (µg/m^3)	-	-	89	96	114
Dún Laoghaire	Annual Mean NO_2 (µg/m^3)	19	15	13	16	16
	Max 1-hr NO_2 (µg/m^3)	135	104	92	93	89
Swords	Annual Mean NO_2 (µg/m^3)	16	15	11	11	12
	Max 1-hr NO_2 (µg/m^3)	112	108	84	79	103
Ballyfermot	Annual Mean NO_2 (µg/m^3)	17	20	12	13	13
	Max 1-hr NO_2 (µg/m^3)	217	124	108	90	113

Note1 Annual average limit value – 40 µg/m^3 (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).
Daily limit value – 200 µg/m^3 (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).

7.2.2.2. PM_{10}

Continuous PM_{10} monitoring was carried out at five representative Zone A locations from 2018 – 202, Finglas, Ballyfermot, Dún Laoghaire, Dublin Airport and Phoenix Park. These showed an upper average limit of no more than 14 µg/m^3 (Table 7.6). Levels range from 11–- 14 µg/m^3 over the five-year period with at most 7 exceedances (in Ballyfermot) of the 24-hour limit value of 50 µg/m^3 in 2019 (35 exceedances are permitted per year) (EPA, 2023a). Based on the EPA data, a conservative estimate of the current background PM_{10} concentration in the region of the proposed development is 12 µg/m^3.

Table 7.6 - Trends In Zone A Air Quality: PM_{10}

Station	Averaging Period Note 1	Year				
		2018	2019	2020	2021	2022
Finglas	Annual Mean PM_{10} (µg/m³)	11	13	12	12	12
	24-hr Mean > 50 µg/m³ (days)	1	2	0	0	
Ballyfermot	Annual Mean PM_{10} (µg/m³)	16	14	12	12	13
	24-hr Mean > 50 µg/m³ (days)	0	7	2	0	1
Dún Laoghaire	Annual Mean PM_{10} (µg/m³)	13	12	12	11	12
	24-hr Mean > 50 µg/m³ (days)	0	2	0	0	1
Dublin Airport	Annual Mean PM_{10} (µg/m³)	-	-	13	11	12
	24-hr Mean > 50 µg/m³ (days)	-	-	0	0	1
Phoenix Park	Annual Mean PM_{10} (µg/m³)	11	11	10	10	11
	24-hr Mean > 50 µg/m³ (days)	0	2	0	0	0

Note1 Annual average limit value – 40 µg/m³ (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).
Daily limit value – 50 µg/m³ (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).

7.2.2.3. $PM_{2.5}$

Continuous PM_{10} monitoring was carried out at five representative Zone A locations from 2018 – 2022, Finglas, Ballyfermot, Dún Laoghaire and Dublin Airport. These showed an upper average limit of no more than 8 µg/m³ (Table 7.7). Levels range from 6.6–-8.4 µg/m³ over the five-year period. Based on the EPA data, a conservative estimate of the current background $PM_{2.5}$ concentration in the region of the proposed development is 7 µg/m³.

Table 7.7 - Trends In Zone A Air Quality: $PM_{2.5}$

Station	Averaging Period Note 1	Year				
		2018	2019	2020	2021	2022
Finglas	Annual Mean $PM_{2.5}$ (µg/m³)	8	9	7	8	7
Ballyfermot	Annual Mean $PM_{2.5}$ (µg/m³)	7	10	8	8	8
Dún Laoghaire	Annual Mean $PM_{2.5}$ (µg/m³)	-	10	8	88	8
Phoenix Park	Annual Mean $PM_{2.5}$ (µg/m³)	6	8	7	6	6
Dublin Airport	Annual Mean $PM_{2.5}$ (µg/m³)	-	-	6	6	7

Note1 Annual average limit value – 25 µg/m³ (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).

7.2.2.4. Summary

Based on the above information the air quality in the area is predominantly good, with concentrations of the key pollutants generally well below the relevant limit values. However, the EPA have indicated that road transport emissions are contributing to increased levels of NO_2. There is the potential for breaches in the annual NO_2 limit value in future years at locations within urban centres and roadside locations. In addition, burning of solid fuels for home heating is contributing to increased levels of particulate matter (PM_{10} and $PM_{2.5}$). The EPA predict that exceedances in the particulate matter limit values are likely in future years if burning of solid fuels for residential heating continues (EPA, 2023).

The current estimated background concentrations have been used in the operational phase air quality assessment for both the Opening Year and Design Year as a conservative approach to predict pollutant concentrations in future years. This is in line with the TII methodology (TII, 2022a).

7.2.3. Sensitivity of the Receiving Environment to Dust Impacts

In line with the UK Institute of Air Quality Management (IAQM) guidance document 'Guidance on the Assessment of Dust from Demolition and Construction' (2024) prior to assessing the impact of dust from a proposed development, the sensitivity of the area must first be assessed as outlined below. Both receptor sensitivity and proximity to proposed works areas are taken into consideration. For the purposes of this assessment, high sensitivity receptors are regarded as residential properties where people are likely to spend the majority of their time. Commercial properties and places of work are regarded as medium sensitivity while low sensitivity receptors are places where people are present for short periods or do not expect a high level of amenity.

In terms of receptor sensitivity to dust soiling, there are between 1 and 10 residential properties with 100 m of the proposed main works areas (4. no residential properties on Harristown Lane). Based on the IAQM criteria outlined in Table 7.8, the worst-case sensitivity of the area to dust soiling is considered **low**.

Table 7.8 - Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from Source (m)			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	**Low**	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

In addition to sensitivity to dust soiling, the IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to human health impacts. The criteria take into consideration the current annual mean PM_{10} concentration, receptor sensitivity based on type (residential receptors are classified as high sensitivity) and the number of receptors affected within various distance bands from the construction works.

A conservative estimate of the current annual mean PM_{10} concentration in the vicinity of the proposed development is 12 µg/m^3. There are between 1 and 10 high sensitivity receptors located within 50 m of the proposed development site (4. no residential properties on Harristown Lane). Based on the IAQM criteria outlined in Table 7.9, the worst-case sensitivity of the area to human health is considered **low**.

Table 7.9 - Sensitivity of the Area to Dust-Related Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from Source (m)			
			<20	<50	<100	<250
High	< 24 µg/m^3	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	< 24 µg/m^3	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	< 24 µg/m^3	>1	Low	Low	Low	Low

The IAQM guidelines (2024) also outline the assessment criteria for determining the sensitivity of the area to dust-related ecological impacts. Dust emissions can coat vegetation leading to a reduction in the photosynthesizing ability of the plant, as well as other effects. The guidance states that dust impacts to vegetation can occur up to 50 m from the site and 50 m from site access roads, up to 250 m for the site entrance. There are

no sensitive ecological receptors within these criteria. The closest designated site, Santry Demesne pNHA, is 2.6km south east of the site. Based on the IAQM criteria outlined ecology impacts are considered to be scoped out with respect to construction phase dust.

7.3. Characteristics of the Proposed Development

The proposed site is located directly south of the western corner of the South Airport Runway; in the townland of Harristown. The site is bounded to the North by the R108; to the East by the Holiday Blue Long Term Car Park; to the West by an access road serving three dwellings and to the South by the Horizon Logistics Park. Santry River crosses through the middle of the site and discharges to the North Bull Island transitional waterbody to the east of the site (EPA code: 09S01).

The proposed car park is currently a greenfield site with an area of approximately 4.26ha. The car park will cater for 950 staff car parking spaces, of which 48 no. will be provided for Persons with Reduced Mobility (PRM) and 96 no. will be serviced by Electric Vehicle (EV) charging points. The development is also inclusive of cycle parking, a bus stop and a welfare facility building and associated infrastructure to be installed to the west of the existing entrance. In addition, a new security hut with a toilet and sink will be located on the traffic island along the existing entrance road. The site is to be accessed off the South Parallel Road (R108) via an upgraded existing former temporary construction access/egress, with an emergency access also to be provided through the existing Holiday Blue Long-Term Car Park immediately east of the proposed development site via a tie in, with security barriers, to the existing internal roundabout.

In relation to air quality, impacts will occur during both the construction and operational phases of the development. During the construction stage, the main source of air quality impacts will be due to fugitive dust emissions from site activities. Dust emissions will primarily occur because of site preparation works, minor demolition works, earthworks, construction of proposed buildings and the movement of trucks on site and exiting the site.

During the operational phase, air quality may be affected by increased traffic accessing the site. This can be attributed to a higher number of vehicles and the potential rise in vehicle exhaust emissions. Operational phase impacts will have a long-term impact on air quality.

7.4. Potential Effects during Construction Phase

7.4.1. Construction Dust Assessment

The greatest potential effect on air quality during the construction phase of the proposed development is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 250m of a construction site, the majority of the deposition occurs within the first 50m. The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity. In addition, the potential for dust dispersion and deposition depends on local meteorological factors such as rainfall, wind speed and wind direction. A review of Dublin Airport meteorological data indicates that the prevailing wind direction is westerly to south-westerly and wind speeds are generally moderate in nature (see Figure 7-2). In addition, dust generation is considered negligible on days where rainfall is greater than 0.2 mm. A review of historical 30 year average data for Dublin Airport meteorological station indicates that, on average, 200 days per year have rainfall over 0.2 mm (Met Eireann, 2024). Therefore, it can be determined that over 54% of the time dust generation will be reduced due to natural meteorological conditions.

In order to determine the level of dust mitigation required during the proposed works, the potential dust emission magnitude for each dust generating activity needs to be taken into account, in conjunction with the previously established sensitivity of the area (see Section 7.2.3). The major dust generating activities are divided into four types within the IAQM guidance to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (transport of dust and dirt from the construction site onto the public road network).

7.4.1.1. Demolition

There are demolition works associated with the proposed development, comprising of the demolition of existing cattle pen and hard standing area (total 911m^2) and the removal of 1 no. existing gated site entrance from the South Parallel Road (R108).

Dust emission magnitude from demolition can be classified as small, medium, or large based on the definitions from the IAQM guidance as transcribed below:

- **Large** Total building volume >75,000 m^3 potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >12 m above ground level;
- **Medium** Total building volume 12,000 m^3 – 75,000 m^3 potentially dusty construction material, demolition activities 6-12 m above ground level; and
- **Small** Total building volume <12,000 m^3 construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6 m above ground, demolition during wetter months.

The dust emission magnitude for the proposed demolition activities can be classified as **small** as the total building volume is unlikely to be more than 12,000 m^3. The sensitivity of the area, as determined in Section 7.2.3, is combined with the dust emission magnitude for each dust generating activity to define the risk of dust impacts in the absence of mitigation. As outlined in Table 7.10 and in Table 7.11, this results in an overall negligible risk of dust soiling impacts.

Table 7.10 - Criteria for Rating Risk of Dust Impacts: Demolition

Sensitivity of Area	Dust Emission Magnitude – Earthworks		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Source: (IAQM, Guidance on the Assessment of Dust from Demolition & Construction, 2024)

Table 7.11 - Risk of Dust Impacts: Demolition

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Earthworks	Risk of Dust-Related Impacts
Dust Soiling	Low	Small	Negligible
Human Health	Low		Negligible

7.4.1.2. Earthworks

Earthworks primarily involve excavating material, loading and unloading of materials, tipping and stockpiling activities. Activities such as levelling the site and landscaping works are also considered under this category. The dust emission magnitude from earthworks can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large** Total site area > 110,000 m^2, potentially dusty soil type (e.g., clay which will be prone to suspension when dry due to small particle size), > 10 heavy earth moving vehicles active at any one time, formation of bunds >6 m in height;
- **Medium** Total site area 18,000 m^2 – 110,000 m^2, moderately dusty soil type (e.g., silt), 5 - 10 heavy earth moving vehicles active at any one time, formation of bunds 3 – 6 m in height;
- **Small** Total site area < 18,000 m^2, soil type with large grain size (e.g., sand), < 5 heavy earth moving vehicles active at any one time, formation of bunds < 3 m in height.

The total site area is between 18,000 and 110,000 m^2. Therefore, the proposed earthworks can be classified as **medium**. The sensitivity of the area, as determined in Section 7.2.3, is combined with the dust emission magnitude for each dust generating activity to define the risk of dust impacts in the absence of mitigation. As outlined in Table 7.12 and Table 7.13, combining the large dust emission magnitude with a low sensitivity to dust soiling and low sensitivity to human health impacts results in a low risk of dust soiling impacts and a low risk of dust-related human health impacts. This is as a result of the proposed earthworks activities in the absence of mitigation.

Table 7.12 - Criteria for Rating Risk of Dust Impacts: Earthworks

Sensitivity of Area	Dust Emission Magnitude – Earthworks		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Source: (IAQM, Guidance on the Assessment of Dust from Demolition & Construction, 2024)

Table 7.13 - Risk of Dust Impacts: Earthworks

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Earthworks	Risk of Dust-Related Impacts
Dust Soiling	Low	Medium	Low Risk
Human Health	Low		Low Risk

7.4.1.3. Construction

Dust emission magnitude from construction can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large** Total building volume > 750,000 m^3, on-site concrete batching, sandblasting;
- **Medium** Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material (e.g., concrete), on-site concrete batching; and,
- **Small** Total building volume < 12,000 m^3, construction material with low potential for dust release (e.g., metal cladding or timber).

The dust emission magnitude for the proposed construction activities can be classified as **small** as a worst-case, as the total building volume will be less than 12,000 m^3. As outlined in Table 7.14 and Table 7.15, combining the small dust emission magnitude with a low sensitivity to dust soiling and low sensitivity to human health impacts results in an overall negligible risk of dust soiling impacts and a negligible risk of dust-related human health impacts. This is as a result of the proposed construction activities in the absence of mitigation.

Table 7.14 - Criteria for Rating Risk of Dust Impacts: Construction

Sensitivity of Area	Dust Emission Magnitude – Construction		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Source: (IAQM, Guidance on the Assessment of Dust from Demolition & Construction, 2024)

Table 7.15 - Risk of Dust Impacts: Construction

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Construction	Risk of Dust-Related Impacts
Dust Soiling	Low	Small	Negligible
Human Health	Low		Negligible

7.4.1.4. Trackout

Factors which determine the dust emission magnitude are vehicle size, vehicle speed, number of vehicles, road surface material and duration of movement. Dust emission magnitude from trackout can be classified as **small**, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large** > 50 HDV (> 3.5 t) outward movements in any one day, potentially dusty surface material (e.g., high clay content), unpaved road length > 100 m;
- **Medium** 20 - 50 HDV (> 3.5 t) outward movements in any one day, moderately dusty surface material (e.g., high clay content), unpaved road length 50 – 100 m;
- **Small** < 20 HDV (> 3.5 t) outward movements in any one day, surface material with low potential for dust release, unpaved road length < 50 m.

The dust emission magnitude for the proposed trackout can be conservatively classified as medium as, at worst-case periods, there will likely be between 20 and 50 outward HDV movements per day. As outlined in Table 7.16 and Source: (IAQM, Guidance on the Assessment of Dust from Demolition & Construction, 2024)

Table 7.17, combining the large dust emission magnitude with a low sensitivity to dust soiling and low sensitivity to human health impacts results in an overall low risk of dust soiling impacts and a low risk of dust-related human health impacts. This is as a result of the proposed trackout activities in the absence of mitigation.

Table 7.16 - Criteria for Rating Risk of Dust Impacts: Trackout

Sensitivity of Area	Dust Emission Magnitude – Trackout		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Source: (IAQM, Guidance on the Assessment of Dust from Demolition & Construction, 2024)

Table 7.17 - Risk of Dust Impacts: Trackout

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Trackout	Risk of Dust-Related Impacts
Dust Soiling	Low	Medium	Low Risk
Human Health	Low		Low Risk

7.4.1.5. Summary of Dust Emission Risk

The risk of dust effects as a result of the proposed development are summarised in Table 7.18 for each activity. The magnitude of risk determined is used to prescribe the level of site-specific mitigation required for each activity to prevent significant impacts occurring.

Overall, to ensure that no dust nuisance occurs during the earthworks, construction and trackout activities, best practice dust mitigation measures appropriate for sites with a low risk of dust impacts must be implemented. In the absence of mitigation dust impacts are predicted to be ***direct***, ***short-term, localised, negative*** and ***slight***.

Table 7.18 - Summary of Dust Impact Risk used to Define Site-Specific Mitigation

Potential Impact	Dust Emission Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Emission Magnitude	N/A	Medium	Small	Small
Dust Soiling Risk	N/A	Low Risk	Negligible	Low Risk
Human Health Risk	N/A	Low Risk	Negligible	Low Risk
Ecology Risk	N/A	N/A	N/A	N/A

7.4.2. Construction Phase Traffic Assessment

There is also the potential for traffic emissions to impact air quality in the short-term over the construction phase. Particularly due to the increase in HGVs accessing the site. The construction stage traffic has been reviewed and a detailed air quality assessment has been scoped out as none of the road links affected by the proposed development satisfy the TII assessment criteria in Section 7.1.2.

It can therefore be determined that the construction stage traffic will have an ***imperceptible, neutral*** and ***short-term*** effects on air quality.

7.5. Potential Effects during Operational Phase

7.5.1. Operational Phase Traffic Assessment

The potential effects of the proposed development have been assessed by modelling emissions from the traffic generated as a result of the development. The traffic data includes the Do Nothing and Do Something scenarios. The impact of NO_2, PM_{10} and $PM_{2.5}$ emissions for the modelled Opening Year and Design Year was predicted at the nearest sensitive receptors to the development. This assessment allows the significance of the development, with respect to both relative and absolute impacts, to be determined.

The TII guidance PE-ENV-01106 (TII, 2022a) details a methodology for determining air quality impact significance criteria for TII road schemes and infrastructure projects. However, this significance criteria can be applied to any development that causes a change in traffic. The degree of impact is determined based on both the absolute and relative effects of the proposed development. Results are compared against the 'Do-Nothing' scenario, which assumes that the proposed development is not in place in future years, to determine the degree of impact.

7.5.1.1. NO_2

The results of the assessment of the effects of the proposed development on NO_2 in the Opening Year 2028 and Design Year 2038 are shown in Table 7.19. The annual average concentration is in compliance with the limit value at the worst-case receptors in the year 2028 and 2038. Concentrations of NO_2 are at most 51% of the annual limit value in 2028 and 49% of the annual limit value in 2038 Do-Something scenario. In addition, the TII guidance (2022a) states that the hourly limit value for NO_2 of 200 µg/m^3 is unlikely to be exceeded at roadside locations unless the annual mean is above 60 µg/m^3. As predicted NO_2 concentrations are significantly below 60 µg/m^3. It can be concluded that the short-term NO_2 limit value will be complied with at all receptor locations.

The effects of the proposed development on annual mean NO_2 concentrations can be assessed relative to "Do Nothing (DN)" levels. NO_2 concentrations at the receptors assessed will increase as a result of the proposed development when compared with the Do-Nothing scenario. There will be at most an increase of 0.05 µg/m^3 at receptor R1, which is a 0.13% change when compared with the ambient air quality limit value of 40 µg/m^3. Where the predicted annual mean concentrations are less than 75% of the air quality standard (see Table 7.1) and there is a less than 5% change in concentrations compared with the annual mean ambient air quality standard, then, the impact is considered neutral as per the TII significance criteria (see Table 7.3). Therefore, the impact of the proposed development on NO_2 concentrations according to the TII guidance (TII, 2022a) is neutral.

Table 7.19 - Predicted Annual Mean NO_2 Concentrations (µg/m^3)

Receptor	Impact Opening Year				
	DM	DS	DS-DM	% Change of AQAL	Description
R1	20.4	20.4	0.05	0.13%	Neutral
R2	20.1	20.1	0.03	0.07%	Neutral
Receptor	Impact Design Year				
	DM	DS	DS-DM	% Change of AQAL	Description
R1	19.7	19.7	0.02	0.05%	Neutral
R2	19.6	19.6	0.02	0.05%	Neutral

7.5.1.2. PM_{10}

In relation to changes in PM_{10} concentrations as a result of the proposed development, the results of the assessment can be seen in Table 7.20 for the Opening Year 2028 and Design Year 2038. The annual average concentration is in compliance with the limit value at the worst-case receptors in the year 2028 and 2038. Concentrations of PM_{10} are at most 33% of the annual limit value in the 2028 and 2038 Do-Something scenario. In addition, the proposed development will not result in any exceedances of the daily PM_{10} limit value of 50 µg/m^3. The effects of the proposed development on annual mean PM_{10} concentrations can be assessed relative to "Do Nothing (DN)" levels. PM_{10} concentrations at the receptors assessed will increase as a result of the proposed development when compared with the Do-Nothing scenario. There will be at most an increase of 0.02 µg/m^3 at

receptor R1, this is a 0.05% increase when compared with the ambient air quality limit value of 40 µg/m^{3}As with NO_2, where the predicted annual mean concentrations are less than 75% of the air quality standard (Table 7.1) and there is a less than 5% change in concentrations compared with the ambient annual mean air quality limit value (AQAL) then the impact is considered neutral as per the TII significance criteria (see Table 7.3). Therefore, the impact of the proposed development on PM_{10} concentrations according to the TII guidance (TII, 2022a) is neutral.

Table 7.20 - Predicted Annual Mean PM_{10} Concentrations (µg/m^3)

Receptor	Impact Opening Year				
	DM	DS	DS-DM	% Change of AQAL	Description
R1	13.3	13.3	0.02	0.05%	Neutral
R2	13.0	13.0	0.02	0.05%	Neutral
Receptor	Impact Design Year				
	DM	DS	DS-DM	% Change of AQAL	Description
R1	13.3	13.4	0.02	0.05%	Neutral
R2	13.0	13.0	0.01	0.02%	Neutral

7.5.1.3. $PM_{2.5}$

In relation to changes in $PM_{2.5}$ concentrations as a result of the proposed development, the results of the assessment can be seen in Table 7.21 for the modelled Opening Year 2028 and Design Year 2038. The annual average concentration is in compliance with the limit value at the worst-case receptors in the year 2028 and 2038. Concentrations of $PM_{2.5}$ are at most 31% of the annual limit value in the 2028 and 2038 Do-Something scenario. The effect of the proposed development on annual mean $PM_{2.5}$ concentrations can be assessed relative to "Do Nothing (DN)" levels. $PM_{2.5}$ concentrations at the receptors assessed will increase as a result of the proposed development when compared with the Do-Nothing scenario. There will be at most an increase of 0.02 µg/m^3 at receptor R1, this is a 0.05% change when compared with the ambient air quality limit value of 25 µg/m^3. As with NO_2, where the predicted annual mean concentrations are less than 75% of the air quality standard (see Table 7.1) and there is a less than 5% change in concentrations compared with the ambient annual mean air quality limit value (AQAL), then, the impact is considered neutral as per the TII significance criteria (see Table 7.3). Therefore, the impact of the proposed development on $PM_{2.5}$ concentrations according to the TII guidance (TII, 2022a) is neutral.

Table 7.21 - Predicted Annual Mean $PM_{2.5}$ Concentrations (µg/m^3)

Receptor	Impact Opening Year				
	DM	DS	DS-DM	% Change of AQAL	Description
R1	7.76	7.78	0.02	0.05%	Neutral
R2	7.58	7.59	0.01	0.02%	Neutral
Receptor	Impact Design Year				
	DM	DS	DS-DM	% Change of AQAL	Description
R1	7.76	7.77	0.01	0.02%	Neutral
R2	7.58	7.59	0.01	0.02%	Neutral

Overall, the potential effect of the proposed development on ambient air quality in the operational stage, according to the EPA guidelines (EPA, 2022) is considered ***direct, long-term, negative*** and ***not significant***.

7.6. Cumulative Effects

7.6.1. Construction Phase

According to the IAQM guidance (2024) should the construction phase of the proposed development coincide with the construction of any other permitted developments within 250m of the site then there is the potential for cumulative dust impacts to the nearby sensitive receptors. Should simultaneous construction phases occur, it would lead to cumulative dust soiling and dust-related impacts on human health, specifically localised to the works area associated with the proposed works.

A review of the planned and permitted projects within the vicinity of the site was undertaken. Those projects within 250m of the proposed development were identified, these include:

- F01A/0974 Monaer (Cork) Limited
- FW23A/0097 Killick Aerospace Limited
- FW20A/0156 DHL Supply Chain Ireland Limited
- F18A/0730 DHL Supply Chain Ireland Ltd
- F08A/1248 Green REIT Horizon Ltd
- F14A/0181 Green Reit Horizon Ltd.
- FW19A/0095 Green Reit Horizon DAC
- FW19A/0033 Green Reit Horizon DAC
- FW20A/0034 Expeditors Ireland Ltd
- FW22A/0145 Fynes Logistics LTD
- FW20A/0025 Bunzl Ireland Ltd
- FW22A/0260 UPS SCS Ireland Limited
- FW23A/0259 UPS SCS Ireland Limited
- FW20A/0160 Transport Infrastructure Ireland
- FW22a/0036 Kuehne & Nagel Ireland Limited
- F99A/1519 Aer Rianta Cpt
- FW22A/0021 daa PLC
- SID/01/18 daa PLC
- SID/01/11 daa PLC
- F09A/0092 daa PLC
- F20A/0668 daa PLC
- F06A/0088 daa PLC
- F07A/0093 daa PLC
- F23A/0781 daa PLC
- FW21A/0180 HPREF Dublin Office DevCo 1 Limited
- FW22A/0079 HPREF Dublin Office DevCo 1 Limited
- FW20A/0187 HPREF Dublin Office DevCo 1 Limited
- FW23A/0067 HPREF Dublin Office DevCo 1 Limited
- FW23A/0250 HPREF Dublin Office DevCo 1 Limited

There is the potential for cumulative construction dust effects should the construction phases overlap with that of the proposed development. However, the dust mitigation measures outlined in Section 7.7.1 will be applied throughout the construction phase of the proposed development which will avoid significant cumulative effects on air quality. With appropriate mitigation measures in place, the predicted cumulative effect on air quality associated with the construction phase of the proposed development are deemed **short-term, negative** and **imperceptible**.

7.6.2. Operational Phase

Cumulative impacts have been incorporated into the traffic data supplied for the operational stage air modelling assessments where such information was available. The results of the modelling assessment (Section 7.5.1) show that there is a **long-term, neutral** and **imperceptible** effect on air quality during the operational stage.

7.7. Mitigation Measures

7.7.1. Construction Phase

The proposed development has been assessed as having a low risk of dust soiling impacts and a low risk of dust related human health impacts during the construction phase as a result of earthworks, construction and trackout activities (see Section 7.2.3). Therefore, the following dust mitigation measures shall be implemented during the construction phase of the proposed development. These measures are appropriate for sites with a low risk of dust impacts and aim to ensure that no significant nuisance occurs at nearby sensitive receptors. The mitigation measures draw on best practice guidance from Ireland (DCC, 2018), the UK (IAQM (2024), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997). These measures will be incorporated into the overall Construction Environmental Management Plan (CEMP) prepared for the site. The measures are divided into different categories for different activities.

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before works commence on site. Community engagement includes explaining the nature and duration of the works to local residents and businesses.
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details.

Site Management

- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions. Dry and windy conditions are favourable to dust suspension therefore mitigations must be implemented if undertaking dust generating activities during these weather conditions.
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out.

Preparing and Maintaining the Site

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

Operating Vehicles / Machinery and Sustainable Travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 15 kph haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.

- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)

Operations

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

Waste Management

- Bonfires and burning of waste materials is not permitted.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

Measures Specific to Construction

- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures Specific to Trackout

- A speed restriction of 15 kph will be applied as an effective control measure for dust for on-site vehicles.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10 m from receptors where possible.

Monitoring

- Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.

- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

7.7.2. Operational Phase

There is no mitigation required for the operational phase of the development as effects on air quality are predicted to be **neutral** and **imperceptible**.

7.8. Residual Effects

7.8.1. Construction Phase

Once the dust minimisation measures outlined in Section 7.7.1 are implemented, the effect of the proposed development in terms of dust soiling will be **direct, short-term, localised, negative** and **not significant** at nearby receptors.

7.8.2. Operational Phase

Air dispersion modelling of operational traffic emissions associated with the proposed development was carried out using the TII REM model. The modelling assessment determined that the change in emissions of traffic related pollutants at nearby sensitive receptors as a result of the proposed development will be neutral. Therefore, the operational phase impact to air quality is **direct, long-term, negative** and **not significant**.

7.9. Risk to Human Health

Dust emissions from the construction phase of the proposed development have the potential to affect human health through the release of PM_{10} and $PM_{2.5}$ emissions. As per Section 7.2.3, the surrounding area is of low sensitivity to dust related human health impacts. It was determined that there is an overall low risk of dust related human health effects as a result of the construction phase of the proposed development.

Best practice mitigation measures are proposed for the construction phase of the proposed development which will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the effect of construction of the proposed development is likely to be **direct, short-term, localised, negative** and **not significant** with respect to human health.

Traffic related air emissions have the potential to affect air quality which can affect human health. As the operational phase air dispersion modelling has shown that emissions of air pollutants are significantly below the ambient air quality standards which are based on the protection of human health, impacts to human health are **direct, long-term, negative** and **not significant**.

7.10. Monitoring Requirements

7.10.1. Construction Phase

During working hours, dust control methods will be monitored as appropriate depending on the prevailing meteorological conditions. Monitoring of emissions is not proposed for the construction phase of the proposed development as effects are predicted to be imperceptible. Once the dust mitigation measures outlined in the mitigation section are implemented, then construction dust emissions will be imperceptible.

7.10.2. Operational Phase

There is no proposed monitoring during the operational phase.

7.11. Difficulties Encountered During Preparation of this Chapter

There were no difficulties encountered when compiling this assessment.

7.12. Risk of Major Accidents and/or Disasters

There are no likely risks of major accidents and disasters in relation to air quality associated with the proposed development due to the nature and scale of the development. The proposed development will not require large scale quantities of hazardous materials or fuels.

8. Climate Change

8.1. Introduction

This chapter assesses the likely climate impacts associated with the proposed Remote South Staff Car Park. The Remote South Staff Car Park is a proposed new car park to provide parking for airport staff located to the west of the existing Holiday Blue Car Park at Dublin Airport, with an independent access. A full description of the development can be found in Chapter 2 – Project Description.

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8.2. Legislation, Policy and Guidance

8.2.1. Legislation

In 2015, the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (Government of Ireland, 2015) was enacted (the Act). The purpose of the Act was to enable Ireland 'to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050' (3.(1) of No. 46 of 2015). This is referred to in the Act as the 'national transition objective'. The Act made provision for a national mitigation plan, and a national adaptation framework. In addition, the Act provided for the establishment of the Climate Change Advisory Council with the function to advise and make recommendations on the preparation of the national mitigation and adaptation plans and compliance with existing climate obligations.

The first Climate Action Plan (CAP) was published by the Irish Government in June 2019 (Government of Ireland, 2018). The Climate Action Plan 2019 outlined the current status across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and outlined the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. The 2019 CAP also detailed the required governance arrangements for implementation including carbon-proofing of policies, establishment of carbon budgets, a strengthened Climate Change Advisory Council and greater accountability to the Oireachtas. The Government published the second Climate Action Plan in November 2021 (Government of Ireland, 2020) and a third update in December 2022 (Government of Ireland, 2022). The most recent Climate Action Plan (CAP24) was published in December 2023 (Government of Ireland, 2023).

Following on from Ireland declaring a climate and biodiversity emergency in May 2019, and the European Parliament approving a resolution declaring a climate and environment emergency in Europe in November 2019, the Government approved the publication of the General Scheme in December 2019, followed by the publication of the Climate Action and Low Carbon Development (Amendment) Bill 2021 (hereafter referred to as the 2021 Climate Bill) in March 2021. The Climate Act was signed into Law on the 23rd of July 2021, giving statutory effect to the core objectives stated within the CAP.

The purpose of the 2021 Climate Act (Government of Ireland, 2021) is to provide for the approval of plans *"for the purpose of pursuing the transition to a climate resilient, biodiversity rich and climate neutral economy by no later than the end of the year 2050"*. The 2021 Climate Act will also *"provide for carbon budgets and a decarbonisation target range for certain sectors of the economy"*. The 2021 Climate Act defines the carbon budget as "the total amount of greenhouse gas emissions that are permitted during the budget period".

In relation to carbon budgets, the 2021 Climate Action and Low Carbon Development (Amendment) Act states *'A carbon budget, consistent with furthering the achievement of the national climate objective, shall be proposed by the Climate Change Advisory Council, finalised by the Minister and approved by the Government for the period of 5 years commencing on the 1 January 2021 and ending on 31 December 2025 and for each subsequent period of 5 years (in this Act referred to as a 'budget period')'*. The carbon budget is to be produced for 3 sequential budget periods, as shown in Table 8.1. The carbon budget can be revised where new obligations are imposed under the law of the European Union or international agreements or where there are significant developments in scientific knowledge in relation to climate change. In relation to the sectoral emissions ceiling, the Minister for the Environment, Climate and Communications (the Minister for the Environment) shall prepare and submit to

government the maximum amount of GHG emissions that are permitted in different sectors of the economy during a budget period and different ceilings may apply to different sectors. The sectoral emission ceilings for 2030 were published in July 2022 and are shown in Table 8.2. Industry has a 35% reduction requirement and a 2030 emission ceiling of 4 Mt CO_2e.

Table 8.1 5-Year Carbon Budgets 2021-2025, 2026-2030 and 2031-2025

Budget Period	Carbon Budget	Reduction Required
2021-2025	295 Mt CO_2e	Reduction in emissions of 4.8% per annum for the first budget period.
2026-2030	200 Mt CO_2e	Reduction in emissions of 8.3% per annum for the second budget period.
2031-2035	151 Mt CO_2e	Reduction in emissions of 3.5% per annum for the third provisional budget.

Table 8.2 - Sectoral Emission Ceilings 2030 Note 1

Sector	Baseline ($MtCO_2e$)	Carbon Budgets ($MtCO_2e$)		2030 Emissions ($MtCO_2e$)	Indicative Emissions % Reduction in Final Year of 2025-2030 Period (Compared to 2018)
	2018	2021-2025	2026-2030		
Transport	12	54	37	6	50
Electricity	10	40	20	3	75
Built Environment - Residential	7	29	23	4	40
Built Environment - Commercial	2	7	5	1	45
Agriculture	23	106	96	17.25	25
Land Use, Land-use Change and Forestry (LULUCF)	5	TBC Note 2	TBC	TBC	TBC
Industry	7	30	24	4	35
Other (F-gases, waste, petroleum refining)	2	9	8	1	50
Unallocated Savings	-	7	5	-5.25	-
Total	68	TBC	TBC	-	-
Legally Binding Carbon Budgets and 2030 Emission Reduction Targets	-	295	200	-	51

Note 1 Table derived from CAP23

Note 2 TBC – these values were not populated in the Government of Ireland Report

8.2.2. Policy

In December 2023, CAP24 was published (Government of Ireland, 2023).This is the second CAP since the publication of the carbon budgets and sectoral emissions ceilings and builds on the progress of CAP23, and it aims to implement the required changes to achieve a 51% reduction in carbon emissions by 2030 and 2050 net zero goal. The CAP has six vital high impact sectors where the biggest savings can be made: renewable energy, energy efficiency of buildings, transport, sustainable farming, sustainable business and change of land-use. CAP24 states that the decarbonisation of Ireland's manufacturing industry is key for Ireland's economy and future competitiveness. There is a target to reduce the embodied carbon in construction materials by 10% for materials produced and used in Ireland by 2025 and by at least 30% for materials produced and used in Ireland by 2030. CAP24 states that these reductions can be brought about by product substitution for construction materials and reduction of clinker content in cement. Cement and other high embodied carbon construction elements can be reduced by the adoption of the methods set out in the Construction Industry Federation 2021 report Modern Methods of Construction. In order to ensure economic growth can continue alongside a reduction in emissions, the IDA Ireland will also seek to attract businesses to invest in decarbonisation technologies.

In April 2023 the Government published a draft Long-Term Strategy on Greenhouse Gas Emissions Reductions (Government of Ireland, 2023). This strategy provides a long-term plan on how Ireland will transition towards net carbon zero by 2050, achieving the interim targets set out in the Climate Action Plan. The strategy will be updated on the basis of a second round of public consultation throughout 2023 with an updated strategy published after this is complete.

The Fingal County Council (FCC) Climate Action Plan (FCC and Codema, 2019) outlines FCC's goals to mitigate GHG emissions and plans to prepare for and adapt to climate change. The FCC Climate Action Plan states that FCC aims to reduce car dependency by encouraging modal shifts from cars to more sustainable modes, including public transport and cycling. Similar to DCC, FCC states that it wishes to work with the relevant transportation bodies to introduce measures to achieve modal shifts and promote interchange between modes.

The FCC Climate Action Plan highlights the risks that climate change poses to the transportation network, with risks mainly associated with extreme weather events. The FCC Climate Action Plan notes that cold snaps and fluvial flooding have the greatest future risk when both the likelihood and consequence are accounted for. Increases in fluvial and pluvial flooding will cause road damage, which can lead to disruption of transport services.

8.2.3. Guidance

The principal guidance and best practice documents used to inform the assessment of potential impacts on climate are summarised below.

- The assessment has made reference to national guidelines where available, in addition to international standards and guidelines relating to the assessment of climate impacts. These are summarised below:
- Guidelines on the Information to be contained in Environmental Impact Assessment Reports (hereafter referred to as the EPA Guidelines) (EPA, 2022);
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Transport Infrastructure Ireland (TII) GE-GEN-01101: Guide to the Implementation of Sustainability for TII Projects (TII, 2023);
- Transport Infrastructure Ireland (TII) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII, 2022a);
- Transport Infrastructure Ireland (TII) PE-ENV-01105: Climate Assessment Standard for Proposed National Roads (TII, 2022b);
- Transport Infrastructure Ireland (TII) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document (TII, 2022c);
- Institute of Environmental Management & Assessment (IEMA) Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance (hereafter referred to as the IEMA 2022 GHG Guidance) (IEMA, 2022);
- IEMA Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (hereafter referred to as the IEMA 2020 EIA Guide) (IEMA, 2020a);
- IEMA GHG Management Hierarchy (hereafter referred to as the IEMA 2020 GHG Management Hierarchy) (IEMA, 2020b); and

- Technical guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021).

In addition to the above guidance, the following daa reports have also been considered:

- Dublin Airport Carbon Reduction Strategy (daa, 2021); and,
- Dublin Airport Sustainability Report 2020 (daa, 2020).

8.3. Methodology

The climate assessment is divided into two distinct sections – a greenhouse gas assessment (GHGA) and a climate change risk assessment (CCRA):

- Greenhouse Gas Emissions Assessment (GHGA) – Quantifies the GHG emissions from a project over its lifetime. The assessment compares these emissions to relevant carbon budgets, targets and policy to contextualise magnitude; and,
- Climate Change Risk Assessment (CCRA) – Identifies the impact of a changing climate on a project and receiving environment. The assessment considers a project's vulnerability to climate change and identifies adaptation measures to increase project resilience.

8.3.1. Greenhouse Gas Assessment

As per the EU guidance document *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (European Commission, 2013) the climate baseline is first established with reference to EPA data on annual GHG emissions.

8.3.1.1. Construction Phase

PE-ENV-01104 (TII, 2022a) recommends the calculation of the construction stage embodied carbon using the TII Online Carbon Tool (TII, 2022c). Embodied carbon refers to the sum of the carbon needed to produce a good or service. It incorporates the energy needed in the mining or processing of raw materials, the manufacturing of products and the delivery of these products to site. The TII Online Carbon Tool (TII, 2022c) has been commissioned by TII to assess GHG emissions associated with road or rail projects using Ireland-specific emission factors and data. Given the nature of the proposed development as a car park, the use of the TII carbon tool is considered appropriate as material types and construction activities are likely similar to those associated with elements of road and rail projects.

The TII Carbon Tool (TII, 2022c) uses emission factors from recognised sources including the Civil Engineering Standard Method of Measurement (CESSM) Carbon and Price Book database (CESSM, 2013). The carbon emissions are calculated by multiplying the emission factor by the quantity of the material that will be used over the entire construction / maintenance phase. The outputs are expressed in terms of tCO_2e (tonnes of carbon dioxide equivalent).

Information on the material quantities, site activities, land clearance, waste product and construction traffic were provided by AECOM for input into the carbon tool. This information was used to determine an estimate of the GHG emissions associated with the development. Complete detailed information regarding the proposed construction materials and exact methodologies was not available at the time of this assessment and will be specified at the detailed design stage. Best estimates have been used in this assessment to provide an estimate of the GHGs associated with the proposed development.

8.3.1.2. Operational Phase

Emissions from road traffic associated with the proposed development have the potential to emit carbon dioxide (CO_2) which will impact climate.

The UK Highways Agency DMRB guidance document in relation to climate impact assessments LA 114 Climate (UK Highways Agency, 2019) contains the following scoping criteria to determine whether a detailed climate assessment is required for a proposed development during the operational stage. If any of the road links impacted by the proposed development meet or exceed the below criteria, then further assessment is required.

- A change of more than 10% in AADT;
- A change of more than 10% to the number of heavy duty vehicles; and
- A change in daily average speed of more than 20 km/hr.

There are a small number of road links that will experience a change of over 10% in the AADT during the operational phase as a result of the proposed development. As a result, a detailed assessment of traffic related CO_2 emissions was conducted.

PE-ENV-01104 (TII, 2022a) states that road traffic related emissions information should be obtained from an Air Quality Practitioner to show future user emissions during operation without the development in place. The Air Quality Practitioner calculated the traffic related emissions through the use of the TII REM tool (TII, 2022d) which includes detailed fleet predictions for age, fuel technology, engine size and weight based on available national forecasts. The output is provided in terms of CO_2e for the Base Year 2023, Opening Year 2028 and Design Year 2038. Both the Do Nothing and Do Something scenarios are quantified in order to determine the degree of change in emissions as a result of the proposed development. Traffic data was obtained from AECOM for the purpose of this assessment. Inputs include light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type and project county location. Further details are provided in Chapter 7 – Air Quality and the Traffic and Transport Impact Assessment (Refer to Appendix 2 'AECOM (2023) Traffic Impact Assessment' within Appendix 10.1).

8.3.1.3. Significance Criteria for GHGA

The Transport Infrastructure Ireland (TII) guidance document entitled PE-ENV-01104 Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII, 2022a) outlines a recommended approach for determining the significance of both the construction and operational phases of a development.

The significance of GHG effects set out in PE-ENV-01104 (TII, 2022a) is based on IEMA guidance (IEMA, 2022) which is consistent with the terminology contained within Figure 3.4 of the EPA's (2022) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports'.

The 2022 IEMA Guidance (IEMA, 2022) sets out the following principles for significance:

- When evaluating significance, all new GHG emissions contribute to a negative environmental impact; however, some projects will replace existing development or baseline activity that has a higher GHG profile. The significance of a project's emissions should, therefore, be based on its net impact over its lifetime, which may be positive, negative or negligible;
- Where GHG emissions cannot be avoided, the goal of the EIA process should be to reduce the project's residual emissions at all stages; and
- Where GHG emissions remain significant, but cannot be further reduced, approaches to compensate the project's remaining emissions should be considered.

TII (TII, 2022a) states that professional judgement must be taken into account when contextualising and assessing the significance of a project's GHG impact. In line with IEMA Guidance (IEMA, 2022), TII state that the crux of assessing significance is "*not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050*".

Significance is determined using the criteria outlined in Table 8.3 (derived from Table 6.7 of PE-ENV-01104 (TII, 2022a)) along with consideration of the following two factors:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

The significance of the effect of GHG emissions on climate is assessed for the total GHG emissions across all project stages.

Table 8.3 - Greenhouse Gas Assessment (GHGA) Significance Criteria

Effects	Significance Level Description	Description
Significant Adverse	Major Adverse	• The project's GHG impacts are not mitigated. • The project has not complied with do-minimum standards set through regulation, nor provided reductions required by local or national policies; and • No meaningful absolute contribution to Ireland's trajectory towards net zero.
	Moderate Adverse	• The project's GHG impacts are partially mitigated. • The project has partially complied with do-minimum standards set through regulation, and have not fully complied with local or national policies; and • Falls short of full contribution to Ireland's trajectory towards net zero.
Not Significant	Minor Adverse	• The project's GHG impacts are mitigated through 'good practice' measures. • The project has complied with existing and emerging policy requirements; and • Fully in line to achieve Ireland's trajectory towards net zero.
	Negligible	• The project's GHG impacts are mitigated beyond design standards. • The project has gone well beyond existing and emerging policy requirements; and • Well 'ahead of the curve' for Ireland's trajectory towards net zero.
	Beneficial	• The project's net GHG impacts are below zero and it causes a reduction in atmosphere GHG concentration. • The project has gone well beyond existing and emerging policy requirements; and • Well 'ahead of the curve' for Ireland's trajectory towards net zero, provides a positive climate impact.

Ireland's carbon budgets can also be used to contextualise the magnitude of GHG emissions from the proposed development (TII, 2022a). The approach is based on comparing the net proposed development GHG emissions to the relevant carbon budgets (DECC, 2023). With the publication of the Climate Action Act in 2021 and the Climate Action Plan 2024, sectoral carbon budgets have been published for comparison with the net GHG emissions from the proposed development over its lifespan. The relevant sector budgets are for Transport and Industry. The Transport sector emitted approximately 12 $MtCO_2e$ in 2018 and has a ceiling of 6 Mt CO_2e in 2030 which is a 50% reduction over this period. The Industry sector emitted approximately 7 $MtCO_2e$ in 2018 and has a ceiling of 4 Mt CO_2e in 2030 which is a 35% reduction over this period.

8.3.2. Climate Change Risk Assessment

The assessment involves an analysis of the sensitivity and exposure of the proposed development to climate hazards which together provide a measure of vulnerability of the proposed development to hazards as a results of climate change.

PE-ENV-01104 (TII, 2022a) states that the CCRA is guided by the principles set out in the overarching best practice guidance documents:

- EU (2021) Technical guidance on the climate proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021); and

- The Institute of Environmental Management and Assessment, Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (2nd Edition) (IEMA, 2020a).

The baseline environment information provided in Section 8.3.2.1, future climate change modelling and input from other experts working on the proposed development (i.e. hydrologists) should be used in order to assess the likelihood of a climate risk.

First an initial screening CCRA based on the operational phase is carried out, according to the TII guidance PE-ENV-01104. This is carried out by determining the sensitivity of proposed development assets (i.e. receptors) and their exposure to climate change hazards.

The proposed development asset categories must be assigned a level of sensitivity to climate hazards. PE-ENV-01104 (TII, 2022a) provides the below list of asset categories and climate hazards to be considered. The asset categories will vary for development type and need to be determined on a development by development basis.

- **Asset Categories** Pavements; drainage; structures; utilities; landscaping; signs, light posts, buildings, and fences.
- **Climate Hazards** Flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning and hail; landslides; fog.

The asset sensitivity is based on a High, Medium or Low rating with a score of 1 to 3 assigned as per the criteria below. Asset sensitivity takes into account design mitigation measures.

- **High Sensitivity** The climate hazard will or is likely to have a major impact on the asset category. This is a sensitivity score of 3.
- **Medium Sensitivity** It is possible or likely the climate hazard will have a moderate impact on the asset category. This is a sensitivity score of 2.
- **Low Sensitivity** It is possible the climate hazard will have a low or negligible impact on the asset category. This is a sensitivity score of 1.

Once the sensitivities have been identified the exposure analysis is undertaken. The exposure analysis involves determining the level of exposure of each climate hazard at the proposed development location. Exposure is assigned a level of High, Medium or Low as per the below criteria.

- **High Exposure** It is almost certain or likely this climate hazard will occur at the project location i.e., might arise once to several times per year. This is an exposure score of 3.
- **Medium Exposure** It is possible this climate hazard will occur at the project location i.e., might arise a number of times in a decade. This is an exposure score of 2.
- **Low Exposure** It is unlikely or rare this climate hazard will occur at the project location i.e., might arise a number of times in a generation or in a lifetime. This is an exposure score of 1.

Once the sensitivity and exposure are categorised, a vulnerability analysis is conducted by multiplying the sensitivity and exposure to calculate the vulnerability.

8.3.2.1. Significance Criteria for CCRA

The assessment of vulnerability to climate change combines the outcomes of the sensitivity and exposure analysis with the aim of identifying the key vulnerabilities and potentially significant climate hazards which could impact the proposed development. The vulnerability assessment takes any proposed mitigation into account.

Vulnerability = Sensitivity x Exposure

Table 8.4 details the vulnerability matrix; vulnerabilities are scored on a high, medium and low scale. A risk that is low or medium is classed as non-significant, while a high or extreme risk is classed as a significant risk.

TII guidance (TII, 2022a) and the EU technical guidance (European Commission, 2021a) note that if all vulnerabilities are ranked as low in a justified manner, no detailed climate risk assessment may be needed. The impact from climate change on the proposed development can, therefore, considered to be not significant. The impact from climate change on the proposed development can therefore considered to be not significant.

Where residual medium or high vulnerabilities exist the assessment may need to be progressed to a detailed climate change risk assessment and further mitigation implemented to reduce risks. An assessment of construction phase CCRA impacts is only required according to the TII guidance (TII, 2022a) if a detailed CCRA is required.

Table 8.4 - Vulnerability Matrix

		Exposure		
		High (3)	Medium (2)	Low (1)
Sensitivity	High (3)	9 – High	6 – High	3 – Medium
	Medium (2)	6 – High	4 – Medium	2 – Low
	Low (1)	3 – Medium	2 – Low	1 – Low

The screening CCRA, discussed in Section 8.6.2, did not identify any residual medium or high risks to the proposed development as a result of climate change. Therefore a detailed CCRA for the construction phase was scoped out.

While a CCRA for the construction phase was not required, best practice mitigation against climate hazards is still recommended in Section 8.8.

8.4. Receiving Environment

8.4.1. Current GHGA Baseline

PE-ENV-01104 (TII, 2022a) states that a baseline climate scenario should identify, consistent with the study area for the proposed development, GHG emissions without the proposed development for both the current and future baseline.

Ireland declared a climate and biodiversity emergency in May 2019 and in November 2019 there was European Parliament approval of a resolution declaring a climate and environment emergency in Europe. This, in addition to Ireland's current failure to meet its EU binding targets under Regulation 2018/842 (European Union, 2018) results in changes in GHG emissions either beneficial or adverse being of more significance than previously considered prior to these declarations.

Climate impacts are assessed at a national level and in relation to national targets and sectoral emission ceilings. The study area for climate is the Republic of Ireland and the baseline is determined in relation to this study area.

Ireland's GHG emissions are estimated to be 60.76 million tonnes carbon dioxide equivalent (Mt CO_2e), which is 1.9% lower (or 1.19 Mt CO_2e) than emissions in 2021 (61.95 Mt CO_2e) and follows a 5.1% increase in emissions reported for 2021 (EPA, 2023). In 2022 emissions in the stationary emissions trading scheme (ETS) sector decreased by 4.3% and emissions under the ESR (Effort Sharing Regulation) decreased by 1.1%. When LULUCF is included, total national emissions decreased by 1.8%. The sector with the highest emissions in 2022 (excluding LULUCF) was agriculture at 38.4% of the total, followed by transport at 19.1%. Decreased emissions in 2022 compared to 2021 were observed in the largest sectors except for transport, waste and commercial services. These 3 sectors showed increases in emissions (6.0%, 4.9% and 0.2% respectively). For 2022, the total national emissions (excluding LULUCF) were estimated to be 68,069 kt CO_2e as shown in Table 8.5 (EPA, 2023).

Table 8.5 - Total National GHG Emissions in 2022 Note 1

Sector	2021 Emissions (Mt CO_2e)	2022 Emissions (Mt CO_2e)	% Total 2022 (including LULUCF)	% Change from 2021 to 2022
Agriculture	23.626	23.337	34%	-2.1
Transport	10.978	11.634	17%	6.0
Energy Industries	10.262	10.076	15%	-1.8
Residential	6.992	6.105	9%	-12.7
Manufacturing Combustion	4.614	4.288	6%	-7.1
Industrial Processes	2.475	2.289	3%	-7.5
F-Gases	0.745	0.741	1%	-0.5
Commercial Services	0.765	0.767	1%	0.2
Public Services	0.672	0.659	1%	-1.9
Waste Note 2	0.726	0.867	1%	4.9
Land Use, Land-use Change and Forestry (LULUFC)	7.338	7.305	11%	-0.5
National Total excluding LULUFC	61.955	60.764	89%	-1.9
National Total including LULUFC	62.293	68.069	100%	-1.8

Note 1 Reproduced from Latest emissions data on the EPA website (EPA, 2023)

Note 2 Waste includes emissions from solid waste disposal on land, solid waste treatment (composting and anaerobic digestion), wastewater treatment, waste incineration and open burning of waste

8.4.2. Future GHGA Baseline

The future baseline with respect to the GHGA can be considered in relation to the future climate targets which the assessment results will be compared against. In line with TII (TII, 2022c) and IEMA Guidance (IEMA, 2022) the future baseline is a trajectory towards net zero by 2050, *"whether it [the project] contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050"*.

The future baseline will be determined by Ireland meeting its targets set out in the CAP23, and future CAPs, alongside binding 2030 EU targets. In order to meet the commitments under the Paris Agreement, the European Union (EU) enacted *'Regulation (EU) 2018/842 on binding annual GHG emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013'* (hereafter referred to as the Regulation) (European Union, 2018). The Regulation aims to deliver, collectively by the EU in the most cost-effective manner possible, reductions in GHG emissions from the Emission Trading Scheme (ETS) and non-ETS sectors amounting to 43% and 30%, respectively, by 2030 compared to 2005. The Regulation was amended in April 2023 and Ireland must now limit its greenhouse gas emissions by at least 42% by 2030. The ETS is an EU-wide scheme which regulates the GHG emissions of larger industrial emitters Including electricity generation, cement manufacturing and heavy industry. The non-ETS sector includes all domestic GHG emitters which do not fall under the ETS scheme and thus includes GHG emissions from transport, residential and commercial buildings and agriculture.

8.4.3. Current CCRA Baseline

The region of the proposed development has a temperate, oceanic climate, resulting in mild winters and cool summers. The Met Éireann weather station at Dublin Airport is the nearest weather and climate monitoring station to the proposed development with meteorological data recorded for the 30-year period from 1991 to 2020. The historical regional weather data for Dublin Airport Metrological station is representative of the current climate in the region of the proposed development. The data for the 30-year period from 1991 to 2020 indicates that the wettest months at Dublin Airport Metrological Station were November and December, and the driest month on average was June. July was the warmest month with a mean temperature of 15.4 Celsius. January was the coldest month with a mean temperature of 5.2 Celsius.

Met Éireann's 2023 Climate Statement (Met Éireann, 2024) states 2023's average shaded air temperature in Ireland is provisionally 11.20 °C, which is 1.65°C above the 1961-1990 long-term average. Previous to this 2022 was the warmest year on record, however 2023 was 0.38 °C warmer (see Figure 8-1).

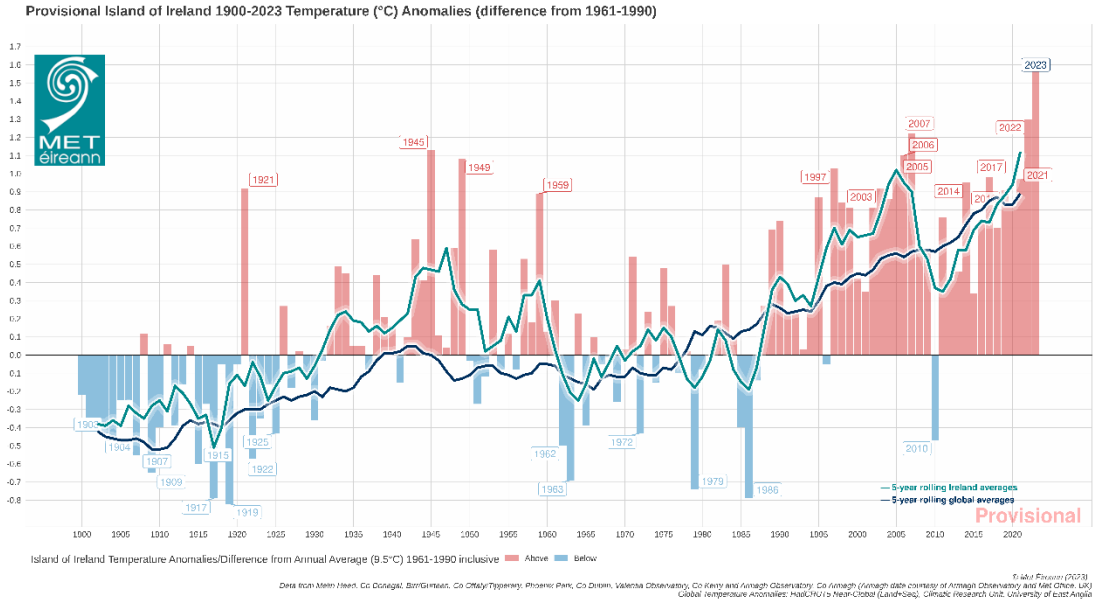


Figure 8-1 - 1900-2023 Temperature (°C) Temperature Anomalies (differences from 1961-1990)

2023 also had above average rainfall, this included the warmest June on record and the wettest March and July on record. Record high sea surface temperatures (SST) were recorded since April 2023 which included a severe marine heatwave to the west of Ireland during the June 2023. This marine heatwave contributed to the record rainfall in July.

Recent weather patterns and records of extreme weather events recorded by Met Éireann have been reviewed. Considering the extraordinary 2023 data, Met Éireann states that the latest Irish climate change projections indicate further warming in the future, including warmer winters. The record temperatures means the likelihood of extreme weather events occurring has increased. This will result in longer dry periods and heavy rainfall events. Storm surges and coastal flooding due to sea level rise. Compound events, where coastal surges and extreme rainfall events occur simultaneously will also increase. Met Éireann has high confidence in maximum rainfall rates increasing but not in how the frequency or intensity of storms will change with climate change.

8.4.4. Future CCRA Baseline

Impacts as a result of climate change will evolve with a changing future baseline, changes have the potential to include increases in global temperatures and increases in the number of rainfall days per year. Therefore, it is expected that the baseline climate will evolve over time and consideration is needed with respect to this within the design of the proposed development.

Ireland has seen increases in the annual rainfall in the north and west of the country, with small increases or decreases in the south and east including in the region where the proposed development will be located (EPA, 2021b). The EPA also note the following may occur as a result of climate change (EPA, 2021a):

- More intense storms and rainfall events;
- Increased likelihood and magnitude of river and coastal flooding;
- Adverse impacts on water quality; and

- Changes in distribution of plant and animal species.

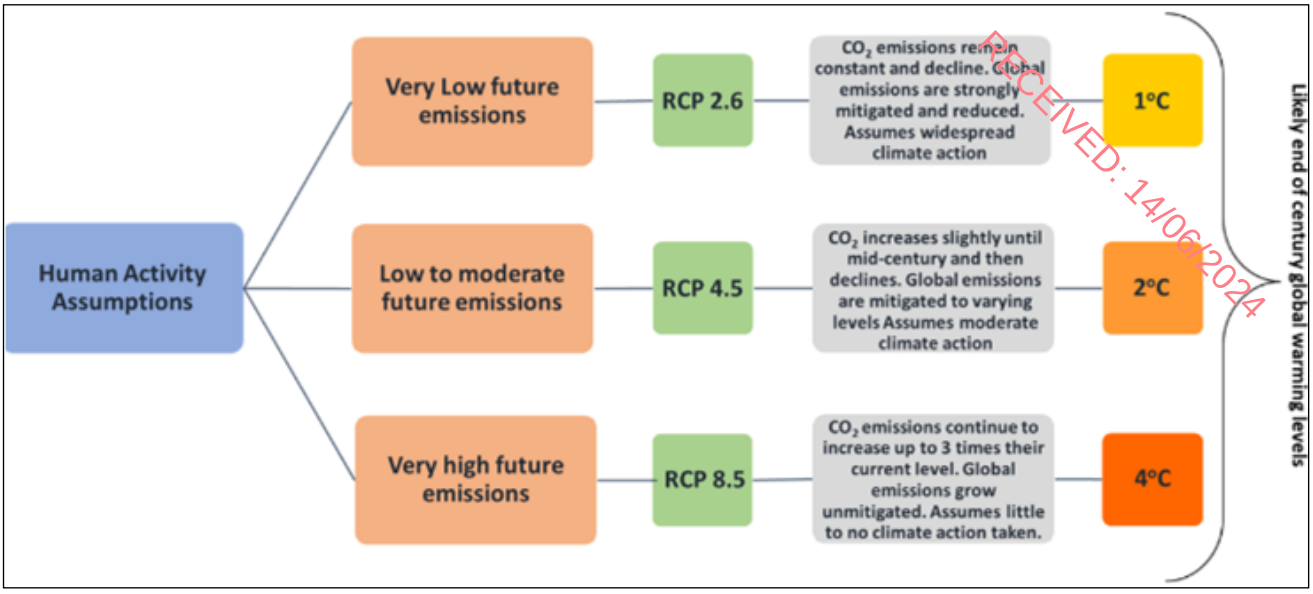
The EPA's *State of the Irish Environment Report (Chapter 2: Climate Change)* (EPA, 2020b) notes that projections show that full implementation of additional policies and measures, outlined in the 2019 Climate Action Plan, will result in a reduction in Ireland's total GHG emissions by up to 25% by 2030 compared with 2020 levels. Climate change is not only a future issue in Ireland, as a warming of approximately 0.8°C since 1900 has already occurred. The EPA state that it is critically important for the public sector to show leadership and decarbonise all public transport across bus and rail networks to the lowest carbon alternatives. The report (EPA, 2020b) underlines that the next decade needs to be one of major developments and advances in relation to Ireland's response to climate change in order to achieve these targets. Ireland must accelerate the rate at which it implements GHG emission reductions. The report states that mid-century mean annual temperatures in Ireland are projected to increase by between 1.0°C and 1.6°C (subject to the emissions trajectory). In addition, heat events are expected to increase by mid-century (EPA, 2020b). While individual storms are predicted to have more severe winds, the average wind speed has the potential to decrease (EPA, 2020b).

TII's Guidance document PE-ENV-01104 (TII, 2022a) states that for future climate change a moderate to high Representative Concentration Pathways (RCP) should be adopted. RCP4.5 is considered moderate while RCP8.5 is considered high. Representative Concentration Pathways (RCPs) describe different 21st century pathways of GHG emissions depending on the level of climate mitigation action undertaken.

Future climate predictions undertaken by the EPA have been published in *Research 339: High-resolution Climate Projections for Ireland – A Multi-model Ensemble Approach* (EPA, 2020a). The future climate was simulated under both Representative Concentration Pathway 4.5 (RCP4.5) (medium-low) and RCP8.5 (high) scenarios. This study indicates that by the middle of this century (2041–2060), mid-century mean annual temperatures are projected to increase by 1 to 1.2°C and 1.3 to 1.6°C for the RCP4.5 and RCP8.5 scenarios, respectively, with the largest increases in the east. Warming will be enhanced at the extremes (i.e. hot days and cold nights), with summer daytime and winter night-time temperatures projected to increase by 1 to 2.4°C. There is a projected substantial decrease of approximately 50%, for the number of frost and ice days. Summer heatwave events are expected to occur more frequently, with the largest increases in the south. In addition, precipitation is expected to become more variable, with substantial projected increases in the occurrence of both dry periods and heavy precipitation events. Climate change also has the potential to impact future energy supply which will rely on renewables such as wind and hydroelectric power. More frequent storms have the potential to damage the communication networks requiring additional investment to create resilience within the network.

The EPA's *Critical Infrastructure Vulnerability to Climate Change* report (EPA, 2021b) assesses the future performance of Irelands critical infrastructure when climate is considered. With respect to road infrastructure, fluvial flooding and coastal inundation/coastal flooding are considered the key climate change risks with snowstorm and landslides being medium risks. Extreme winds and heatwaves/droughts are considered low risk to road infrastructure. One of the key outputs of the research was a framework that will provide quantitative risk-based decision support for climate change impacts and climate change adaptation analysis for infrastructure.

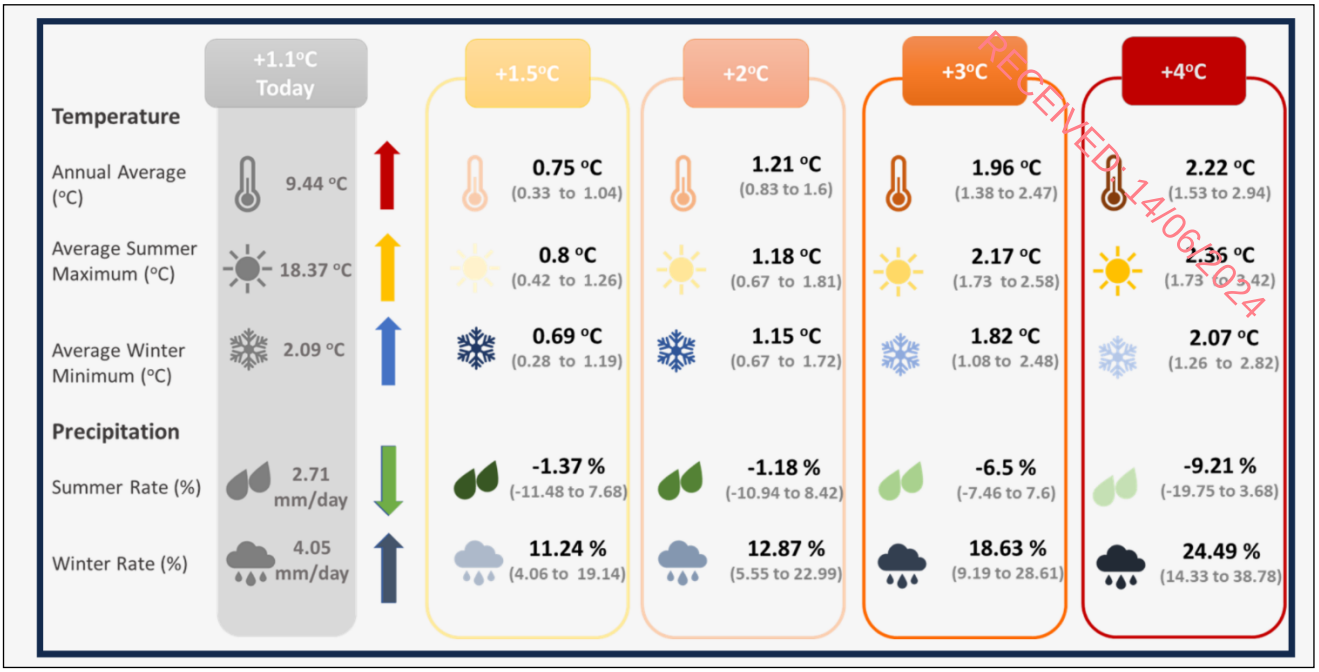
National Framework for Climate Services (NFCS) was founded in June 2022 to streamline the provision of climate services in Ireland and will be led by Met Éireann. The aim of the NFCS is to enable the co-production, delivery and use of accurate, actionable and accessible climate information and tools to support climate resilience planning and decision making. In addition to the NFCS, further work has been ongoing into climate projects in Ireland through research under the TRANSLATE project. TRANSLATE (Met Éireann, 2023) has been led by climate researchers from University of Galway – Irish Centre for High End Computing (ICHEC), and University College Cork – SFI Research Centre for Energy, Climate and Marine (MaREI), supported by Met Éireann climatologists. TRANSLATE's outputs are produced using a selection of internationally reviewed and accepted models from both CORDEX and CMIP5. Representative Concentration Pathways (RCPs) provide a broad range of possible futures based on assumptions of human activity. The modelled scenarios include for "least" (RCP2.6), "more" (RCP4.5) or "most" (RCP8.5) climate change, see Figure 8-2.



Source TRANSLATE Project Story Map (Met Éireann, 2023)

Figure 8-2 - Representative Concentration Pathways Associated Emission Levels

TRANSLATE (Met Éireann, 2023) provides the first standardised and bias-corrected national climate projections for Ireland to aid climate risk decision making across multiple sectors (for example, transport, energy, water), by providing information on how Ireland's climate could change as global temperatures increase to 1.5˚C ,2˚C, 2.5˚C, 3˚C or 4˚C (see Figure 8-3). Projections broadly agree with previous projections for Ireland. Ireland's climate is dominated by the Atlantic Meridional Overturning Circulation (AMOC), a large system of ocean currents – including the Gulf Stream – characterised by a northward flow of warm water and a southward flow of cold water. Due to the AMOC, Ireland does not suffer from the extremes of temperature experienced by other countries at a similar latitude. Recent studies have projected that the AMOC could decline by 30 – 40 % by 2100, resulting in cooler North Atlantic Sea surface temperatures (SST)s (Met Éireann, 2023). Met Éireann projects that Ireland will nevertheless continue to warm, although the AMOC cooling influence may lead to reduced warming compared with continental Europe. AMOC weakening is also expected to lead to additional sea level rise around Ireland. With climate change Ireland's temperature and rainfall will undergo more and more significant changes e.g. on average summer temperature could increase by more than 2°C, summer rainfall could decrease by 9% while winter rainfall could increase by 24%. Future projects also include a 10-fold increase in the frequency of summer nights (values > 15°C) by the end of the century, a decrease in the frequency of cold winter nights and an increase in the number of heatwaves. A heatwave in Ireland is defined as a period of 5 consecutive days where the daily maximum temperature is greater than 25°C.



Source TRANSLATE Project Story Map (Met Éireann, 2023)

Figure 8-3 - Change of Climate Variables for Ireland for Different Global Warming Thresholds

8.5. Characteristics of the Proposed Development

The proposed site is located directly south of the western corner of the North Airport Runway; in the townland of Harristown. The site is bounded to the North by the R108; to the East by the Holiday Blue Long Term Car Park; to the West by an access road serving three dwellings and to the South by the Horizon Logistics Park.

The proposed car park is currently a greenfield site with an area of approximately 4.26ha. The car park will cater for 950 staff car parking spaces, of which 48 no. will be provided for Persons with Reduced Mobility (PRM) and 96 no. will be serviced by Electric Vehicle (EV) charging points. The development is also inclusive of cycle parking, a bus stop and a welfare facility building and associated infrastructure to be installed to the west of the existing entrance. In addition, a new security hut with a toilet and sink will be located on the traffic island along the existing entrance road. The site is to be accessed off the South Parallel Road (R108) via an upgraded existing former temporary construction access/egress, with an emergency access also to be provided through the existing Holiday Blue Long-Term Car Park immediately east of the proposed development site via a tie in, with security barriers, to the existing internal roundabout.

In relation to climate, impacts will occur during both the construction and operational phases of the development. During the construction stage the main source of climate impacts will be because of GHG emissions and embodied carbon associated with the proposed construction materials and activities for the proposed development.

During the operational phase vehicle emissions from traffic changes associated with the proposed development have the potential to release CO_2 and other GHGs which will impact climate. In addition, the vulnerability of the proposed development in relation to future climate change must be considered during the operational phase.

8.6. Potential Effects

8.6.1. Greenhouse Gas Assessment

There is the potential for greenhouse gas emissions to atmosphere during the construction and operational phases of the proposed development. As per the TII guidance (2022a), the significance of the effect of GHG emissions on climate is assessed for the total GHG emissions across all proposed development stages.

8.6.1.1. Construction Phase

The embodied carbon within the construction materials has been calculated. This calculation was based on the TII Online Carbon Tool (TII, 2022c), and the quantities provided AtkinsRéalis. The proposed development is estimated to result in total construction phase GHG emissions of 16,587 tonnes embodied CO_2e for the product and construction processes. This is equivalent to 0.008% of the 2030 Industrial Sector Budget and 0.006% of the

Transport Sector Budget when annualised over the proposed development lifespan (assumed 50 years). Annualising the full carbon emissions over the lifetime of the development allows for appropriate comparison with annual GHG targets (see Table 8.6). The highest impact area is the construction waste due to excavation, which accounts for 89% of the total embodied CO_2e. This is followed by material embodied carbon and then material maintenance.

Table 8.6 Greenhouse Gas Assessment

Source	Carbon Emissions (tCO_2e)	% of Total
Embodied Carbon/Materials	1340	8%
Construction Activities	0.04	0.0002%
Construction Waste	14,992	90%
Maintenance	255	1.5%
Total	**16,587**	
2030 Sectoral Budget (Industry Sector)	4,000,000	
2030 Sectoral Budget (Transport Sector)	6,000,000	
Total Annualised Emissions as % of Industrial Sectoral Ceiling	0.008%	
Total Annualised Emissions as % of Transport Sectoral Ceiling	0.005%	

8.6.1.2. Operational Phase

There is the potential for increased traffic volumes to impact climate during the operational phase. To provide for a worst-case assessment and to assess potential cumulative impacts, the traffic data has included specific cumulative developments within the area (see Traffic & Transport Assessment for further details).

The predicted concentrations of CO_2e for the future years of 2028 and 2038 are detailed in Table 8.7. These are significantly less than Ireland's national 2028 and 2030 targets set out under EU legislation (targets beyond 2030 are not available) and the 2030 sectoral emissions ceilings. It is predicted that in 2028 the proposed development will increase CO_2 emissions by 146 tonnes CO_2e.This equates to 0.00041% of the 2028 national emission ceiling or 0.00244% of the 2030 Transport sector emissions ceiling (see Table 8.7). Similarly low increases in CO_2 emissions are predicted to occur in 2038 with emissions increasing by 269 tonnes CO_2e. This equates to 0.00081% of the 2030 national emission ceiling or 0.00449% of the 2030 Transport sector emissions ceiling (see Table 8.7).

Table 8.7 - Traffic Emissions GHG Impact Assessment

Year	Scenario	CO_2e (tonnes/annum)
2028	Do Nothing	1,600
	Do Something	1,746
2038	Do Nothing	1,556
	Do Something	1,825
Increment Change in 2028		146
National Emission Ceiling 2028 (Tonnes) Note 1		35,625,332
Impact in 2028 (as % of national emissions ceiling)		0.00041%
Transport Sector 2030 Emission Ceiling		6,000,000
Impact in 2028 (as % of transport sector emissions ceiling)		0.00244%
Increment Change in 2038		269
National Emission Ceiling 2030 (Tonnes) Note 1		33,381,312
Impact in 2038 (as % of national emissions ceiling)		0.00081%
Impact in 2038 (as % of transport sector emissions ceiling)		0.00449%

8.6.1.3. GHGA Significance of Effects

The TII guidance states that the following two factors should be considered when determining significance:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

The level of mitigation described in Section 8.8. has therefore been taken into account when determining the significance of the proposed development's GHG emissions. According to the TII significance criteria described in Section 8.3.1.3, the significance of the GHG emissions during the construction and operational phase is ***minor adverse.***

In accordance with the EPA guidelines (EPA, 2022), the above significance equates to a significance of effect of GHG emissions during the construction and operational phase which is ***direct, long-term, negative*** and ***slight,*** which is overall ***not significant.***

8.6.2. Climate Change Risk Assessment

8.6.2.1. Construction Phase

A detailed CCRA of the construction phase has been scoped out, as discussed in Section 8.3.2.1. However, consideration has been given to the proposed development's vulnerability to the following climate change hazards with best practice mitigation measures proposed in Section 8.8:

- Flood Risk due to increased precipitation, and intense periods of rainfall. This includes fluvial and pluvial flooding;
- Increased temperatures potentially causing drought, wildfires and prolonged periods of hot weather;
- Reduced temperatures resulting in ice or snow; and
- Major Storm Damage – including wind damage.

8.6.2.2. Operational Phase

In order to determine the vulnerability of the proposed development to climate change the sensitivity and exposure of the development to various climate hazards must first be determined. The following climate hazards have been considered in the context of the proposed development: flooding (coastal, pluvial, fluvial); extreme

heat; extreme cold; wildfire; drought; extreme wind; lightning, hail, landslides and fog. Wildfire and landslides were not considered relevant to the proposed development due to the proposed development location and have been screened out of the assessment.

The sensitivity of the proposed development to the above climate hazards is assessed irrespective of the proposed development location. The sensitivity of the proposed development is determined on a scale of high (3), medium (2) and low (1). Once the sensitivity has been established the exposure of the proposed development to each of the climate hazards is determined, this is the likelihood of the climate hazard occurring at the proposed development location and is also scored on a scale of high (3), medium (2) and low (1). The product of the sensitivity and exposure is then used to determine the overall vulnerability of the proposed development to each of the climate hazards. The results of the vulnerability assessment are detailed in Table 8.8.

Table 8.8 - Climate Change Vulnerability Assessment

Climate Hazard	Sensitivity	Exposure	Vulnerability
Flooding (Coastal, Pluvial, Fluvial)	1 (Low)	2 (Medium)	2 (Low)
Extreme Heat	1 (Low)	2 (Medium)	2 (Low)
Extreme Cold	1 (Low)	2 (Medium)	2 (Low)
Drought	1 (Low)	2 (Medium)	2 (Low)
Extreme Wind	1 (Low)	2 (Medium)	2 (Low)
Lightning & Hail	1 (Low)	1 (Low)	1 (Low)
Fog	1 (Low)	1 (Low)	1 (Low)

The proposed development has a worst-case low vulnerability to the identified climate hazards. The Site-Specific Flood Risk Assessment (SFRA) completed by AtkinsRéalis indicates that the site is contained within Flood Zone C. The proposed development would not be at risk of Pluvial flooding and surface water will be catered for within the car park proposed and existing SuDS drainage systems. The groundwater vulnerability, when the groundwater table may be high, is indicated as Low. However, this is only indicative of groundwater vulnerability and does not reflect the risk of groundwater flooding of the site. However, there are no significant springs or groundwater discharges recorded in the immediate vicinity of the site. The site is well elevated (circa 70m above sea level) and is approximately 11 kilometres inland from the nearest coastline. Therefore, the risk of tidal flooding is not considered likely. Furthermore, the location of the proposed development is not at risk of fluvial flooding.

Adequate attenuation and drainage in accordance with relevant standards have been incorporated into the design of the development which allows for additional rainfall as a result of climate change thereby reducing the risk for the site. The site drainage system is designed to cater for the 1 in 2 year return period for underground pipes flowing full with surcharge capacity up to 1 in 30 year event. The pluvial flood risk has been considered by designing the drainage system, swale, the culvert and attenuation storage design allow for a 20% (Climate Change Factor) increase in rainfall intensities due to future climate change on top of the 1-in-100-year storm event. This is in line with the “Medium Risk” RCP4.5 scenario. An additional 30% would align with the “High Risk” RCP8.5 scenario, therefore, the exposure has been classified as medium, however the resulting vulnerability remains low.

In relation to extreme temperatures, both extreme heat and extreme cold, these have the potential to impact the building materials and some related infrastructure. However, the building materials selected at the detailed design stage will be of high quality and durability. Therefore, extreme temperatures are not considered a significant risk.

There is no additional vulnerability with respect to all climate hazards when design mitigation has been put in place in order to alleviate this known vulnerability to future climate change risk.

8.6.2.3. CCRA Significance of Effects

With design mitigation in place, there are no significant risks to the proposed development as a result of climate change. In accordance with the EPA Guidelines (EPA, 2022), the significance of effect of the impacts to the proposed development as a result of climate change are ***direct, long-term, negative*** and ***imperceptible***.

8.7. Cumulative Effects

With respect to the requirement for a cumulative assessment PE-ENV-01104 (TII, 2022a) states that "*for GHG Assessment is the global climate and impacts on the receptor from a project are not geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable*."

However, by presenting the GHG impact of a proposed development in the context of its alignment to Ireland's trajectory of net zero and any sectoral carbon budgets, this assessment will demonstrate the potential for the proposed development to affect Ireland's ability to meet its national carbon reduction target. Therefore, the assessment approach is considered to be inherently cumulative.

8.8. Mitigation Measures

8.8.1. Construction Phase

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. Best practice measures to reduce the embodied carbon of the construction works include:

- Appointing a suitably competent contractor who will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled;
- Materials will be reused on site where possible;
- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods;
- Ensure all plant and machinery are well maintained and inspected regularly;
- Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site; and
- Sourcing materials locally where possible to reduce transport related CO_2 emissions.

In terms of impact on the proposed development due to climate change, during construction the Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will be required to mitigate against the effects of fog, lighting and hail through site risk assessments and method statements.

8.8.2. Operational Phase

Some measures have been incorporated into the of the development to mitigate the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated to avoid potential flooding impacts due to increased rainfall events in future years. These measures have been considered when assessing the vulnerability of the proposed development to climate change (see Section 8.1).

No additional specific mitigation measures in relation to climate have been identified for the operational phase.

8.9. Residual Effects

The proposed development will result in some impacts to climate through the release of GHGs. TII state that the crux of assessing significance is "*not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050*". The proposed development has incorporated some minimal measures to reduce climate change impacts. As per the assessment criteria in Table 8.3 the effect of GHG emissions during the construction and operational phase, which is ***direct, long-term, negative*** and ***not significant***.

In relation to climate change vulnerability, it has been assessed that the effect on the proposed development as a result of climate change is ***direct, long-term, negative*** and ***imperceptible***.

8.10. Monitoring Requirements

8.10.1. Construction Phase

There is no proposed monitoring during the construction phase.

8.10.2. Operational Phase

There is no proposed monitoring during the operational phase.

8.11. Difficulties Encountered During Preparation of this Chapter

There were no difficulties encountered when compiling this assessment.

8.12. Risk of Major Accidents and/or Disasters

There are no likely risks of major accidents and disasters in relation to climate associated with the proposed development due to the nature and scale of the development. The vulnerability of the proposed development to future climate change has been assessed and it was determined that there were at most low risks to the relevant climate hazards.

9. Noise & Vibration

This chapter assesses the potential noise and vibration impacts associated with the development and operations of the proposed new Remote South Staff Carpark at Dublin Airport. A description of the proposed development is outlined in Chapter 2.

When considering the potential impacts from this development, key sources of noise will relate to the permanent impacts associated with road traffic on the surrounding road network and on-site car park activities and the short term impacts associated with the construction stage of the proposed development.

9.1. Methodology

The following methodology has been adopted for the impact assessment:

- A desktop review has been undertaken to determine the presence of noise sensitive locations in the vicinity of the car park site;
- Review of measured prevailing noise levels in the vicinity of the subject site in order to characterise the existing baseline noise environment;
- A desktop review of published noise data has been undertaken to describe the prevailing existing noise environment;
- A review of the most applicable standards and guidelines has been conducted in order to set a range of acceptable noise and vibration criteria for the construction and operational phases of the proposed development;
- Predictive calculations have been performed during the construction phase of the project at the nearest sensitive locations to the development site; and,
- An assessment of traffic related noise impacts on the surrounding road network has been undertaken.

9.1.1. Criteria for Rating of Impacts

The significance of noise and vibration effects has been assessed in accordance with the EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports, 2022 (hereafter referred to as EPA 2022 EIAR Guidelines). As these guidelines do not quantify the effects in decibel terms, the following sections discuss the relevant guidelines and standards that have been used to set appropriate noise and vibration thresholds or limit values and to assign a significance of effect in terms of noise.

With regard to the quality of the effect, ratings may have positive, neutral or negative applications.

9.1.2. Construction Noise Criteria

There is no published statutory Irish guidance relating to the maximum permissible noise and vibration levels that may be generated during the construction phase of a project. It is common practice to use BS 5228:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites. Part 1-Noise (Hereafter referred to as BS 5228-1) with respect to the controlling noise impacts. In this instance, appropriate criteria relating to permissible construction noise levels are taken from BS 5228-1.

9.1.2.1. ABC Method

The approach adopted here calls for the designation of a noise sensitive location into a specific category (A, B or C) based on existing ambient noise levels in the absence of construction noise. This then sets a threshold noise value that, if exceeded at this location, indicates a potential significant noise effect is associated with the construction activities, depending on context. Note that, in accordance with the BS 5228-1 guidance, this assessment criterion is only applicable to residential receptors.

Table 9-1 recreates Table E.1 from BS5228-1 setting out the ‘ABC’ threshold values which, when exceeded, signify a potential significant effect at the facades of residential receptors.

Table 9.1 Threshold of Potential Significant Effect at Dwellings

Assessment category and threshold value period (L_{Aeq})	Threshold value, in decibels (dB)		
	Category A	Category B	Category C
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	65	70	75
Evenings and weekends [D]	55	60	65
Night-time (23:00 to 07:00hrs)	45	50	55

- Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.
- Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.
- Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.

For the appropriate assessment period (i.e. daytime in this instance) the ambient noise level is determined and rounded to the nearest 5 dB. This assessment process determines whether a significant construction noise impact is likely.

9.1.2.2. Proposed Threshold Noise Levels

The closest neighbouring commercial buildings are adjacent to the southern boundary of the development site. The nearest residential receptors are located adjacent to the western site boundary.

Taking into account the document outlined above and making reference to the baseline noise environment monitored and mapped around the development site (see Section **Error! Reference source not found.)**, BS 5228-1 has been used to inform the assessment approach for construction noise. For residential NSLs to the west of site development works, based on the unattended baseline data monitored at Location UN1 (Refer to Section 9.3), Category A values are deemed appropriate using the ABC method. Construction noise thresholds for commercial buildings are set using fixed noise limits from BS 5228-1.

The following Construction Noise Threshold (CNT) levels are proposed for the construction stage of this development:

- Residential locations: 65 dB $L_{Aeq,12hr}$ Daytime
- Commercial Locations: 75 dB $L_{Aeq,12hr}$ Daytime

9.1.2.3. Interpretation of the CNT

In order to assist with interpretation of significance relating to the CNTs, Table 9-2 includes guidance as to the likely magnitude of impact associated with construction noise, relative to the CNT. This guidance is derived from Table 9.16 of the Design Manual for Roads and Bridges (DMRB) LA 111 *Sustainability and Environmental Appraisal LA 111 Noise and Vibration Revision 2* (hereafter referred to as DMRB Noise and Vibration*) (UKHA 2020)* and adapted to include the relevant significance effects from the EPA 2022 EIAR Guidelines.

Table 9.2 - Construction Noise Significance Ratings

Guidelines for Noise Impact Assessment Significance (DMRB)	Construction Noise Level per Period	EPA EIAR Significance Effects	Determination
Negligible	Below or equal to baseline noise level	Not Significant	Depending on CNT, duration & baseline noise level
Minor	Above baseline noise level and below or equal to CNT	Slight to Moderate	
Moderate	Above CNT and below or equal to CNT +5 dB	Moderate to Significant	

Guidelines for Noise Impact Assessment Significance (DMRB)	Construction Noise Level per Period	EPA EIAR Significance Effects	Determination
Major	Above CNT +5 to +15 dB	Significant, to Very Significant	

The adapted DMRB guidance outlined will be used to assess the predicted construction noise levels at NSLs and comment on the likely effects during the construction stage.

9.1.3. Construction Vibration Criteria

9.1.3.1. Building Response

Peak particle velocity (PPV) is commonly used to assess the structural response of buildings to vibration. Reference to the following documents has been made for the purposes of this assessment in order to discuss appropriate PPV limit values.

- British Standard BS 7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration (BS7385-2), and;
- British Standard BS 5228: 2009 + A1: 2014: Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration (7385-2).

BS 5228-2 and BS 7385-2 advise that, for soundly constructed residential properties and similar structures that are generally in good repair, a threshold for minor or cosmetic (i.e. non-structural) damage should be taken as a peak component particle velocity (in frequency range of predominant pulse) of 15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz and 50 mm/s at 40 Hz and above. The standard also notes that below 12.5 mm/s PPV the risk of damage tends to zero.

The recommended vibration limits are set in order to avoid cosmetic damage to light framed and residential buildings, as set out in both documents referred to above. These are reproduced in Table 9-3. The documents note that minor structural damage can occur at vibration magnitudes which are greater than twice those presented in Table 9-3. These values refer to the vibration at the base of the building.

Table 9.3 Recommended Construction Vibration Threshold for Light-Framed & Residential Buildings

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of:-		
Less than 15Hz	15 to 40Hz	40Hz and above
15mm/s	20mm/s	50mm/s

9.1.3.2. Human Perception

Human response to vibration stimuli occurs at orders of magnitude below those associated with any form of building damage, hence vibration levels lower than those indicated in Table 9-3 can lead to concern. BS 5228-2 also provides a useful guide relating to the assessment of human response to vibration in terms of PPV from construction works. Table 9-4 summarises the range of vibration values and the associated potential effects on humans.

Table 9.4 - Guidance on Effects of Human Response to PPV Magnitudes

Vibration Level, PPV	Effect
0.14 mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies. At lower frequencies people are less sensitive to vibration.
0.3 mm/s	Vibration might be just perceptible in residential environments.
1 mm/s	It is likely that a vibration level of this magnitude in residential environments will cause complaint.

The standard notes that single or infrequent occurrences of these levels do not necessarily correspond to the stated effect in every case. Where these values are routinely measured or expected then an assessment in accordance with BS 6472 2008 *Guide to evaluation of human exposure to vibration in buildings, Part 1 Vibration*

sources other than blasting (BS 6472–1) might be more appropriate to determine whether time varying exposure is likely to give rise to any degree of adverse comment.

9.1.4. Construction Phase Traffic

Vehicular movement to and from the construction site for the proposed development will make use of the existing road network. In order to assess the potential impact of additional traffic on the human perception of noise, the following two guidelines are referenced: DMRB Noise and Vibration (UKHA 2020) and the EPA EIAR Guidelines (EPA, 2022). For construction traffic, due to the short-term period over which this impact occurs, the magnitude of impacts is assessed against the 'short term' period in accordance with the DMRB Noise and Vibration (UKHA 2020) document.

Table 9-5 sets out the classification of changes in noise level to impact on human perception based on the guidance contained in these documents.

Table 9.5 Classification of Magnitude of traffic noise changes for Construction Traffic

Change in Sound Level (dB)	Subjective Reaction	DMRB Magnitude of Impact (Short-term)	EPA Significance of Effect
Less than 1 dB	Inaudible	Negligible	Imperceptible
1 – 2.9	Barely Perceptible	Minor	Not Significant
3 – 4.9	Perceptible	Moderate	Slight, Moderate
≥ 5	Up to a doubling of loudness	Major	Significant

9.1.5. Operational Phase – Additional Vehicular Traffic

Given that traffic from the development will make use of existing roads already carrying traffic volumes, it is appropriate to consider the increase in traffic noise level that arises as a result of vehicular movements associated with the development.

In order to assist with the interpretation of the noise associated with vehicular traffic on public roads, Table 9-6 offers guidance as to the likely effect associated with any particular change in traffic noise level using guidance from DMRB Noise and Vibration and EPA Guidelines 2022. For the operational phase, the 'long-term' category of impact from the DMRB is used.

Table 9.6 - Likely Impact Associated with Change in Traffic Noise Level

Change in Sound Level (dB)	Subjective Reaction	DMRB Magnitude of Impact (Long-term)	EPA Significance of Effect
0	Inaudible	No impact	Imperceptible
0.1 – 2.9	Barely Perceptible	Negligible	Not significant
3 – 4.9	Perceptible	Minor	Slight, Moderate
5 – 9.9	Up to a doubling of loudness	Moderate	Significant
10+	Doubling of loudness and above	Major	Very significant

9.1.6. Operational Phase – Car Parking Activities

Once operational, the main potential source of noise will relate to car parking activities, namely vehicles driving around internal roads entering and exiting parking spaces, doors closing etc. As this is a new source associated with the proposed development, the operational noise levels are set with reference to BS 8223: 2014 Guidance on Sound Insulation and Noise Reduction for Buildings. The following guidance, summarised in Table 9-7, is provided in this standard for internal ambient noise levels in dwellings and offices. The derived external levels are based on the approximate attenuation provided by a partially open window of 15 dB, as advised in BS 8233, and represent the appropriate noise level at the external façade of the building.

Table 9.7 - Guidance on Indoor Ambient Noise Levels for Buildings

Activity	Location	Daytime (07:00 to 23:00hrs)	Night-time (23:00 to 07:00hrs)	Derived External Levels
Concentration	Open Plan Office	35 - 40 dB $L_{Aeq,T}$		50 – 55 dB $L_{Aeq,T}$
Resting	Living Room	35 dB $L_{Aeq,16hr}$	-	50 dB $L_{Aeq,16hr}$
Dining	Dining Room	40 dB $L_{Aeq,16hr}$	-	55 dB $L_{Aeq,16hr}$
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,8hr}$	50 dB $L_{Aeq,16hr}$ 45 dB $L_{Aeq,8hr\ at\ night}$

9.1.7. Operational Phase – Vibration Criteria

There are no expected sources of vibration associated with the operational phase carpark operations or increased traffic flows, therefore, vibration criteria have not been specified for this phase.

9.2. Baseline Environment

An environmental noise survey has been conducted in order to quantify the existing noise environment. The survey was conducted in accordance with ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise. Specific details are set out below.

9.2.1. Site Context

The car park under consideration is located along the R108 Road to the south of the Dublin Airport as illustrated in Figure 9-1. The car park is bound to the north by the R108 and Dublin Airport Beyond, to the south by light industry/ commercial/ logistics units, to the east by residential homes and to the west by the existing daa Long Term Car Park.

The closest residential noise sensitive locations to the site boundary are residential properties located off the R108 at a distance of approximately 20m west of the site boundary. Commercial units are located adjacent to the southern site boundary at a distance of 15m.

The prevailing noise environment is dominated by road traffic along the surrounding road network and from aircraft take-off and landing at Dublin Airport. Other sources in the environment include activities within the Dublin Airport campus (aircraft and vehicle ground movements etc.) and car parking activities within the surrounding daa car parks.

An environmental noise survey has been conducted in order to quantify the existing noise environment. The noise measurement locations were selected to represent the noise environment at the nearest Noise Sensitive Locations (NSLs) surrounding the proposed development. The noise survey locations are discussed below and shown in Figure 9-1.

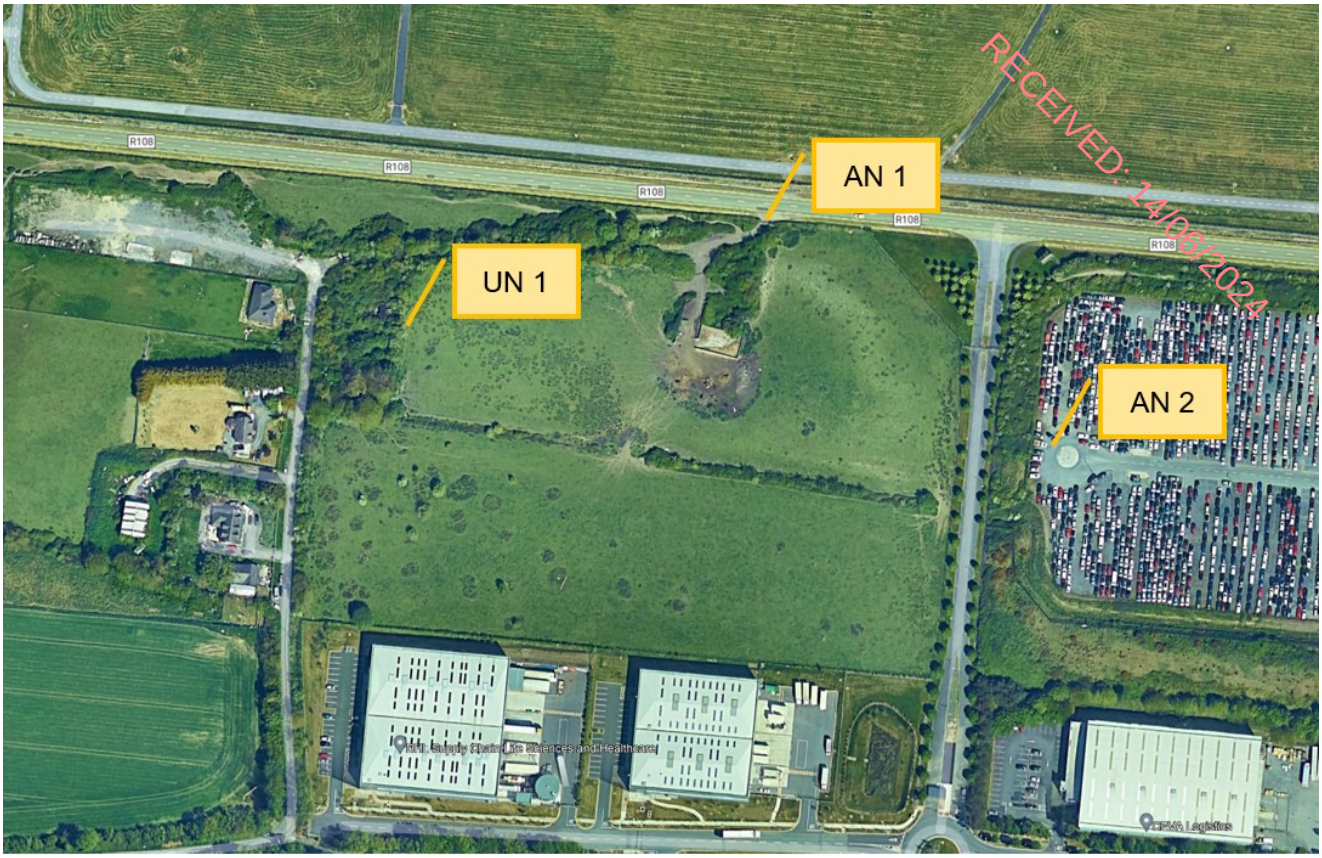


Figure 9-1 - Noise Survey Locations

Location AN1 Attended measurement location to capture the noise levels on the adjacent Pass Road to the north east of the proposed development.

Location AN2 Attended measurement location to capture the noise levels on the adjacent Pass Road to the east of the proposed development in the currently operational daa Long Term Blue Carpark.

Location UN1 Unattended measurement location to capture the noise levels representative of levels received at houses to the west of the proposed development.

9.2.2. Survey Details

Daytime attended measurements were carried out between 09:35 hrs to 12:00 on 10 November 2023. The weather during the survey periods was dry. Wind speeds were generally moderate and below 5 m/s; however, this was not considered to have had any significant effect on the noise measurements.

AWN Consulting carried out the attended noise survey. The noise measurements were performed using a Larson Davis LxTI Sound Level Meter and a Rion NL52. Before and after the survey the measurement apparatus was check calibrated using a Rion Sound Level Calibrator.

Table 9.8 - Instrumentation Details

	Type	Serial Number	Calibration Date
Sound Level Meter	Larson Davis LxTI	6260	March 2023
Calibrator	Rion NC-75	34724227	July 2022

The noise survey results are presented in terms of the following parameters.

L_{Aeq} is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period.

L_{A90} is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.

L_{AFmax} is the instantaneous maximum sound level measured during the sample period using the 'F' time weighting.

The "A" suffix for the noise parameters denotes the fact that the sound levels have been "A-weighted" in order to account for the non-linear nature of human hearing. All sound levels in this report are expressed in terms of decibels (dB) relative to 2x10-5 Pa.

Measurement equipment was configured to record noise levels over consecutive 15-minute intervals. The equipment was check-calibrated using a sound level meter calibrator at the time of installation and again at collection. Survey personnel noted the primary noise sources contributing to noise build-up during site visits.

9.2.3. Survey Results

The survey results are summarised below in Tables 9-9 and 9-10.

Table 9.9 - Summary of Attended Results - Daytime

Location	Start Time (hrs)	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)	
		$L_{Aeq,15min}$	$L_{A90,15min}$
AN1	09:36	71	51
	10:20	72	51
	11:04	69	50
AN2	09:58	62	55
	10:43	64	50
	11:30	59	51

At AN1, noise levels were in the range 69 to 72 dB $L_{Aeq,15min}$ and 50 to 51 dB $L_{A90,15min}$. Noise from road R108 and air traffic were the dominant sources at this location, distant construction noise could be heard also.

At AN2, noise levels were in the range 59 to 64 dB $L_{Aeq,15min}$ and in the range of 50 to 55 dB $L_{A90,15min}$. Excavation noise in the long term blue carpark and street sweeping were the dominant source at this location with road traffic noise and occasional local traffic pass-bys. Occasional reversing beacons were observed.

UN 1

The results of the surveys at the unattended monitoring location are summarised in Table 9-10 below.

Table 9.10 Summary of Noise Measurements at UN 1

Day	Sound Pressure Level (dB re. 2x10-5 Pa)								
	Daytime (07:00 to 19:00 hrs)			Evening (19:00 to 23:00 hrs)			Night (23:00 to 07:00 hrs)		
	L_{Aeq}	L_{A90}	L_{AFMax}	L_{Aeq}	L_{A90}	L_{AFMax}	L_{Aeq}	L_{A90}	L_{AFMax}
Fri, 24 Nov 2023	58	51	73	60	48	80	64	43	83
Sat, 25 Nov 2023	56	47	73	57	49	76	64	46	82
Sun, 26 Nov 2023	62	49	81	52	45	71	65	43	84

Note 1: L_{Aeq} parameter is Logarithmically averaged

Note 2: L_{A90} and L_{AFmax} parameters are arithmetically averaged

At UN1, noise levels during the daytime period were in the range 58 to 62 dB L_{Aeq} and in the range of 47 to 51 dB L_{A90}. During the evening periods noise levels were in the range 52 to 60 dB L_{Aeq} and in the range of 45 to 49

dB L_{A90}. For Night time periods noise levels were in the range 64 to 65 dB LAeq,15min and in the range of 43 to 46 dB L_{A90}.

Road traffic noise along the R108 with air traffic were the dominant sources at this location. During the night time period between 05:00 and 07:00hrs the highest noise levels associated with air traffic occur increasing the overall measured levels during the night time periods.

9.2.4. Review of Fingal Development Plan Aircraft Noise Zones

Fingal Development Plan Policy on Aircraft Noise

The Fingal Development Plan 2023 - 2029 outlines Noise Zones and policy objectives in relation to aircraft noise from Dublin Airport. Four noise zones (Zone A to D) are indicated representing potential site exposure to aircraft exposure..

Objective DAO11 sets out the following relating to development within the Airport Noise Zones:

"Strictly control inappropriate development and require noise insulation where appropriate in accordance with Table 12.1 above within Noise Zone B and Noise Zone C and where necessary in Assessment Zone D, and actively resist new provision for residential development and other noise sensitive uses within Noise Zone A, as shown on the Development Plan maps, while recognising the housing needs of established families farming in the zone. To accept that time based operational restrictions on usage of the runways are not unreasonable to minimise the adverse impact of noise on existing housing within the inner and outer noise zone."

The proposed site is located in Dublin Airport Noise Zone A which in accordance with the Fingal Development Plan, the following restrictions apply:

To resist new provision for residential development and other noise sensitive uses. All noise sensitive developments within this zone may potentially be exposed to high levels of aircraft noise, which may be harmful to health or otherwise unacceptable. The provision of new noise sensitive developments will be resisted.

Fingal Development Plan section 8.5.7 outlines the type of buildings which are considered to be noise sensitive buildings:

"The noise zoning system has been developed with the overarching objective to balance the potential impact of aircraft noise from the Airport on both external and internal noise amenity. This allows larger development which may be brought forward in the vicinity of the Airport's flight paths to be identified and considered as part of the planning process. The focus of the noise zones is to ensure compatibility of residential development and ensuring compatibility with pertinent standards and guidance in relation to planning and noise, namely:

- *National Planning Framework 2040, DHPLG, February 2018;*
- *ProPG: Planning & Noise – New Residential Development, May 2017;*
- *British Standard BS8233:2014 'Guidance on sound insulation and noise reduction for*
- *buildings'; and*
- *ICAO guidance on Land-use Planning and Management in Annex 16, Volume I, Part*
- *IV and in the ICAO Doc 9184, Airport Planning Manual, Part 2 — Land Use and*
- *Environmental Control.*

Where development includes other non-residential noise sensitive receptors, alternative design guidance will need to be considered by the developer. Non-residential buildings and uses which are viewed as being noise sensitive within the functional area of FCC include hospitals, residential care facilities and schools."

British Standard BS8233:2014 'Guidance on sound insulation and noise reduction for buildings' defines noise sensitive premises as places where the building's occupiers may be resting, sleeping or studying. This includes residential premises, offices, hotels, hospitals, nursing homes and schools.

The proposed car park site has two buildings, a security hut and a welfare building comprising washrooms and storage and comms/electrical rooms. It is therefore determined that in line with the Fingal Development plan, the carpark does not contain noise sensitive buildings that would be restricted for development in this zone. Given the nature and use of the internal areas of these buildings, no specific acoustic assessment is deemed necessary for the building sound insulation performance.

9.2.5. Review of EPA Noise Mapping

A desktop review of publicly available data has been undertaken to characterise the baseline noise environment. Reference has been made to the most recent Round 4 noise maps published by the Environmental Protection Agency (EPA) (https://gis.epa.ie/EPAMaps/) for aircraft and road traffic noise within the Dublin Agglomeration. The published noise maps are provided for the overall day-evening-night period in terms of L_{den} and the 8-hour night-time period, L_{night}, defined as follows:

L_{den} is the 24hour noise rating level determined by the averaging of the L_{day} with the $L_{evening}$ (plus a 5dB penalty) and the L_{night} (plus a 10dB penalty). L_{den} is calculated using the following formula:

$$L_{den} = 10log\left(\frac{1}{24}\right)\left(12 * \left(10^{\frac{Lday}{10}}\right) + 4 * \left(10^{\frac{Levening+5}{10}}\right) + 8 * \left(10^{\frac{Lnight+10}{10}}\right)\right)$$

Where:

L_{day} is the A-weighted long-term average sound level as defined in ISO 1996-2, determined over all the day periods of a year. The 12hr daytime period is between 07:00 to 19:00hrs.

$L_{evening}$ is the A-weighted long-term average sound level as defined in ISO 1996-2, determined over all the evening periods of a year. The 4hr evening period is between 19:00 to 23:00hrs.

L_{night} is the A-weighted long-term average sound level as defined in ISO 1996-2, determined over all the night periods of a year. The 8hr night-time period is between 23:00 to 07:00hrs.

9.2.6. Aircraft Noise

Figure 9-2 presents the aircraft noise levels across the site as reported in the Noise Round 4 Airport National maps in terms of the L_{den} parameter and sourced from the EPA noise maps.

Figure 9-2 - Existing Lden Aircraft Noise Level (Source: http://gis.epa.ie accessed February 2024)

The car park is located within the 65 to 70dB L_{den} noise contour. The nearest noise sensitive locations to the car park, located west of the site, fall within the 65 to 70dB L_{den} noise contour for aircraft noise also.

Figure 9-3 presents the aircraft noise levels across the site as reported in the Noise Round 4 Airport National maps in terms of the L_{night} parameter.

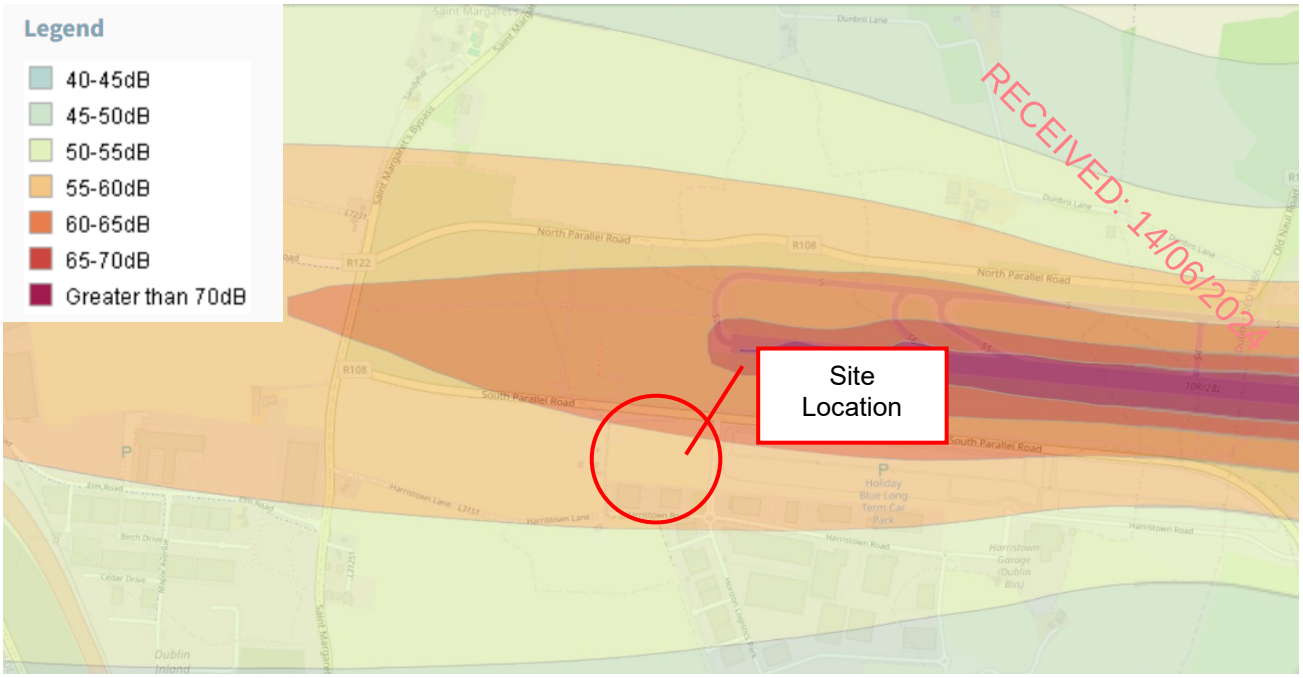


Figure 9-3 - Existing Lnight Aircraft Noise Level (Source: http://gis.epa.ie accessed February 2024)

The proposed development is located within the 55 to 60 dB and 60 to 65 dB L_{night} noise contours. The nearest noise sensitive locations to the car park, located west of the site, fall within the 55 to 60dB L_{night} noise contour for aircraft noise.

9.2.7. Road Traffic Noise

Figure 9-4 presents the road traffic noise levels across the site in terms of the L_{den} parameter and sourced from the EPA Round 4 noise maps.

The northern portion of the car park is located within the 60 to 65 L_{den} noise contours along the road edge, reducing to within the 55 to 60dB L_{den} further south. The southern portion of the carpark is mapped below 55 dB L_{den}. The nearest noise sensitive locations to the car park, located west of the site, are located within the 45 to 50 and 50 to 55 dB L_{den} noise contours for road traffic noise.

Figure 9-4 - Existing Lden Road Traffic Noise Level (Source: http://gis.epa.ie accessed February 2024)

Figure 9-5 presents the night-time road traffic noise levels across the site in terms of the L_{night} parameter and sourced from the EPA noise maps.

The northern portion of the car park is located within the 55 to 60dB and 60 to 65 dB L_{night} noise contours. The southern portion of the site is located outside of the 55 to 60dB L_{night} noise contour. The nearest noise sensitive locations to the car park, located west of the site, are located within the 45 to 50 and 50 to 55 dB L_{night} noise contours for road traffic noise.

Figure 9-5 - Existing Lnight Road Traffic Noise Level (Source: http://gis.epa.ie accessed February 2024)

9.2.8. Cumulative Noise Levels

The contribution of road and aircraft noise across the study area has been combined using the noise mapping information discussed in Sections 9.3.5 and 9.3.6. The results of the noise maps are presented in terms of the L_{den} and L_{night} parameters. Whilst the maps do not display the L_{day} parameter, an estimation of daytime noise levels has been determined by subtracting 2dB from the L_{den} values. This is based on the recommended approach set out in the *Brink 2018 - Conversion_between_noise_exposure_indicators*, document[30]. Table 9-11 presents the resultant cumulative noise level from road and air traffic. The values are summed logarithmically to obtain a combined dB value.

Table 9.11 - Cumulative Existing Noise Levels Across Study Area

Noise Source	Car Park Area			Nearest Residences (R108)		
	L_{den}	L_{day}	L_{night}	L_{den}	L_{day}	L_{night}
Aircraft	65 – 70	63 – 68	55 – 65	65 – 70	63 – 68	55 – 60
Road	45 – 65	43 – 63	45 – 65	45 – 55	43 – 53	45 – 55
Cumulative	65 – 71	63 – 69	55 – 68	65 – 70	63 – 68	55 – 61

Review of the noise maps indicates that existing noise levels across the study area are dominated by aircraft noise, with road traffic along the R108 to a lower extent.

The measured baseline noise levels at UN1 are at the lower end of the mapped contour noise levels during the daytime period and at the upper end of the mapped contour noise levels during the night-time period.

[30] Brink et al: "Conversion between noise exposure indicators Leq_{24h}, L_{Day}, $L_{Evening}$, L_{Night}, L_{dn} and L_{den}: Principles and practical guidance" 2018

9.3. Potential Effect

The proposed development is a proposed Remote Staff South Car Park to provide parking for airport staff located to the west of the existing Long Term Holiday Car Park at Dublin Airport, with an independent access. The proposed car park is currently a greenfield site with an area of approximately 4.26ha. The car park will cater for 950 staff car parking spaces.

9.3.1. Construction Phase

9.3.1.1. Construction Phase – Noise

The highest potential noise of the proposed development will occur during the construction phase due to site clearance, removal of structures and topsoil with the potential for rock breaking to be required, north of the Santry River. Surfacing and landscaping will be required also. During the construction phase there will be approximately 20 staff trips during the morning and evening periods and 30 Heavy Goods Vehicles (HGVs) movements to, from and around the site. Impacts during this phase will be short-term in duration.

During the construction of the proposed development, the closest noise sensitive locations are located adjacent to the western and southern boundaries. To the western boundary of the site lie residential properties at approximately 60m from the nearest closest works associated with the development. To the southern boundary, commercial properties are located at a distance of approximately 30m from the nearest closest works. The identified NSLs surrounding the development site are shown in Figure 9-6 below.

Figure 9-6 - Identified Residential and Commercial NSLs

- NSL 1: Residential NSLs along the western boundary of the development site.
- NSL 2: Commercial NSLs along the southern boundary of the development site.

Construction noise associated with activities on site are reviewed for the purposes of determining the likely significant effects. Indicative ranges of noise levels associated with construction may be calculated in accordance with the methodology set out in BS 5228-1. This standard sets out sound power and sound pressure levels for plant items normally encountered on construction sites, which in turn enables the prediction of noise levels.

Given that works during the various construction phases will be transient in nature and will involve the use of several different plant items at any one time, it is difficult at this stage of the assessment to state accurately what items of plant will be in use and what levels of noise will be experienced during construction works. In order to assess the range of potential noise levels associated with the construction phase, therefore, indicative noise prediction calculations have been prepared in relation to construction activities. Table 9.12 outlines typical plant

items and associated noise levels that are anticipated for various phases of the construction programme and the number of plant assumed to operate at any one time simultaneously.

For the purpose of the assessment, a standard site hoarding of 2.4m high has been included in the calculations for noise sensitive boundaries. It must be stated that for most of the time, plant and equipment will be a greater distance from the nearest NSLs than those used within the calculations and consequently will have lower noise levels. The assessment presented is therefore representative of a best estimate conservative scenario representing construction activities.

Table 9.12 - Indicative construction noise levels during Construction

Phase	Item of Plant (BS5228 Ref)	Noise level at 10m	No of items assumed
Rock Breaking	Rock Excavation (D2.13)	90	1
	Combined dB L_{Aeq} at 10m		
Site Preparation/ Clearance/General Construction	Track Excavator (C2 22)	72	1
	Wheeled Loader Lorry (C2.28)	76	1
	Dump Truck (C4.2)	78	1
	Generator (C4.78)	66	1
	Combined dB L_{Aeq} at 10m	85	
Surfacing / Landscaping	Dozer (C2.13)	78	1
	Dump Truck (C4.2)	78	1
	Surfacing (D8.26)	80	1
	Combined dB L_{Aeq} at 10m	84	

The total construction noise level assumed for each phase is broadly similar typically ranging between 81 and 84 dB L_{Aeq} at 10m for activities including a combination of mobile plant, static plant items. The noise levels used indicate that for varying phases, whilst different plant items will be used, the overall construction noise levels will not vary considerably.

Noise levels have been calculated at these distances assuming each plant item per phase are operating at these distances. A partial line of sight correction is included in the calculations to account for the site hoarding. Prediction calculations are presented in Table 9-13.

Table 9.13 Typical Noise Levels associated with Construction Plant Items

NSL Ref.	Distance, m	Phase	Predicted Construction Noise Level $L_{Aeq(1hour)}$ (dB)	Daytime $L_{Aeq(1hour)}$ (dB) CNT	Complies?
NSL 1	60m	Rock Breaking	65	65	Yes
	60m	Site clearance/ preparation/ General Construction	59		Yes
	60m	Landscaping/ Surfacing	57		Yes
NSL 2	60m	Rock Breaking	65	75	Yes
	30m	Site clearance/ preparation/ General Construction	66		Yes
	30m	Landscaping/ Surfacing	64		Yes

The construction noise levels detailed in Table 9-13 above indicate that construction noise levels at the nearest commercial properties (30m from the majority of works. 60m from rock breaking works) would be expected to be at or below significance threshold of 75 dB $L_{Aeq,12hr}$ during construction phases. The closest residential NSLs are 60m from the nearest construction works, as a result the construction noise levels are at or below the CNT of 65 dB $L_{Aeq,12hr}$.

It is noted the predicted construction noise levels are indicative only based on the assumed activity noise levels and distances noted above.

Predicted construction noise effects are **negative, slight to moderate** and **short-term** for the nearest noise sensitive residential locations**.** At further distances from the NSL boundaries, construction noise levels will be lower than those in Table 9-13.

9.3.1.2. Construction Phase – Vibration

The construction phase of the development involves demolition of an existing cattle pen and hard standing area and the removal of 1 no. existing gated site entrance. The demolition of the pen and hard standing will involve normal construction plant and equipment that do not generate any significant vibration at source. These areas are over 100m from the nearest NSLs. There will be no piling works.

Rock breaking will be required at distances beyond 60m from the nearest residential and commercial receivers. During intermittent breaking activity at ground level, there is potential for vibration to be generated. Empirical data for this activity is not provided in the BS 5228- 2 standard, however the likely levels of vibration from this activity is expected to be significantly below the vibration criteria for building damage based on experience from other sites. AWN Consulting have previously conducted vibration measurements under controlled conditions, during trial construction works, on a sample site where concrete slab breaking was carried out. The trial construction works consisted of the use of the following plant and equipment when measured at various distances:

- 3 tonne hydraulic breaker on small CAT tracked excavator
- 6 tonne hydraulic breaker on large Liebherr tracked excavator

Vibration measurements were conducted during various staged activities and at various distances. Peak vibration levels during staged activities using the 3 Tonne Breaker ranged from 0.48 to 0.25 PPV (mm/s) at distances of 10 to 50m respectively from the breaking activities. Using a 6 Tonne Breaker, measured vibration levels ranged between 1.49 to 0.24 PPV (mm/s) at distances of 10 to 50m respectively. Whilst these measurements relate to a solid concrete slab, the range of values recorded provides some context in relation typical ranges of vibration generated by construction breaking activity.

Vibration magnitudes associated with this activity at 60m from the proposed construction works are well below those associated with any form of cosmetic damage to buildings and have the potential to be just perceptible in residential environments.

During the construction phase in the absence of mitigation at distances greater than 60m the effect in relation to vibration in the absence of mitigation will be **short term**, **negative** and **not significant**.

9.3.1.3. Construction Phase – Traffic

During the construction phase, traffic associated with the proposed development would consist of a mix of Light Goods Vehicles (LGVs) and Heavy Goods Vehicles (HGVs) travelling to and from the site.

In terms of the additional traffic on local roads that will be generated as a result of this development the following comment is presented: Considering that in order to increase traffic noise levels by 1dB traffic volumes would need to increase by the order of 25% it is considered that additional traffic introduced onto the local road network due to this development will not result in a significant noise impact. The resultant noise impact is **neutral**, **imperceptible** and **long-term**.

9.3.2. Road Traffic Along Surrounding Road Network

The Remote South Staff Carpark is accessed via the South Parallel Road.

Traffic flow data for the wider study area has been modelled for this project by AECOM (Refer to Appendix 2 'AECOM (2023) Traffic Impact Assessment' within Appendix 10.1). The highest change in traffic flows shall be in the vicinity of the carpark and all other roads are screened out of the traffic noise assessment. The information provided has been used to calculate the traffic noise level changes along these road links between the 'Do Nothing' and 'Do Something' scenarios to determine the level of noise change. Figure 9.7 illustrates the location of the traffic assessment locations.

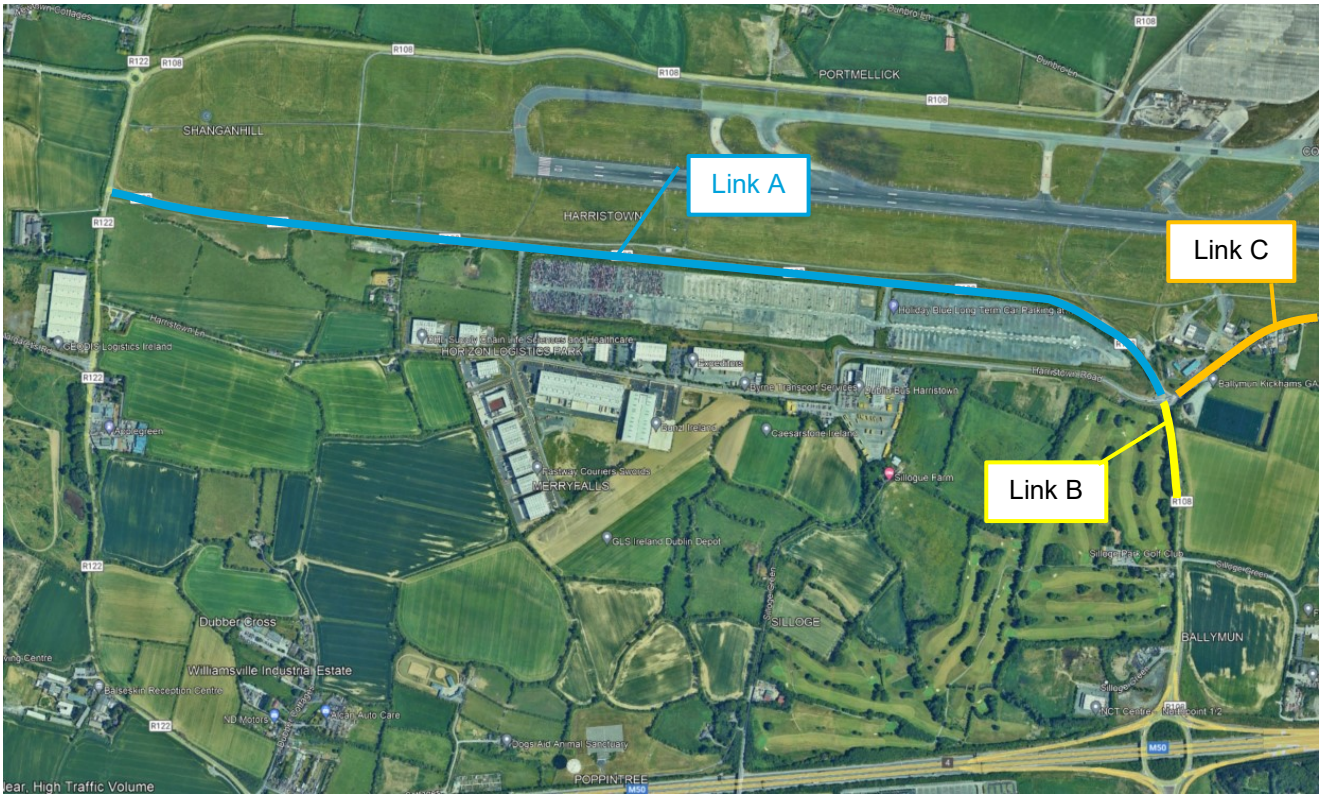


Figure 9-7 - AADT Locations for Traffic Noise

The calculated difference in noise levels along these link roads are presented in Table 9.14 for the year 2028 and in Table 9.15 for the year 2038.

Table 9.14 - Calculated Difference in Traffic Noise Levels, Year 2028

Traffic Assessment Locations	Future Year 2028				Calculated Change in Noise Levels, dB
	Do Nothing		Do Something		
	AADT	% HGV	AADT	% HGV	

Link A	12,518	11.7%	14,674	10.0%	+0.1
Link B	19,275	7.5%	21,165	6.8%	0.0
Link C	19,525	11.2%	19,792	11.0%	+0.1

Table 9.15 Calculated Difference in Traffic Noise Levels, Year 2038

Traffic Assessment Locations	Future Year 2038				Calculated Change in Noise Levels, dB
	Do Nothing		Do Something		
	AADT	% HGV	AADT	% HGV	
Link A	13,480	11.8%	15,636	10.2%	+0.1
Link B	20,875	7.5%	22,764	6.9%	0.0
Link C	21,131	11.0%	21,398	10.9%	+0.1

During both assessment years, there is minimal change in traffic noise levels calculated between the Do Nothing and Do Something scenarios. This is due to the low volume of traffic associated with the car park under consideration compared to the total traffic along the surrounding road network. Reference to Table 9-6 indicates the magnitude of change is determined to be **negligible** and the associated effect is determined to be **long term** and **not significant**.

9.3.3. Car Parking Activities

Once traffic enters the car park area, there is an element of activities associated with vehicle movements.

Measurement Location AN2 was measured at the boundary of the adjacent Blue Holiday car park. This location was in proximity to the internal road and car parking spaces and measured an average noise level 60 dB $L_{Aeq, 15mins}$. The measured noise level at this location was influenced by internal car park activities, road traffic along the R108 and aircraft noise. Using a conservative assessment, assuming the measured value of 60dB L_{Aeq} at AN2 is dominated by car parking activities only, this value has been used to calculate car parking activities at the nearest NSLs to the west of the proposed development.

The nearest residential properties to the west of the car park are approximately 60m from the proposed areas of car park operations. Using the noise level referenced above and accounting for distance attenuation, the calculated noise level associated with this source is 38 dB L_{Aeq}. This level of noise is below those referenced in Table 9-7 for achieving acceptable internal noise levels in dwellings and is also comfortably below the prevailing noise environment in this area that the operation of the car park will not add to the prevailing noise environment at the closest NSLs.

The operational impact during the Do Something is therefore concluded to be **neutral, long-term** and **not significant.**

9.4. Likelihood of Significant Effects

9.4.1. Construction Effects

During the construction phase of the development, there is a high likelihood of **negative**, **slight to moderate** and **short-term effect** at these nearest residential and commercial locations as a result of plant noise and works associated with construction.

9.4.2. Operational Effects

No significant effects are predicted to occur during the operational phase of the proposed development.

9.4.3. Cumulative Effects

In terms of construction noise, In the scenario whereby construction on multiple developments is ongoing simultaneously there is potential for significant noise effect at nearby NSL's.

There is a potential for cumulative effects associated with construction noise traffic if another development is constructed in vicinity concurrently, with an increase of +3 Db representing the worst case scenario of a doubling of construction traffic when compared to either site operating in isolation.

There is a potential for cumulative impacts associated with construction if another development is constructed in vicinity concurrently. An increase of +3 Db represents the worst case scenario whereby construction noise incident on noise sensitive receptors from two sites is matched in level.

At operational stage, cumulative noise impacts associated with the proposed development and other developments in the area are most likely to be associated with increase noise associated with traffic. An increase +3 Db represents a worst case scenario of a doubling in volume of traffic, representing a perceptible change with negative, slight to moderate significance and short-term.

9.5. Remedial or Reductive Measures

The noise and vibration impact assessment has concluded that significant effects associated with construction are not expected. The following noise and vibration reduction measures are included in order to ensure noise and vibration impacts are controlled using best practice measures.

The results of the assessment have concluded that once operational, noise impact from the carpark shall be long-term and not significant. Noise mitigation measures are not deemed necessary for the proposed development.

9.5.1. Construction Phase

The construction phase of the proposed development will require site clearance, surfacing and general construction, hence avoidance of these elements are not considered appropriate for noise mitigation.

- N & V CONST 1: Screening – Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Construction site hoarding will be constructed around the site boundaries as standard. The hoarding will be constructed of a suitable material in order to provide a good level of sound insulation. In addition, careful planning of the site layout will also be considered. The placement of site buildings such as offices and stores will be used, where feasible, to provide noise screening when placed between the source and the receiver.
- N & V CONST 2 : Selection of Quiet Plant – This practice is recommended in relation to static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' proprietary acoustic enclosures. The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item should be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action should be to identify whether or not said item can be replaced with a quieter alternative.
- N & V CONST 3: Project Programme – The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. During high noise generating works are in progress on a site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to prevent unacceptable disturbance at any time.
- N & V CONST 4: The contract documents will clearly specify the construction noise criteria included in this chapter which the construction works must operate within. The Contractor undertaking the construction of the works will be obliged to take specific noise abatement measures and comply with the recommendations of BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise and the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001. Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise and vibration monitoring, where required.
- N & V CONST 5: Noise Control at Source – If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control "at source". This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.

Referring to the potential noise generating sources for the works under consideration, the following best practice migration measures should be considered:

- For mobile plant items such as dump trucks, excavators and loaders, the installation of an acoustic exhaust and or maintaining enclosure panels closed during operation can reduce noise levels by up to 10 Db.
- Mobile plant should be switched off when not in use and not left idling.
- For all materials handling ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.

- For compressors, generators and pumps, these can be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- Demountable enclosures can also be used to screen operatives using hand tools and will be moved around site as necessary.
- All items of plant should be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

- N & V CONST 6: Liaison with the Public – A designated environmental liaison officer will be appointed to site during construction works. Any noise complaints should be logged and followed up in a prompt fashion by the liaison officer. In addition, where a particularly noisy construction activity is planned or other works with the potential to generate high levels of noise, or where noisy works are expected to operate outside of normal working hours etc., the liaison officer will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

9.6. Operational Phase

9.6.1. Car Parking Activities

During the operational phase of the development, noise mitigation measures with respect to noise associated with car park activities are not deemed necessary

9.6.2. Operational Traffic

During the operational phase of the development, noise mitigation measures with respect to traffic along the surrounding road network from the development are not deemed necessary.

9.7. Residual Effects

During operations (Do Something scenario), noise levels at the nearest noise sensitive locations will continue to be dominated by road traffic along the R108 and aircraft noise from Dublin Airport. The overall impact is determined to be **neutral**, **long term** and **not significant**.

There will be a period of construction works with noise associated with plant items and machinery associated with site clearance, general construction and surfacing, prior to the operational phase. Upon completion of the construction of the construction phase there will be no further noise impacts associated with the construction phase. With mitigation, the overall impact of the construction phase is determined to be **negative**, **short term** and **not significant**.

10. Traffic

10.1. Introduction

daa have appointed AtkinsRéalis to prepare a traffic chapter as part of an EIAR for the Remote South Staff Car Park to the south of Dublin Airport, herein referred to as the 'proposed development'. This chapter seeks to provide a description of the outline methodology and anticipated traffic impact of the proposed development.

10.2. Methodology

This report should be read in conjunction with Traffic and Transport Assessment (TTA). The TTA is included in Appendix 10.1 – Volume 3. AECOM (2023) prepared a Traffic Impact Assessment (TIA) for the proposed development. AECOM TIA is presented within Appendix 2 of Appendix 10.1.

This traffic chapter has been prepared in accordance with European Union (Environmental Impact Assessment Directive (2011/92/EU as amended by 2014/52/EU) and European Union (Planning and Development) (Environmental Impact Assessment) Regulations and with due regard to the following EIAR guidance:

- Environmental Protection Agency (EPA) 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' published in 2022;
- EPA 'Advice Notes on Current Practice (in the preparation of Environmental Impact Statements)' published in September 2003;
- EPA Guidelines on the information to be contained in Environmental Impact Statements, 2002,
- European Commission (EC) 'Environmental Impact Assessment of Projects Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU)', published in 2017;
- EC '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)', published in 2017;
- Department of Housing, Local Government and Heritage (DoHPLG) 'Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment' published in August 2018;
- Fingal County Council - Fingal Development Plan 2023 – 2029;
- Fingal County Council - South Fingal Transportation Study 2019;
- daa - Dublin Airport Mobility Management Update 2019;
- Fingal County Council - Dublin Airport Local Area Plan 2020
- Transport Infrastructure Ireland - Traffic and Transport Guidelines 2014;
- Transport Infrastructure Ireland – Spatial Planning and National Roads 2012;
- Transport Infrastructure Ireland - Project Appraisal Guidelines (Related Units) 2016; and
- National Transport Authority - Transport Strategy for the Greater Dublin Area 2022 – 2042.

10.3. Receiving Environment

This section should be read in conjunction with Traffic and Transport Assessment report (Volume 3 – Appendix 10.1) and AECOM (2023) Traffic Impact Assessment' within Appendix 10.1 submitted as part of the application.

10.3.1. Surrounding Road Network

The proposed site is located in the vicinity of the M50, M1, R122 and Old Airport Road. The R108 is a 60km/hr, single carriageway regional road which, locally, starts from the M50 Ballymun Interchange and terminates at the R122 to the west. The Old Airport Road runs between the R108 and the R132 and provides access between the airport complex and the proposed development site. The M50 and M1 are the two National Roads nearest to the proposed development. The local road network in the vicinity of the proposed development is shown in Figure 10-1 while the typical cross-section of the R108 is shown in Figure 10-2 below.

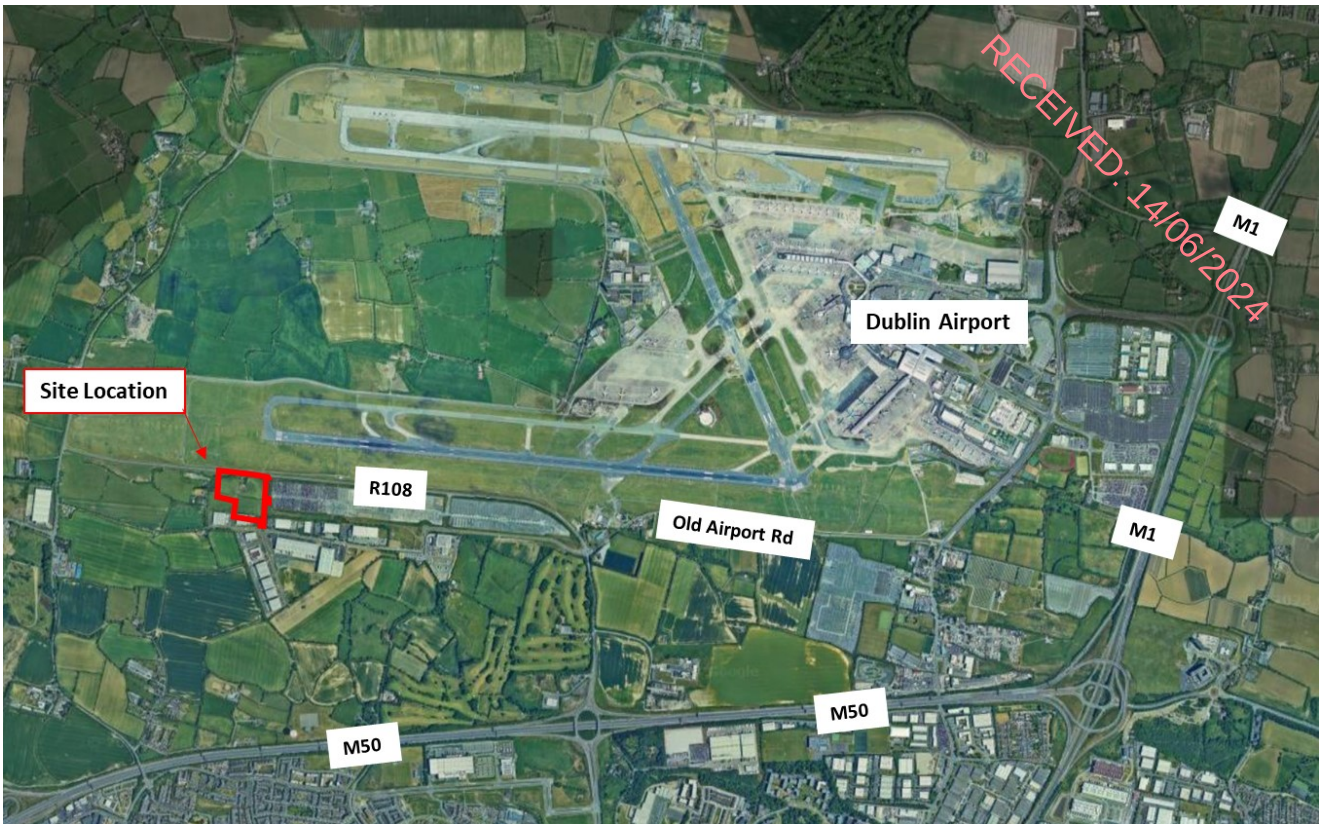


Figure 10-1 - Existing Road Network

Figure 10-2 - Road Cross Section - R108

10.3.2. Local Road Junctions

The key junctions in the area of influence of the proposed development in terms of potential vehicular traffic impact are illustrated in Figure 10-3 and described in the following section.

Figure 10-3 - Local Road Junctions

10.3.2.1. R108/Old Airport Road Junction

The junction is located on the northern side of M50 Ballymun Junction where Old Airport Road intersects with R108. It is a four-legged signalised junction having pelican crossing facility for pedestrians. Figure 10-4 shows aerial view of R108/Old Airport Road Junction.

Figure 10-4 - R108/Old Airport Road Junction

10.3.2.2. M50 Ballymun Interchange

M50 Ballymun Interchange is a signalised junction located on southern side of R108/Old Airport Road Junction and considered as one of the key interchanges on M50. Figure 10-5 illustrates aerial view of the interchange.

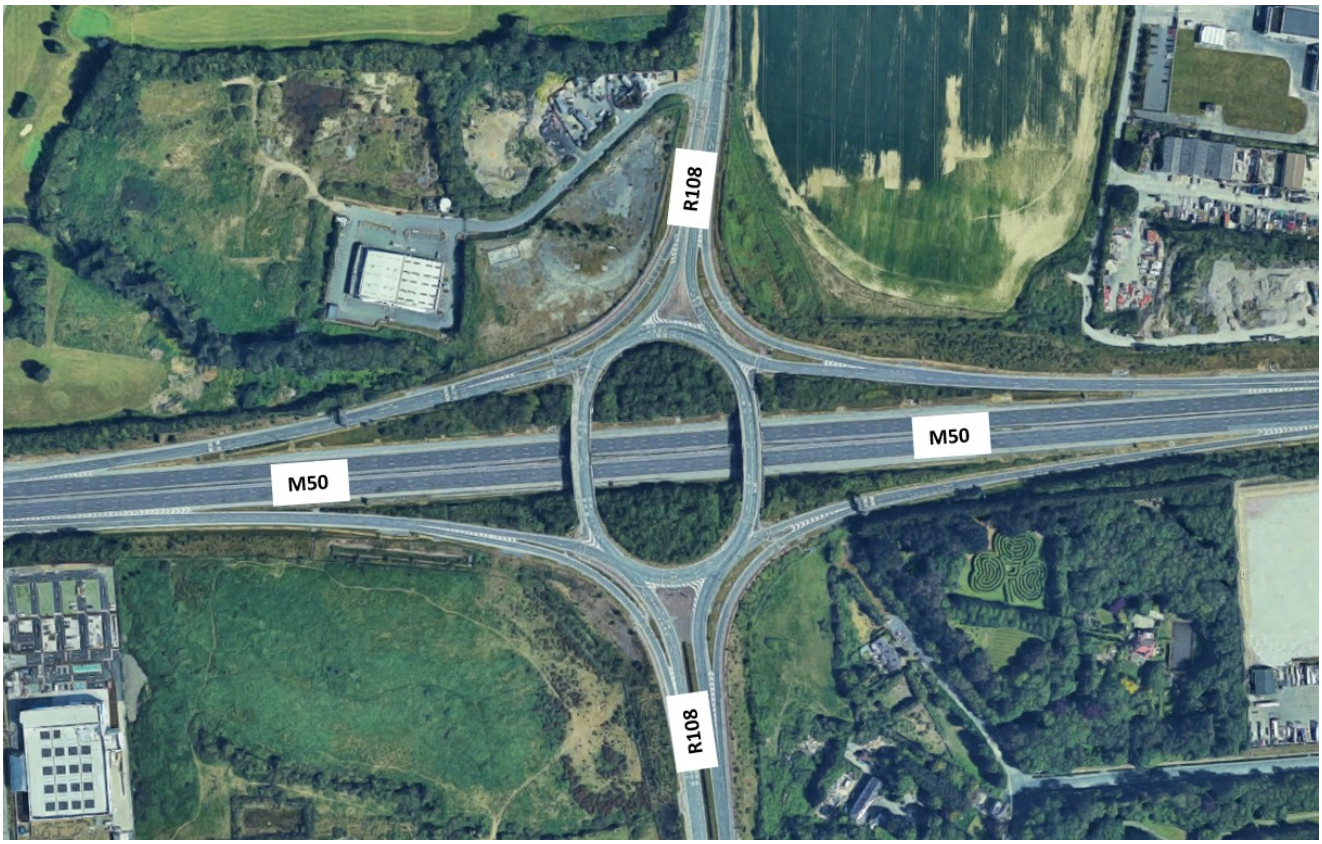


Figure 10-5 - M50 Ballymun Interchange

10.3.2.3. Baseline Traffic Conditions

This section should be read in conjunction with Traffic and Transport Assessment report submitted as part of the application (Appendix 10.1 - Volume 3). Peak hour volume and volume to capacity ratio for base year is presented in this section. Link Capacity analysis sites are illustrated in Figure 10-6 and link capacity analysis is shown in Table 10.1.

Figure 10-6 - Link Capacity Analysis Sites

Table 10.1 - Base Year Link Capacity (TTA Report – Appendix 10.1 - Volume 3)

Base 2019	2-Way Peak Hour Volume		Volume to Capacity Ratio	
	Site 1	Site 2	Site 1	Site 2
2019 AM	655	589	0.25	0.22
2019 PM	815	925	0.31	0.35

From above table, it can be observed that the volume of traffic remains significantly less than the capacity for both of the links analysed at peak hours.

Junction analysis showed that R108/Old Airport Rn junction currently operates above capacity for the base 2019 in the PM period with substantial queueing occurring on the Old Airport Rd left turn. The PRC recorded for AM and PM peak hour is 37.90% and -25.10% respectively.

M50 Ballymun Interchange operates above capacity for the base 2019 in the AM and PM periods with substantial queueing occurring on the M50 off-slip. This is predominantly due to a significant volume of city-bound traffic exiting at the interchange. The prs recorded for AM and PM peak hour is -71.30% and -4.10% respectively. More details can be referred from Traffic and Transport Assessment report (in Appendix 10.1).

10.4. Potential Traffic Effects on the Local Road Network during Construction Phase

10.4.1. Construction Traffic Generation

This section outlines construction traffic generation and impact of construction traffic on surrounding road network during construction phase. The proposed development is a car park site. The majority of construction activity includes earthwork and surface work. The construction traffic associated with proposed development is

anticipated to be minimal considering nature of project. As the majority of construction traffic will operate outside network peak hour, impact of construction traffic is anticipated to be negligible.

10.4.1.1. Staff Traffic

Based on experience with similar projects, it is assumed that there will be approximately 20 staff trips during the morning and evening periods. These trips will largely be generated from site operatives.

10.4.1.2. Imported/Exported Deliveries

It is noted that the construction phase will be 9no. months in total. The anticipated volume of material to be imported during the excavation and construction works is presented in Table 10.2.

Table 10.2 - Imported Material Volume

Material	Depth	Area	Volume	Density	Wt (in tonnes)
Asphalt-Average (estimate depth 70mm)	70 mm	26988 m2	1889 m3	2.3 t/m3	4345 tonnes
Blinding concrete <150mm	N/A	N/A	189 m3	2.4 t/m3	453 tonnes
Bracings, purlins and cladding walls	N/A	N/A	N/A	N/A	550 tonnes
Close graded asphalt 40mm nominal size aggregate; depth 60mm	60 mm	14373 m2	862 m3	2.3 t/m3	1983 tonnes
Close graded asphalt 40mm nominal size aggregate; depth 80mm	80 mm	14373 m2	1150 m3	2.3 t/m3	2645 tonnes
Concrete- Average	N/A	N/A	220 m3	2.4 t/m3	528 tonnes
Geotextiles - Average	N/A	26988 m2	N/A	500 g/m2	13 tonnes
Granular material Type 1 depth 100mm	100 mm	2022 m2	202 m3	2 t/m3	404 tonnes
Granular material Type 1 depth 200-250mm	250 mm	26427 m2	6607 m3	2 t/m3	13214 tonne
				Total	**24136 tonnes**

- There will be 550 tonnes of topsoil retained on site for landscaping and 19,670 tonnes of topsoil removed off site.
- The total volume of material to be imported and exported is 24,136 tonnes and 19,670 tonnes respectively; which equals to 43,806 tonnes.
- A bulking factor of 10% has been applied to the above material volumes, which equals to 48,187 tonnes.
- It is assumed that there will be 20 working days in each month. Therefore, for 9 months construction period it equates to 180 working days.
- Therefore, the total material required to be moved each day over a period of 9 months will be ca. 270 tonnes.
- It is assumed that a Rigid HGV, which carries up to 20 tonnes, will be utilised in terms of payload calculation. Although an articulated vehicle, which can carry up to 30 tonnes, could potentially be utilised - the Rigid HGV was used in the calculation for robustness.

- Based on 20 tonnes capacity of Rigid HGV, total number of trips would equate to approximately 15 trips per day. The number of trips associated with construction phase is listed in Table 10.3.

Table 10.3 - Number of Trips Associated with Construction Phase

Activity	Number of trips
Staff	20 Arrival + 20 departure
Material delivery	30 (15 HGV Arrival + 15 HGV departure)
Total trips	70

- It is recommended that material deliveries and removal to be planned outside network peak hours. Assuming that these trips are anticipated to be evenly spread throughout the day, the impact on weekday traffic conditions are anticipated to be imperceptible.

10.5. Potential Traffic Effects on the Local Road Network during Operational Phase

This section summarises potential traffic impact on the local road network during operational phase. Detailed analysis can be referred from TTA attached in Appendix 10.1 (Refer to Appendix 2 'AECOM (2023) Traffic Impact Assessment' within Appendix 10.1). The parking spaces provided in the proposed development represent a re-location of existing / previously lost spaces, rather than a net increase in the total number of spaces that are currently permitted at the airport. It is anticipated that travel demand to and from the proposed development will be outside of background peak periods of the day. It should also be noted that the proposed development will make use of existing shuttle bus service to transport staff to the main airport campus. Shuttle buses run with frequency of 15 minutes. From the analysis, it is observed that the relocation of the spaces will reduce approximately 284 and 330 staff related car trips from the central airport campus and adjacent road network during morning and evening peak hour respectively.

Traffic analysis was carried out to assess the effects of proposed development on surrounding road network in terms of links and junction capacities. Link capacity analysis showed that the R108 has adequate capacity to cater for the traffic generated by the proposed development. Link capacity for DS scenario is shown in Table 10.4.

Table 10.4 - Peak hours DS scenario future year link capacity (TTA Report – Appendix 10.1-Volume 3)

AM DS	2-Way Peak Hour Volume		Volume to Capacity Ratio	
	Site 1	Site 2	Site 1	Site 2
2023	721	819	0.27	0.31
2028	785	896	0.30	0.34
2038	911	1,050	0.35	0.40
PM DS	2-Way Peak Hour Volume		Volume to Capacity Ratio	
	Site 1	Site 2	Site 1	Site 2
2023	820	1,126	0.31	0.43
2028	803	1,113	0.30	0.42
2038	771	1,085	0.40	0.41

Although there is an increase in future year traffic in the DS scenario because of the proposed development, it can be seen from the volume to capacity ratio that both sites will continue to operate well within capacity during both peak hours. Additional details can be referred from Appendix B of Traffic and Transport Assessment report.

The key signalised junctions included in the analysis were R108/Old Airport Road junction and M50 Ballymun Interchange. Summary of junction analysis is included in Table 10.5 and Table 10.6.

Table 10.5 - Summary of R108 / Old Airport Road LinSig Analysis (TTA Report Appendix 10.1-Volume 3)

Scenario	Period	PRC	Cycle Time
2019 Base	AM Peak	37.9%	120
2023 Do Minimum		31.3%	120
2023 Do Something		31.4%	120
2023 Do Something (new signal timings)		38.8%	120
2019 Base	PM Peak	-25.1%	120
2023 Do Minimum		-29.9%	120
2023 Do Something		-34.7%	120
2023 Do Something (new signal timings)		-2.1%	120

Table 10.6 - Summary of Ballymun Interchange LinSig Analysis (TTA Report - Appendix 10.1-Volume 3)

Scenario	Period	PRC	Cycle Time
2019 Base	AM Peak	-71.3%	80
2023 Do Minimum		2.4%	104
2023 Do Something		2.2%	100
2019 Base	PM Peak	4.1%	80
2023 Do Minimum		-11.3%	115
2023 Do Something		-11.6%	120

It was determined that both junctions are already operating over capacity in the base 2019 scenario, the M50 Ballymun Interchange in the AM peak period and the R108/Old Airport Road Junction in the PM peak period.

The Do Something (DS) flows have little impact on the M50 Ballymun Interchange when compared with the Do Minimum (DM) flows. Whereas, for the R108/Old Airport Rd junction, the DS flows have a slight negative impact on the junction due to the extra trips generated by remote south staff car park present in the DS scenario.

For DS scenario, an upgraded junction layout was assessed which consisted of widening of the approaches from the R108 south and Old Airport Road to provide approx. 50m of two and three-lane approaches, respectively. Changes in signal timing were also proposed for R108/Old Airport Road Junction. Green time for give-way left turn was removed from stage 1 and 3 for Old Airport Road left turn slip and green time was provided for all movements together in stage 4. The suggested upgrades to the R108/Old Airport Road Junction improve the throughput of the junction and demonstrate that the junction would operate within the capacity for all scenarios.

It should be noted that the main purpose of the proposed upgrades are to improve the existing performance of the junction. The impact from the proposed car park is anticipated to be minor.

Refer also to the Traffic and Transport Assessment report within Appendix 10.1 Volume 3.

10.6. Cumulative Effects

The proposed development will occur in a phased manner over a period of approximately 9 months. Due to the relatively small scale of the project, no cumulative effects during construction phase are anticipated. For the operational phase, no nearby developments were considered for this assessment. As a result, no cumulative effects are anticipated during the operational phase.

10.7. Mitigation Measures

The following measures will be adopted around the perimeter of the project for security and protection purposes:

- All site access will be well lit, clean, robust level hard-standings, well signed and controlled by experienced gatemen. Doors and gates will be closed at all times when not providing access.
- The traffic management team will be clean and well presented at all times.
- The contractor's detailed Construction Traffic Management Plan will address the following key issues:
  - Maintaining free traffic flow along the local road networks.
  - Ensuring all footpaths and road surfaces are always free from debris.
  - Ensuring the efficient free flow of operatives entering and exiting the proposed development site.
  - Managing the distribution flow of materials within the site and debris removal to maintain the required levels of productivity whilst achieving the high-quality standards expected.
  - Plant and operative segregation during all stages of the proposed development.
  - Robust traffic management principles and practices will need to be enforced to ensure construction traffic does not create congestion and cause inconvenience to the adjacent tenants and the public.
  - Protection to the public for the duration of the project construction phase on all elevations.
- All deliveries will be through regional road R108. The contractor will develop a detailed Logistics Plan to identify the delivery schedule requirements for every delivery. It is anticipated that the contractor will operate a "Just in Time" delivery philosophy to minimise materials stored on site and reduce congestion in and around the works compound.

10.8. Residual Effects

No residual effects are anticipated for the proposed development.

10.9. Monitoring Requirements

No monitoring requirements are necessary for the proposed development.

10.10. Difficulties encountered during preparation of this chapter

No difficulties were encountered during preparation of this chapter.

10.11. Risk of Major Accidents and/or Disasters

No risk of major accidents and/or disasters is anticipated for the proposed development.

11. Land, Soils and Geology

11.1. Introduction

This chapter describes the type of land, soils and geology likely to be encountered beneath the proposed development. It also addresses the potential effects of the proposed development on land, soils, and geology together with the mitigation measures that will be employed to eliminate or reduce any potential effects. The proposed Remote Staff South Car Park located to the west of the existing Holiday Blue Car Park at Dublin Airport (i.e., the red line boundary) is here after referred to as 'the proposed development' or 'the site'. The site is located directly south of the western corner of the South Airport Runway; in the townland of Harristown. The site of the proposed development is currently a greenfield site. A detailed description of the proposed development is presented in Chapter 2 - Project Description.

11.2. Study Assessment and Methodology

The following scope of works was undertaken by AtkinsRéalis in order to complete the land, soils and geology assessment presented in this chapter;

- Desk-based study; and,
- Site walkover survey, carried out on 21st December 2023.

The desk-based study involved reviewing information from the following sources: -

- GSI Datasets Public Viewer and Groundwater web-mapping (consulted 13/02/2024);
- Ordnance Survey web-mapping to assess the surface topography and landforms (consulted 13/02/2024);
- EPA Public Viewer and web-mapping (consulted 13/02/2024);
- Google Maps Aerial photography (consulted 13/02/2024); and,
- Bing Maps Aerial photography (consulted 13/02/2024).

This assessment has been completed in accordance with relevant best practice guidance from the Institute of Geologists of Ireland, *'Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements'* (IGI, 2013). This assessment has also been prepared in accordance with the relevant Environmental Protection Agency (EPA) guidance, '*Guidelines on the information to be contained in Environmental Impact Assessment Reports'* (EPA, 2022) published in May 2022.

A site investigation for the Proposed Development was carried out by the Ground Investigation Ireland (GII) between February and March 2024, which comprised the following scope of works:

- 20 No. Trial Pits to a maximum depth of 3.50m bgl;
- 20 No. TRL/Dynamic Core Penetrometer Probes to determine CBR; and,
- 17 No. Plate Bearing Tests to determine the modulus of subgrade reaction and equivalent CBR.

Further details are presented in the Site Investigation Pack entitled 'daa South Car Park Dublin Airport Authority Ground Investigation Report' prepared by Ground Investigation Ireland (2024), presented in Appendix 11.1.

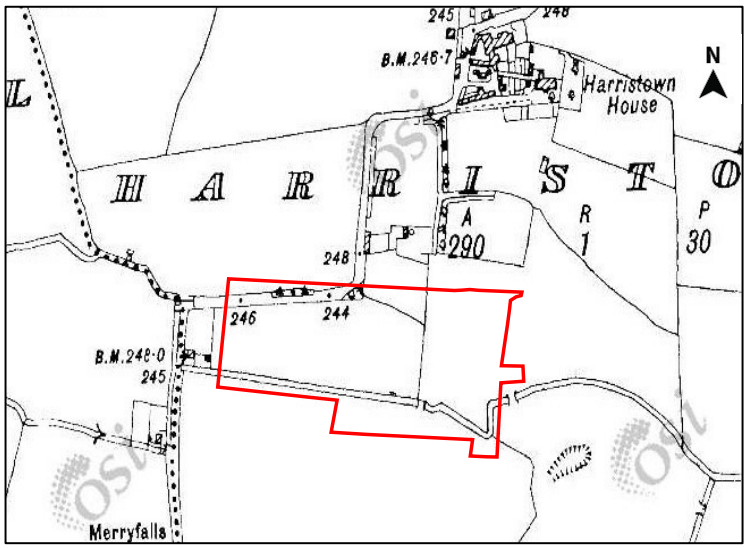
11.3. Receiving Environment

This section provides a description of the land, soils and geology in the general region of the proposed development and also takes account of the current and historic uses of the proposed development.

11.3.1. Site Development

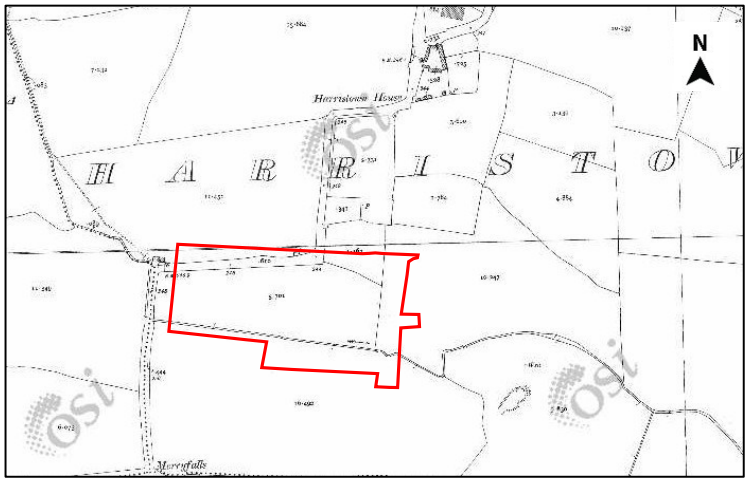
A review of historic maps (including available 6-inch historic maps, 25-inch historic maps, and aerial photographs (1995 to 2018) from the Ordnance Survey of Ireland) (OSI, 2024) and current aerial photography (Bing Maps, 2024) confirms that the site has generally remained a greenfield site over the years with no significant changes to the site. A summary of land use both in relation to the Site and surrounding lands is presented in Table 11.1.

Table 11.1 - Historic Land Use Development - Summary



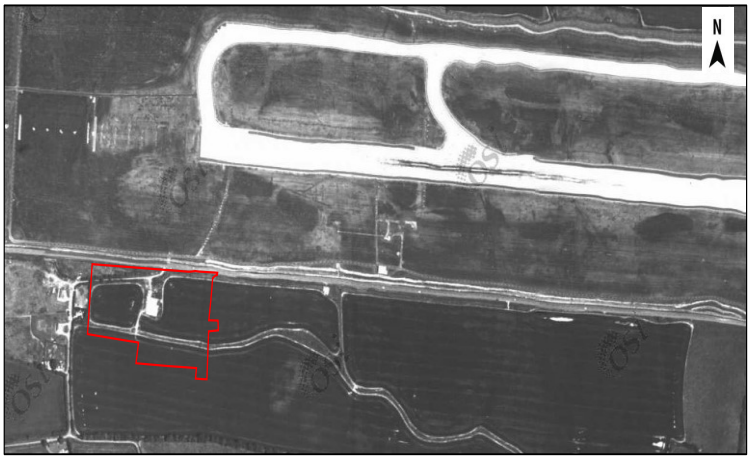
MapGenie 6 Inch BW 1829-1841 (OSI, 2024).

The Site is dominated by greenfield use.



Historic Map 25 Inch 1897-1913 (OSI, 2024).

There is no significant change in the surrounding area.



Aerial Map 1995 (OSI, 2024).

The 1995 aerial map shows an agricultural building has been constructed in the centre of the proposed development site. North of the site, the development of the airport infrastructure can be seen.

Aerial Map 1996-2000 (OSI, 2024).

No significant changes to the site are noted between the 1995 and the 2000 aerial photography. A carpark has been developed east of the site.

Aerial Map 2001-2005 (OSI, 2024).

There is no significant change to the proposed site between 2000 and 2005. 4no. commercial buildings and a Dublin Bus depot were constructed southeast of the proposed development site and the carpark to the east of the site had been extended.

Aerial Map 2006-2012 (OSI, 2024).

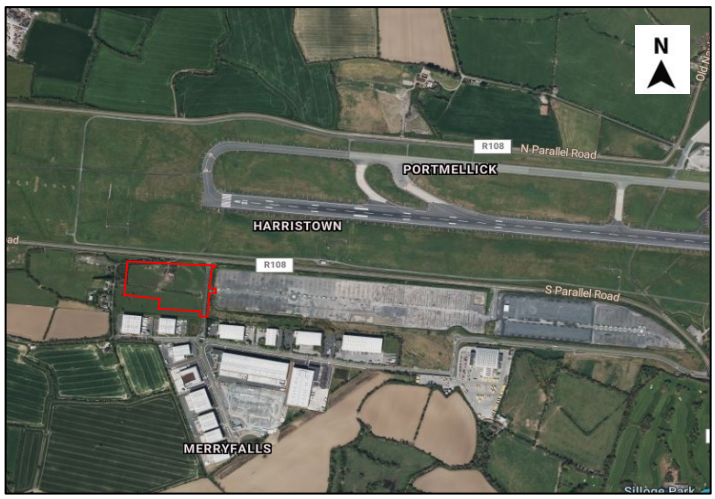
The 2006 – 2012 aerial map shows that the Holiday Blue Carpark has been constructed to the east of the proposed development site.

Aerial Map 2011-2013 (OSI, 2024)

There is no change between the 2006 – 2012 aerial map and the 2011 – 2013 aerial map.

Aerial Map 2013-2018 (OSI, 2023)

The 2013-2018 aerial map indicates the expansion of the Horizon Logistics Park with the construction of 3no. commercial buildings to the south of the proposed development site.



Aerial Map 2023 (Bing maps, 2023)

The 2023 aerial map shows the continued expansion of the Horizon Logistics Park to the south of the proposed development.

11.3.2. Current Site Setting (and Topography)

The Site is located directly south of the western corner of the South Airport Runway; in the townland of Harristown. The site is bounded to the North by the R108; to the East by the Holiday Blue Long Term Carpark; to the West by an access road serving 3 dwellings and by a small woodland area; and to the South by the Horizon Logistics Park.

The Site is currently a greenfield site with an area of approximately 4.56ha and is underlain by limestone till with an area of bedrock outcrop or subcrop running through the site. The Santry River crosses through the middle of the site and discharges to the North Dublin Bay / North Bull Island transitional waterbody to the east of the site, which is 9.7km direct line distance/10.9km downstream via Santry River. Further details on drainage and the condition of the tributary can be found in Chapter 12 – Water. The lands on which the development is proposed is zoned by Fingal County Council development plan 2023-2029 (FCC 2023) as 'GE' General Employment with the zoning objective being to '*provide opportunities for general enterprise and employment*'. Land use zoning objectives are consistent with the national and regional policy which seek the development of serviced sites within settlements designated for development. The site slopes from ca. 73m above ordnance datum (mAOD) in the west to ca. 71mAOD in the east. The northeast corner of the site increases in height to ca. 74mAOD.

11.3.3. Ground Investigation

Based on available site specific records (GII, 2024) general ground conditions at the proposed development comprise the following;

- Topsoil was encountered to a maximum depth of 3.5m below ground level (BGL);
- Localised made ground material consisting of *'brownish grey sandy gravelly clay with low subangular cobble content and fragments of plastic, metal, timber and rubber'* was found in TP06 and TP08 at a maximum depth of 1.8m BGL;
- Cohesive deposits were encountered beneath the Made Ground and were of *'brown slightly sandy gravelly clay with medium subangular cobble and boulder content'*;
- Granular deposits were found to a maximum depth of 3.2m BGL and consisted of *'grey/brown clayey sandy sub rounded to sub angular fine to coarse gravel with occasional cobbles and rare boulders*'; and,
- Weathered rock consisting of *'angular gravel and cobbles of limestone or mudstone'* was encountered in TP13 and TP14.

Slow ingress ground water was encountered in the majority of the trial pits at depths between 0.5mBGL to 2.8mBGL. Site-specific geological data has been obtained via. the completion of ground investigation works across the site. Full details of the ground investigation are presented in the 2024 Ground Investigation Report in Appendix 11.1. The locations of all exploratory holes undertaken during the ground investigation are presented in Figure 11-1.

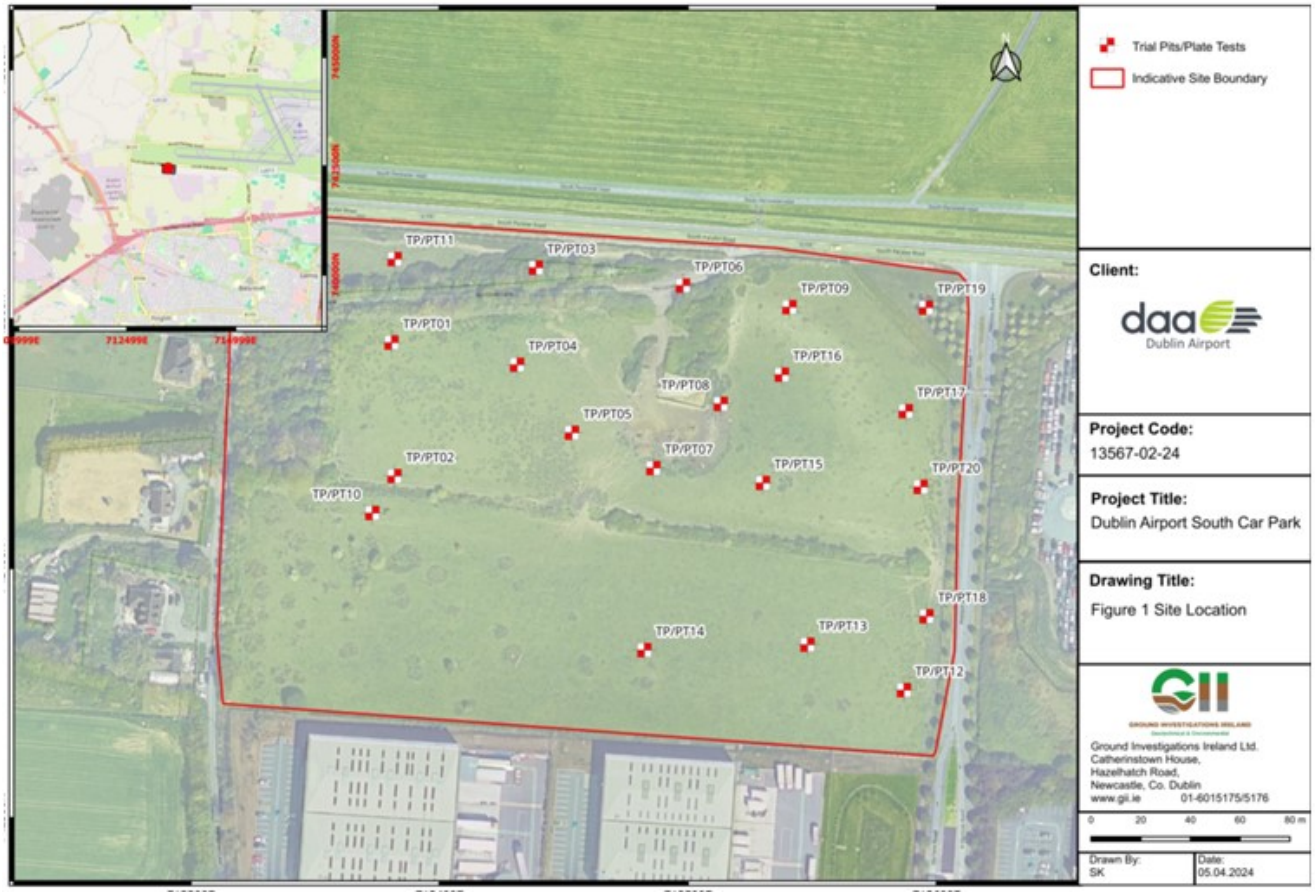


Figure 11-1 - Ground Investigation Locations, Ground Investigations Ireland (2024)

11.3.4. Soils

Based on the Teagasc soils database available on the GSI public data viewer, the dominant soil type underlying the Site and surrounding area is till derived chiefly from limestone. Refer to Figure 11-2. Site specific details are presented previously in Section 11.3.3.

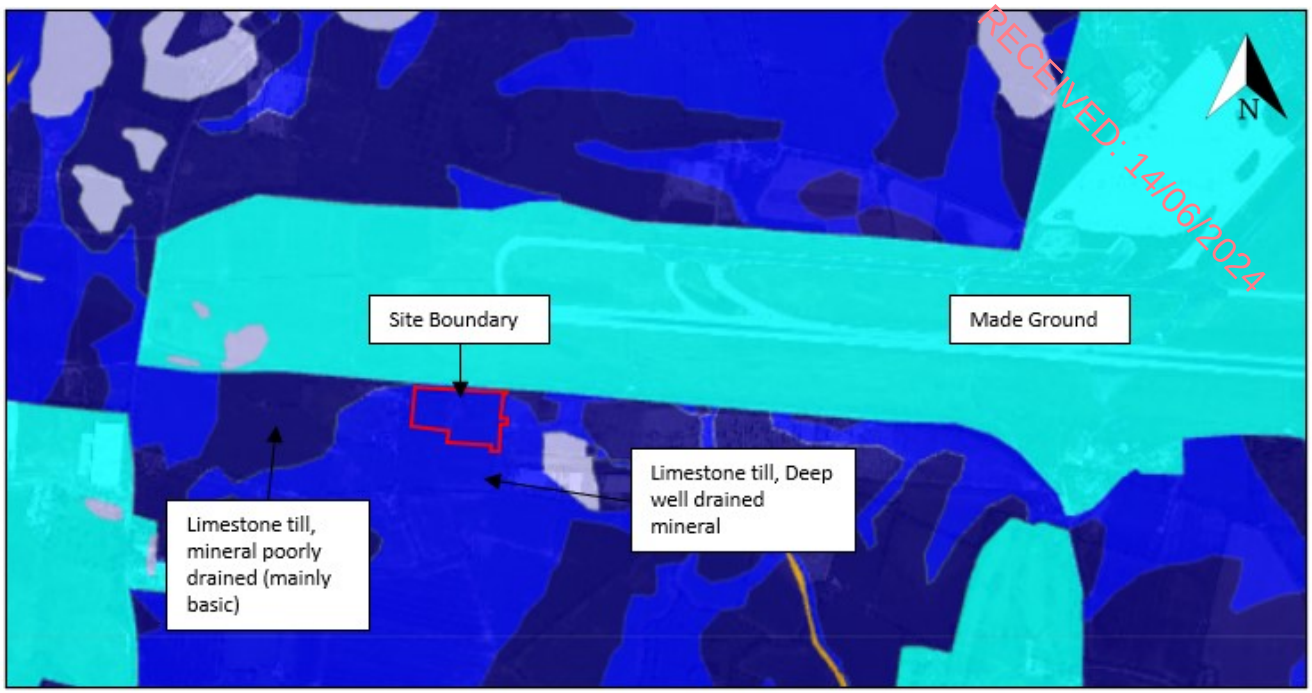


Figure 11-2 - Teagasc Soil Maps (GSI, 2024)

According to the GSI public data viewer (GSI, 2024), the primary superficial / quaternary sediments underlying the Site comprise till derived from limestone. It is also noted that a small area of bedrock outcrop or subcrop is present through the centre of the proposed site. (GSI, 2024). Refer to Figure 11-3. Site specific details are presented previously in Section 11.3.3.

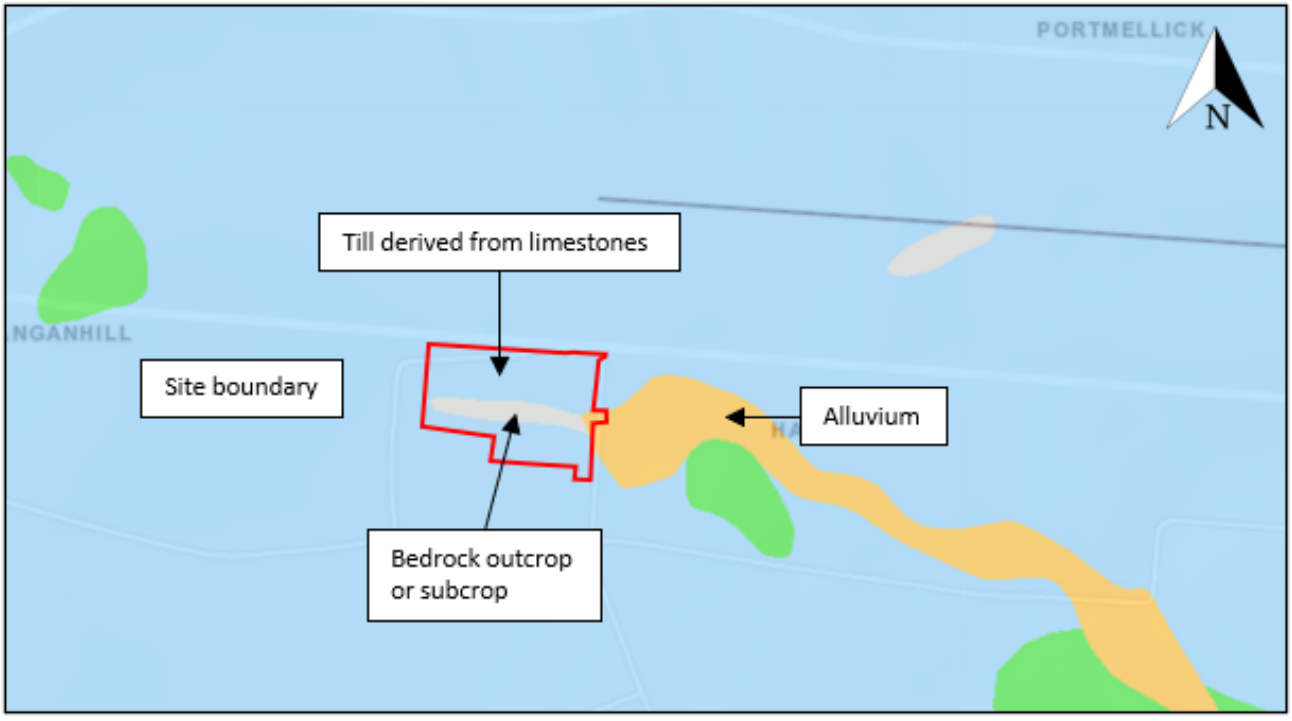


Figure 11-3 – Superficial / Quaternary Deposits (GSI, 2024)

11.3.4.1. Soil Quality / Contaminated Land

Localised made ground material consisting of *'brownish grey sandy gravelly clay with low subangular cobble content and fragments of plastic, metal, timber and rubber'* was identified in the central and northern portions of the site (TP06 and TP08) to a maximum depth of 1.8m BGL

On a regional scale there are 5no. EPA Waste licenced facilities outside of the proposed development as follows:

- Greenstar Ltd. (site code: W0134-01), located 0.9km northwest of the proposed site;
- Ballymun recycling centre (site code: W0303-01), located 1.7km southeast of the proposed site;
- North city operations depot (site code: W0302-01), located 1.9km southeast of the proposed site;
- Kilshane Cross Recycling Park (site code: W0223-01), located 1.9km west of the proposed site; and,
- Huntstown Inert Waste Recovery Facility (site code: W0277-03), located 2.7km west of the proposed site.

On a regional scale there are 21no. IEL, IPC & IPPC licenced facilities outside of the proposed development as follows:

- Mouldpro International Limited (site code: P0131-01), located 1.9km south of the proposed site;
- Patrick Kelly Timber Limited (site code: P0474-01), located 2.1km northwest of the proposed site;
- Huntstown Bioenergy Limited (site code: P0993-02), located 2.1km southwest of the proposed site;
- Huntstown Power Company Limited (site code: P1194-01), located 2.1km southwest of the proposed site;
- Huntstown Power Company Limited (site code: P0483-04), located 2.2km southwest of the proposed site;
- Burgess Galvin and Company Limited (site code: P0075-03), located 2.2km south of the proposed site;
- W.I. Limited (site code: P0293-01), located 2.3km south of the proposed site;
- Energia Power Generation Limited (site code: P0777-02), located 2.3km southwest of the proposed site;
- Computer Plating Specialists Limited (site code: P0278-01), located 2.7km southeast of the proposed site;
- Amcor Flexibles (site code: P0119-02), located 2.8km south of the proposed site
- International Aerospace Coatings Limited (site code: P0921-01), located 3.3km northeast of the proposed site;
- Team Aer Lingus Limited (site code: P0421-01), located 3.6km northeast of the proposed site;
- Dublin Aerospace Limited (site code: P0480-02), located 3.7km northeast of the proposed site;
- Barclay Chemicals Manufacturing Limited (site code: P0317-01), located 4.0km southeast of the proposed site;
- Diamond Innovations Irish Operations (site code: P0532-01), located 4.5km southeast of the proposed site;
- Anglo Beef Processors Ireland (Swords) (site code: P0189-01), located 4.5km northeast of the proposed site;
- Amazon Data Services Ireland Limited (site code: P1171-01), located 4.7km southeast of the proposed site;
- Modus Media International Dublin (site code: P0149-01), located 4.9km southeast of the proposed site;
- Forest Laboratories Ireland Limited (site code: P0306-03), located 4.9km southeast of the proposed site;
- Global Switch Property (Dublin) Limited (site code: P0109-01), located 5.0km southeast of the proposed site; and
- ADSILClonshaugh (site code: P01186-01), located 5.0km southeast of the proposed site. Refer to Figure 11-4.

On a regional scale there are 4no. Section 4 Discharges licenced facilities outside of the proposed development:

- Irish Kennel Club (site code: WPW/F/075), located 4.8km northeast of the proposed site;
- Roadstone Ltd (site code: WPW/F/003), located 2.9km southwest of the proposed site;

- Roadstone Ltd (site code: WPW/F/008), located 2.46km southwest of the proposed site; and,
- East coast Catering (site code: WPW/F/039), located 1.4km southwest of the proposed site.

Figure 11-4 – EPA licenced facilities outside of the Site (EPA, 2024)

11.3.5. Bedrock Geology

The GSI bedrock geology 100k map identifies the underlying bedrock at the Site as the Malahide Formation (see Figure 11-5). The Malahide Formation is described as argillaceous bioclastic limestone shale. The GSI Bedrock mapping database (GSI, 2024) shows that there is a thrust fault running through the proposed development and identifies 8no. bedrock outcrops within the general vicinity of the Site. Site specific details are presented previously in Section 11.3.3.

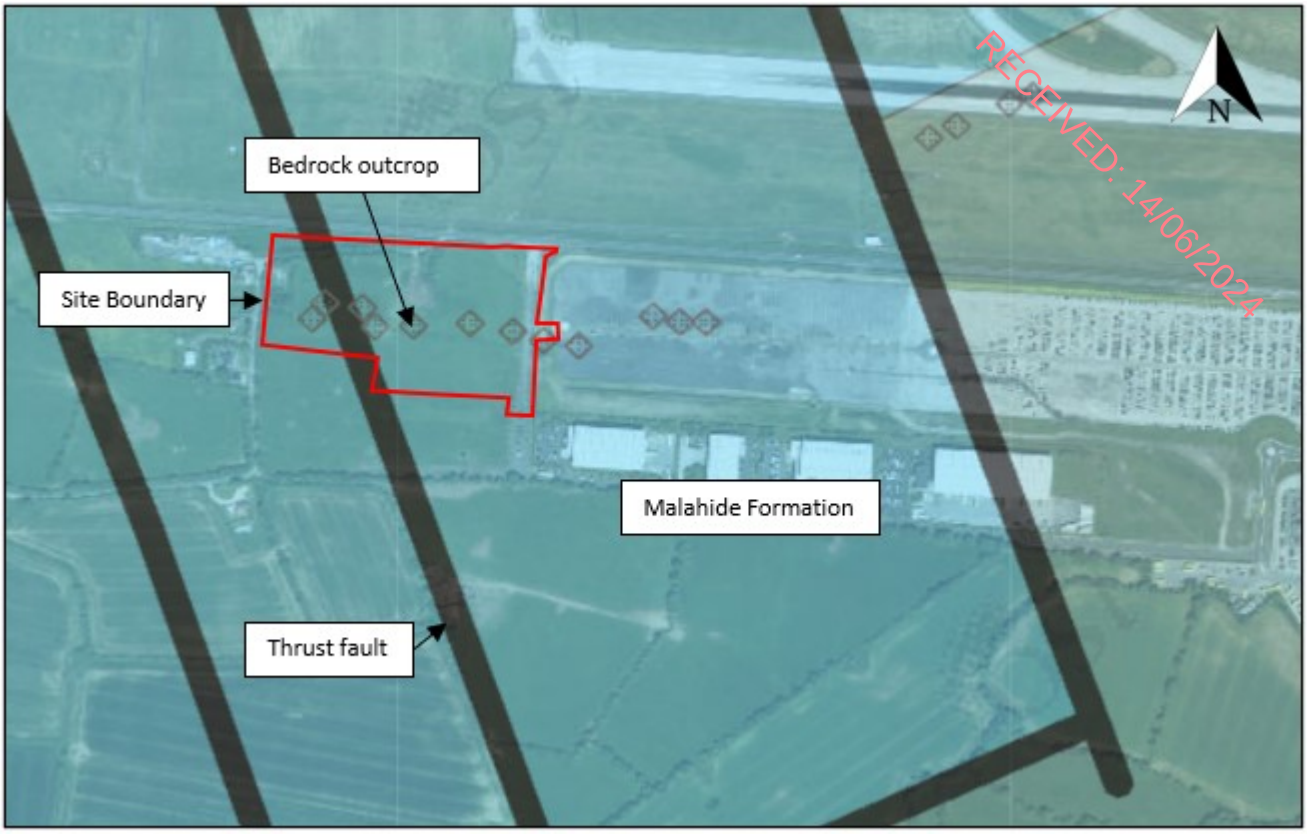


Figure 11-5 – Bedrock Geology (GSI, 2024)

There is a karst feature, or a 'spring' located 7.4km northeast of the Site based on the GSI regional geology mapping. Karst features would not be expected to be encountered beneath the Site or surrounding lands, based on a review of available geological records for the proposed site.

11.3.6. Geological heritage

Huntstown Quarry geological heritage area (site code:DF022) is located ca. 2.1km west of the Site as shown in Figure 11-6. The geological heritage area (GHA) is described as a '*Limestone Quarry showing base of Tober Colleen Formation where it directly overlies Waulsortian.*' (GSI, 2024). According to GSI (2024), Huntstown Quarry GHA is one of few sites currently known where the base of the Tober Colleen formation can be seen overlying the Waulsortian limestones. The proposed development will not have any impact on the Huntstown Quarry geological heritage area, based on the distance of the Quarry from the Site.

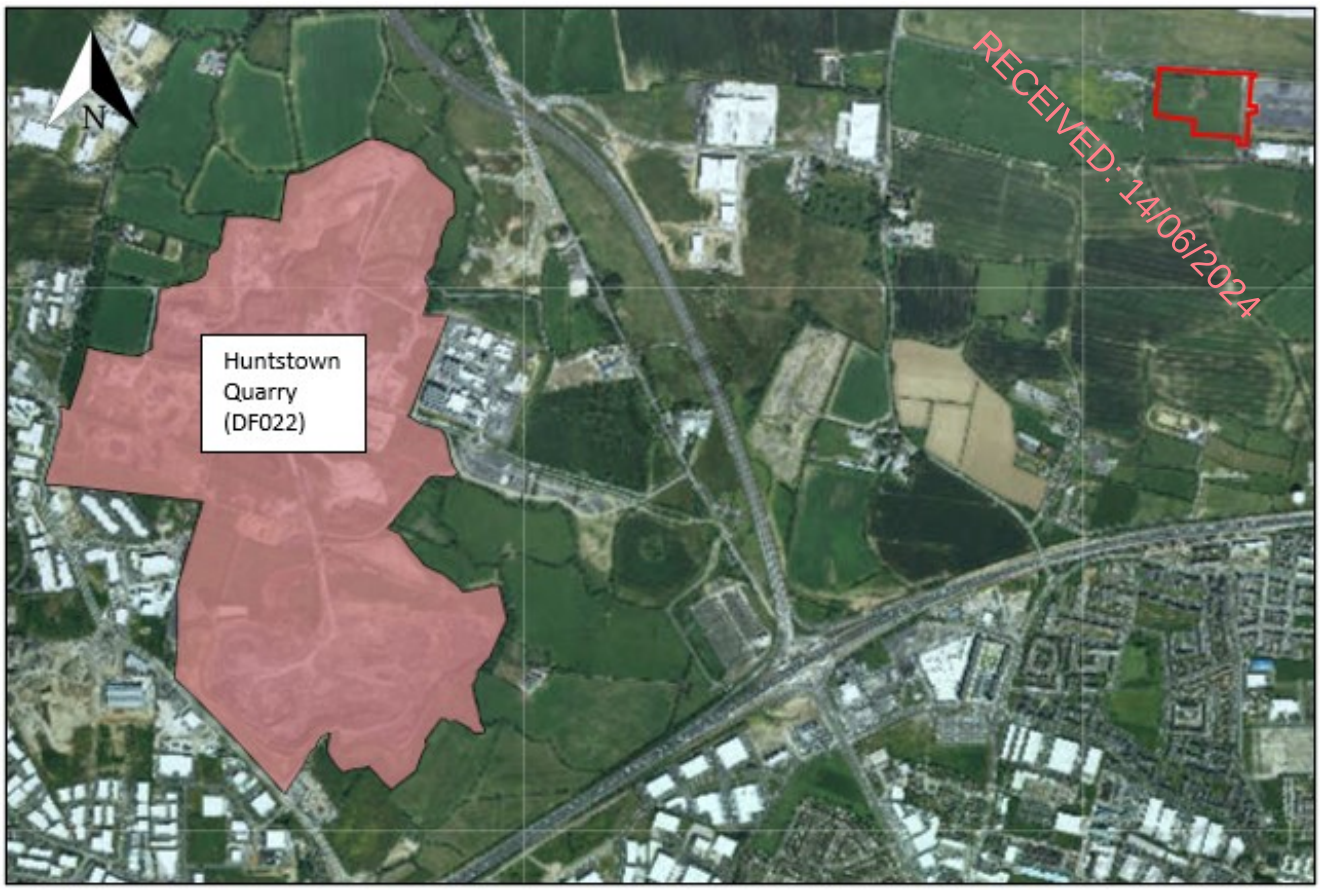


Figure 11-6 – Geological Heritage Areas (GSI, 2024)

11.3.7. Geo-hazards

No landslide susceptibility issues are reported within the Site (GSI, 2024), with the Landslide susceptibility described by GSI as '*low'* within the Site. The closest reported landslide event is located approximately 8.1km southwest of the Site at Knockmaroon Glen Quarry Diswellstown (refer to Figure 11-7).

Figure 11-7 – Landslide Susceptibility (GSI, 2024)

11.3.8. Mineral occurrences

GSI (2024) indicates that Huntstown Quarry, an active limestone quarry, is located ca. 1.4km southwest of the Site.

11.3.9. Radon

Available EPA radon maps shows that about 1 in 20 of the homes within the 10km grid square (standard approach by EPA to radon mapping) where the Site is located, have radon concentrations in excess of the national Reference Level of 200 becquerel per cubic metre (Bq/m^3) as shown in Figure 11-8 (EPA, 2024). Due to the nature and scale of the proposed development, radon is not likely to have a significant effect as a result of the proposed development.

Figure 11-8 – Regional Radon Levels (EPA, 2024)

11.4. Potential Effects of the proposed development

11.4.1. Construction & Demolition Phase

11.4.1.1. Land (Including Land Take)

The proposed development will see a change of use of the Site from a greenfield site to the Staff Carpark. The topography of the site will not change. The proposed development is likely to have a permanent negative not significant effect on land (including land take).

11.4.1.2. Soils and Geology

Activities during construction will primarily comprise of the demolishing of the existing cattle pen and hard standing area, the removal of 1no. gated site entrance and the construction of an extension to the existing Holiday Blue Long-Term Car Park.

- Tracked excavators will likely be sufficient to excavate soils to a maximum depth of 5m across the Site to facilitate the installation of the required surface water drainage infrastructure. Elsewhere across the site the average anticipated excavation depth is ca. 1.2m (for the development of the car park, roads etc.). The extent of excavation for service / utility trenches will vary. All excavations are anticipated to encounter topsoil and underlying till. Potential rock breaking will be required north of the Santry River.
- The total volume of soil requiring excavation for the proposed development is expected to be ca. 20,220 tonnes. 550 tonnes of soil will be retained on site for landscaping. Based on preliminary engineering

calculations it is anticipated that ca. 19,670 tonnes of excess soil will require offsite disposal. All such material will be removed and disposed of offsite to a suitably permitted / licenced waste recovery / disposal facility in accordance with relevant waste management legislation (including but not limited to the Waste Management Act of 1996, 2001 and 2003 and all subsequent waste management regulations as amended).

- The specific methodology will be determined during the detailed design / pre-construction phase.
- During the construction phase of the development, the following potential impacts on soils and bedrock could occur and have been assessed accordingly;
  - Stripping of topsoil and localised portions of hardstanding may result in exposure of the underlying subsoil layers to the effects of weather and construction traffic and may result in subsoil erosion and generation of sediment laden runoff;
  - Soils beneath the proposed development may become unnecessarily compacted by machinery during construction;
  - Dust generation can also occur during extended dry weather periods as a result of construction traffic; and,
  - Soil may be at risk of becoming contaminated through Site construction activity; in particular the risk of spillages and leakage of any fuel oils and paint. Potential human health risks to construction workers could also occur associated with any such spillages and leakage.

These are likely to result in moderate negative effects on receiving soils and/or bedrock; however, any impacts are considered to be short-term and localised. Furthermore, mitigation measures will be implemented during the Construction Phase to reduce and/or avoid these potential effects, and to address any potential waste soil management issues.

11.4.2. Operational Stage

The surface of the car park has been designed to provide attenuation through the use of a proprietary modular geocellular structure with a maintenance/inspection tunnel for providing underground surface water attenuation storage and infiltration to manage storm water runoff (500m3 in the Northern Catchment and 235m^3 in the Southern Catchment). These systems will be provided under the car-parking areas and will provide further surface water management for the site. The Aquacell (or similar) systems will include a filter drain surrounded by stone through the spine of the system. The filter drain will be wrapped in woven geotextile fabric and will acts as a settlement chamber that will provide total suspended solids and pollutant removal while providing surface area for infiltration and runoff reduction. Similar to the permeable pavement with partial infiltration, the Aquacell attenuation systems will have a permeable geotextile at their base which will allow some infiltration to the underlying subgrade, as the existing subgrade is not capable of absorbing all the water through infiltration during a storm event. Taking account of the proposed attenuation system and the fact that the proposed development is underlain by low permeability clay; in the unlikely event of a vehicle spillage /leakage of fuel/ oil any soil impacts would be very localised, with low potential for vertical migration. Hence this potential risk will not result in an adverse impact on soils and geology in the receiving environment of the proposed development.

During the lifetime of the car park, surface cover maintenance, drainage maintenance and underground utility maintenance will be carried out as required. These works have the potential to result in the mobilisation of suspended solids from shallow excavations and fuel and lubricating oils from machinery and equipment. This may potentially result in negative, slight and short term effects on receiving soils and/or bedrock; however, any impacts are considered to be short-term and localised. The following mitigation measures will be implemented to address any potential impacts.

11.5. Mitigation Measures

11.5.1. Construction Phase

Stripping of hardstanding and topsoil will be carried out in a controlled and carefully managed way, coordinated with the proposed staging for the development, and will be removed from Site as soon as possible. Most of this material (ca. 19,670 tonnes) will be removed for offsite disposal to a suitably licenced / permitted waste facility, with the appropriate soil testing carried out, as detailed below. The Contractor, in consultation with the Client and the Engineer, will be responsible for removing and replacing with suitable material as required.

The design of road levels has been carried out in such a way as to minimise cut/fill type earthworks operations. The duration that subsoil layers are exposed to the effects of weather will be minimised. Disturbed subsoil layers will be stabilised as soon as practicable (e.g., backfill of service trenches, construction of road capping layers, construction of building foundations and completion of landscaping).

The excavation of material will be minimised as much as possible to reduce the impact on soils and geology. All waste soils (including made ground) will be classified in accordance with the EPA Guidance Document *'Waste Classification, List of Waste & Determining if Waste is Hazardous or Non-Hazardous'* (2015). It will be the Contractors responsibility to ensure that all waste soils are classified correctly and managed, transported and disposed of offsite in accordance with the requirements of the Waste Management Act 1996, as amended, the Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste and any relevant subsequent waste management legislation.

It will be the Contractors responsibility to ensure that a project specific Detailed Resource and Waste Management Plan (developed in accordance with relevant 2021 EPA Guidance) is fully implemented onsite for the duration of the project.

Further mitigation measures for the prevention of soil / bedrock contamination during construction are proposed below. The Contractor will be responsible for ensuring these measures are fully implemented. Mitigation measures outlined in Chapter 12 - Water are also applicable to the protection of soils and geology during the construction phase:

- In the event that ground contamination is encountered beneath the site during the construction works, all works will cease. Advice will be sought from an experienced contaminated land specialist and a phased environmental risk assessment (specifically to assess any associated potential environmental and/ or human health risks) will be undertaken in accordance with relevant EPA guidance 'Guidance On The Management Of Contaminated Land And Groundwater At EPA Licensed Sites' (EPA, 2013) and UK Environment Agency Guidance 'Land contamination risk management (LCRM)' (UK EA, 2021).
- Earthworks / piling plant and vehicles delivering construction materials to Site will be confined to predetermined haul routes around the Site for each phase of the proposed development;
- The need for vehicle wheel wash facilities will be assessed by the Contractor depending on the phasing of works and onsite activity and will be installed as needed, near any Site entrances and road sweeping implemented as necessary to maintain the road network in the immediate vicinity of the Site;
- Dust suppression measures (e.g., dampening down) will be implemented as necessary during dry periods;
- All excavated materials will be stored away from the excavations / immediate works area, in an appropriate manner at a safe and stable location. The maximum height of temporary stockpiles will be 3m;
- A comprehensive monitoring and supervisory regime including monitoring of all excavations and stability assessments as required will be put in place to ensure that the proposed construction works do not constitute a risk to the stability of the Site;
- The employment of good construction management practices will serve to minimise the risk of pollution from construction activities at the proposed development in line with the Construction Industry Research and Information Association (CIRIA) publication entitled, Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors, CIRIA - C532 (2001) which are also detailed in Chapter 12 – Water; and,
- Specifically, regarding pollution control measures, the following will be adhered to;
    - Fuels, lubricants and hydraulic fluids for equipment used on the construction Site, as well as any solvents, oils, and paints will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to best codes of practice;
    - Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the proposed development for disposal or re-cycling;
    - Any spillage of fuels, lubricants or hydraulic oils will be immediately contained, and the contaminated soil removed from the proposed development and properly disposed of;
    - All Site vehicles used will be refuelled in bunded and adequately sealed and covered areas in the construction compound area;
    - All machinery will be serviced before being mobilised to Site;
    - Refuelling will be completed in a controlled manner using drip trays at all times;
    - Mobile bowsers, tanks and drums will be stored in secure, impermeable storage areas away from open water;
    - Ancillary equipment such as hoses and pipes will be contained within the bund;
    - Taps, nozzles, or valves will be fitted with a lock system;

- Fuel and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage;
- Drip-trays will be used for fixed or mobile plant such as pumps and generators to retain oil leaks and spills;
- Only designated trained operators will be authorised to refuel plant on Site;
- Procedures and contingency plans will be set up to deal with emergency accidents or spills;
- An emergency spill kit with oil boom, absorbers etc. will be kept on-site for use in the event of an accidental spill. A specific team of staff will be trained in the use of spill containment;
- Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised on-Site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the Site. This will minimise the risk of soils and bedrock becoming contaminated through Site activity; and,
- The highest standards of Site management will be maintained, and utmost care and vigilance followed to prevent accidental contamination or unnecessary disturbance to the Site and surrounding environment during construction. A named person will be given the task of overseeing the pollution prevention measures agreed for the Site to ensure that they are operating safely and effectively.

The above mitigation measures will be incorporated (as required) during Detailed Design Stage and form part of the Detailed Construction Environmental Management Plan (CEMP) which will be implemented during the Construction Stage (including initial Site preparatory / enabling works).

11.5.2. Operational Phase

The potential risk posed by localised car park maintenance as required will be mitigated by the fact that any excavation works will be carried out in localised areas for short durations only and will generate minor volumes of excavated soils. Specifically, with regards to soils and bedrock the following mitigation measures will be adhered to at both the car park: -

- All car park maintenance works will be planned and managed carefully;
- Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised on-site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the site. This will minimise the risk of soils, sub soils and bedrock becoming contaminated through operational maintenance activity;
- Fuels, lubricants, hydraulic fluids and paints will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment as per best codes of practice;
- Any spillage of fuels, paints, lubricants or hydraulic oils will be immediately contained and the contaminated soil / bedrock removed from the car park and properly disposed of in accordance with all relevant waste disposal legislation;
- There will be no temporary storage of any fuels, oils or chemicals in the vicinity of shallow excavations;
- Excavated soils will be carefully managed to prevent dust nuisance; and.
- Soils generated on-site during localised maintenance works will be re-used on-site, where possible, or disposed of appropriately in accordance with all relevant waste disposal legislation.

11.6. Monitoring Requirements

11.6.1. Construction Phase

A comprehensive monitoring and supervisory regime including monitoring of all excavations and stability assessments as required will be put in place to ensure that the proposed construction works do not constitute a risk to the stability of the Site.

All waste soils (including made ground) will be classified in accordance with the EPA Guidance Document *'Waste Classification, List of Waste & Determining if Waste is Hazardous or Non-Hazardous'* (2015). It will be the Contractors responsibility to ensure that representative soil samples are taken in advance of removal and disposal offsite. As noted previously, it will be the Contractors responsibility to ensure that all waste soils are classified correctly and managed, transported and disposed of offsite in accordance with the requirements of the Waste Management Act 1996, as amended, the Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste and any relevant subsequent waste management legislation.

11.6.2. Operational Phase

No monitoring will be required during the operational phase.

11.7. Residual Effects

11.7.1. Construction Phase

The proposed development will not have a likely significant impact on land (including land take). Residual effects on land will be permanent negative and not significant.

Implementation of the measures outlined above will ensure that potential moderate effects of the proposed development on soils and the geological environment do not occur during the construction phase, and that any residual effects (with the exception of offsite soil removal) will be negative, not significant and short term in duration, based on the nature, scope and location of the proposed development, and taking account of proposed mitigation measures.

The primary impact is the potential removal of ca. 19,670 tonnes of waste soils (native soil) for offsite disposal. However, all waste soils will be classified in accordance with the EPA Guidance Document *'Waste Classification, List of Waste & Determining if Waste is Hazardous or Non-Hazardous'* (2015), prior to offsite disposal at an appropriate local authority permitted / EPA licenced waste facility. The relevant local authority registered, permitted and /or EPA licenced waste facilities will be operated and managed according to the relevant conditions of their waste permits or EPA waste licences. The Contractor will ensure that all waste soils are classified correctly (as per relevant EPA (2015) Guidance) and managed, transported and disposed of offsite in accordance with the requirements of the Waste Management Act 1996, as amended, the Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste and any relevant subsequent waste management legislation. The residual effect with respect to offsite soil removal is therefore likely to be permanent, negative and not significant.

No significant effects are likely to occur with respect to Land, Soils and Geology, as a result of the proposed development.

11.7.2. Operational Phase

Implementation of the measures outlined above will ensure that any residual effects will be negative, short term and not significant, based on the nature, scope and location of the proposed development, and taking account of proposed mitigation measures.

No significant effects are likely to occur with respect to Land, Soils and Geology, as a result of the proposed development.

11.7.3. Land, Soils and Geology and Human Health

Potential human health risks associated with quality impacts to soils arising from the proposed development during the Construction Phase have been identified as follows;

- Potential risk to receptors (i.e., construction workers) through direct contact, ingestion or inhalation with any soils which may potentially contain hydrocarbon concentrations from Site activities (potential minor leaks and spills of fuels, oils, and paint).

However, this risk will be addressed by implementation of the mitigation measures outlined previously,

Taking account of the baseline environmental setting and the proposed mitigation measures during the Construction Phase, no human health risks associated with exposure to contaminants (via. direct contact, ingestion, or inhalation) resulting from the proposed development are anticipated.

No significant effects are likely to occur with respect to Land, Soils and Geology and Human Health, as a result of the proposed development.

11.8. Cumulative Effects

Provided the mitigation measures listed above are in place for the duration of the construction phase, anticipated effects on soil, land and geology will be negative, short term and not significant during the Construction Phase. Taking account of proposed mitigation measures, effects on soil, land and geology will be negative, short term and not significant during the Operational Phase of the proposed development.

Therefore, no significant cumulative effects are likely.

11.9. Reinstatement

All temporary construction compounds and Site entrances are to be removed upon completion of the construction phase. Such areas are to be reinstated in accordance with the landscape architect's site layout plan and engineer's drawings. All construction waste and / or scrapped building materials are to be removed from Site on completion of the construction phase. Oil, fuel etc. storage areas are to be decommissioned on completion of the construction phase. Any remaining liquids are to be removed from Site and disposed of at an appropriately licenced waste facility.

12. Water

12.1. Introduction

This chapter describes the existing surface water and groundwater regime likely to be encountered beneath and within the general vicinity of the proposed development. It also addresses the potential impact of the proposed development on hydrology (i.e. surface water) and hydrogeology (i.e. groundwater) together with the mitigation measures that will be employed to eliminate or reduce any potential impacts. A detailed description of the proposed development (hereafter referred to as the site) is presented in Chapter 2 - Project Description of the EIAR.

12.2. Methodology

The following scope of works was undertaken by AtkinsRéalis in order to complete this assessment:

- Desk-based study including review of available historical information; and,
- Site walkover survey, carried out on 21st December 2023.

The purpose of the desk-based task is to characterise the current hydrological and hydrogeological setting of the site. Relevant background information was compiled, specifically from the following data sources;

- Bing Maps Aerial photography (consulted 15/04/2024);
- Environmental Protection Agency (EPA) web mapping (consulted 15/04/2024);
- Geological Survey of Ireland (GSI) Datasets Public Viewer and Groundwater web mapping (consulted 15/04/24)
- Google Maps Aerial photography (consulted 15/04/2024);
- Office of Public Works National Flood Hazard mapping web Site (consulted 15/04/2024);
- Ordnance Survey of Ireland (OSI) web mapping (consulted 15/04/2024);
- National Parks and Wildlife Service (NPWS) Map Viewer (consulted 15/04/2024);
- Water Framework Directive (WFD) Ireland web mapping (consulted 15/04/2024);
- daa South Car Park Ground Investigation Report (Ground Investigations Ireland, 2024)
- Flood Risk Assessment (FRA) (AtkinsRéalis, 2024) (Doc Ref. D21081-ATK-SCS-01-XXX-RP-C-XXX-0001) and,
- daa surface water monitoring data for 2020-2023 period.

This assessment has been completed in accordance with relevant best practice guidance from the Institute of Geologists of Ireland (IGI), '*Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements'* (IGI, 2013). The IGI guidance document is an updated version of the 2002 guidelines, '*Geology in Environmental Impact Statements, A Guide'* (IGI, 2002), which was revised to take account of legislative changes, and the operational experience developed by geoscientists in the production of relevant environmental assessments. This assessment has also been prepared in accordance with the relevant Environmental Protection Agency (EPA) guidance, '*Guidelines on the information to be contained in Environmental Impact Assessment Reports'* published in May 2022. A Flood Risk Assessment (FRA) has been prepared by AtkinsRéalis (2023) (Doc Ref. D21081-ATK-SCS-01-XXX-RP-C-XXX-0001) for the proposed development in accordance with the following guidance documents, '*The Planning System and Flood Risk Management – Guidelines for Planning Authorities'* DOEHLG 2009 and the Fingal County Council Development Plan 2023-2029.

12.3. Receiving Environment

12.3.1. Site Development

A review of historic maps (including available 6-inch historic maps, 25-inch historic maps, and aerial photographs (1995-2018) from the Ordnance Survey of Ireland (OSI, 2023) and current aerial photography (Bing Maps, 2023) confirms that the land use at the site has generally been undeveloped and is greenfield in nature. A cattle pen and hard standing area are located within the site (total 4.56 ha). The surrounding land to the north and east has been developed considerably since the late 20th century with airport associated infrastructure. A detailed

summary of land use both in relation to the site and surrounding lands is presented in Chapter 11 – Land, Soils and Geology.

12.3.2. Current Site Setting and Topography

The proposed site is within the townland of Harristown. The site is bounded to the north by the R108 and to the west by an access road serving three dwellings and by a small woodland area, the site is bounded to the east by a road and the existing Holiday Blue car park and to the south by the Horizon Logistics Park. The Santry River crosses through the middle of the site and discharges to the North Bull Island transitional waterbody to the east of the site.

General land use within the site is greenfield with a portion of hardstanding area located at the existing cattle pen. The lands on which the development is proposed is zoned by Fingal County Council development plan 2023-2029 (FCC, 2023) as 'GE' General Employment with the zoning objective being to 'provide opportunities for general enterprise and employment'. Land use zoning objectives are consistent with the national and regional policy which seek the development of serviced sites within settlements designated for development. The topography of the site ranges from ca. 72m to ca. 75m above ordnance datum (mOD).

On a regional scale there are several EPA licensed facilities within 5km of the site (Refer to Chapter 11 – Land Soils and Geology for further details). Land use / activities within the wider environs, including the airport campus and surrounding industrial lands would also be considered as potential contamination sources.

12.3.3. Flood Risk

AtkinsRéalis has been commissioned by daa to prepare a Flood Risk Assessment in support of the daa plc. planning application for the development proposed Remote South Staff Car Park to the west of the existing long-term blue car-park, to the south of Dublin Airport.

This Flood Risk Assessment (FRA) is presented in Appendix 12.3 (Volume 3). The purpose of the *Stage 1 Flood risk identification* process is to establish whether a flood risk issue currently exists or may exist in the future. If no potential flood risk is identified, then the overall assessment can conclude at this point. However, if a potential flood risk issue is identified the risk will be investigated in further detail by undertaking a *Stage 2 – Initial flood risk assessment.*

- Based on the *Stage 1 – Flood risk identification* findings identify that the site is located within Flood Zone C. The proposed development is classified as a '*less vulnerable development*' as per the vulnerability classification in the planning guidelines. Following the sequential approach, it is deemed that a Justification Test for the proposed development is not required, and the site is suitable for the proposed development.

The following design measures have been applied to the proposed development, as detailed within the FRA (AtkinsRéalis, 2024):

- Proposed site levels are designed such that overland flow will not flood the welfare building or footpaths. Surface water runoff is designed to remain within the bounds of roadway reservations where possible and direct runoff to water compatible development areas and open space areas away from the building. Overland flow routes for pluvial events shall not be built on or become blocked off.
- The site drainage system is designed to cater for the 1 in 2-year return period for underground pipes flowing full of surcharge capacity up to 1 in 30 year event. The site attenuation system is designed to cater for the critical 1 in 100-year event. Climate change is applied at 20%. If the capacity of the site drainage is exceeded and overland flow occurs, proposed site levels are designed such that overland flow will not flood buildings or footpaths. Surface water runoff is designed to remain within the bounds of roadway reservations where possible and direct runoff to water compatible development areas and open space areas away from buildings.
- The proposed petrol interceptors and flow control will be maintained on a regular basis to reduce the risk of a blockage. If the site drainage system becomes blocked and overland flow occurs, proposed site levels are designed such that overland flow will not flood buildings or footpaths. Surface water runoff is designed to remain within the bounds of roadway reservations where possible and direct runoff to water compatible development areas and open space areas away from buildings.

12.3.4. Drainage Design and Climate Change

The site lies in Zone C where the probability of fluvial flooding is less than 0.1%. The design of all surface water drainage collection and conveyance systems includes an uplift factor of 20% to all rainfall data/events.

Drainage infrastructure beneath the proposed development has been designed to take account of potential changes in rainfall run-off rates associated with climate change (i.e. 1 in 100-year event including 20% for climate change).

12.4. Hydrology

There is one reported surface water feature located within the site. This is the Santry River (EPA Code: 09S01), a tributary of the Santry River waterbody, which runs in a west – east direction across the centre of the site prior to discharge to Dublin Bay which is located ca. 9.7km direct line from the site and 10.9km downstream via Santry River (EPA, 2024). It is noted that the Santry River was diverted to the South of the existing Harristown car park (holiday blue) during the construction of the original car park. Refer to Figure 12-1 below.

The Mayne River (EPA code: 09M03) and the Cuckoo Stream (EPA Code: 09C07) are located ca. 2.5km and 2.8km east of the site respectfully and flow in an easterly direction. The Huntstown Stream (EPA Code: 08H02) is located ca. 1.5km northwest of the site (EPA, 2024).

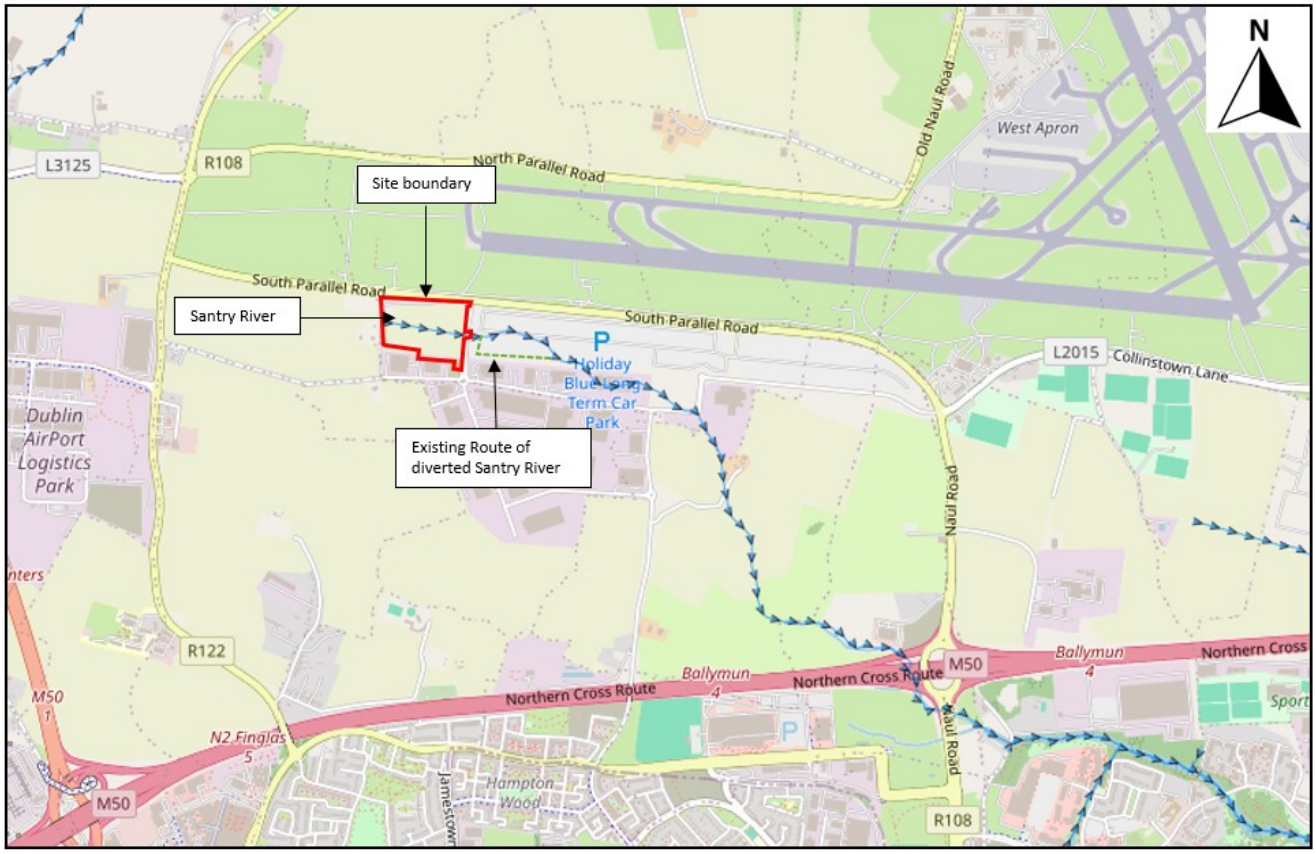


Figure 12-1 - Hydrological Features within the general vicinity of the site (Source: EPA, 2024)

Huntstown Quarry geological heritage area (site code: DF022) is located approximately 2.1km west of the site, as detailed further in Chapter 11 - Land, Soils and Geology. The geological heritage area is described by the GSI (2024) as a 'working limestone quarry.' It is described by the GSI as a *'Limestone Quarry showing base of Tober Colleen Fm where it directly overlies Waulsortian'* (GSI, 2024). The proposed development will not have a significant impact on the Huntstown Quarry geological heritage area.

12.4.1. Surface Water Quality

The EPA maintains a database of surface water features including rivers and lakes as well as water quality and risk status in accordance with the Water Framework Directive (WFD). The purpose of the WFD is to protect and enhance all waters including rivers, lakes, estuaries, coastal waters, and groundwater as well as water dependent wildlife and habitats. This involves improving or maintaining current water quality status with the aim of achieving *'Good'* status for all waters; and mitigating against the risk of a decline in the water body quality status. The site is located within the Mayne_SC_010 WFD sub-catchment of the Liffey and Dublin Bay WFD catchment (EPA, 2024).

The Santry River, which traverses the centre of the site, has been assigned '*poor*' river water quality status by the EPA, for the 2016 to 2021 monitoring period (EPA, 2024), as presented in Figure 12-2. The Santry River is '*at risk*' of failing to meet the relevant WFD objectives by 2027 (EPA, 2024). The EPA undertake biological monitoring of the Santry River ca. 6.5km downstream of the site at Clonshaugh Road Bridge and Q values last

recorded in 2022 were noted to be 2-3 indicating a '*poor*' Q-Value status (Station Code: RS09S010300) (EPA, 2022).

The Santry River discharges to North Dublin Bay / North Bull Island, which is located 9.7km direct line distance and 10.9km downstream via Santry River. Santry River is classified as having *'moderate'* transitional waterbody status by the EPA for the 2016-2021 monitoring period (EPA, 2024) and is currently under review with regards to meeting the relevant WFD objectives by 2027. North Bull Island in turn discharges to the Irish Sea, which is classified as *'good'* coastal waterbody status by the EPA for the 2016-2021 monitoring period (EPA, 2024), and is currently *'not at risk'* with regards to meeting the relevant WFD objectives by 2027.

Figure 12-2 - Regional River Water Quality in the general vicinity of the site (Source: EPA, 2024)

12.4.2. daa Surface Water Quality Monitoring

daa undertake routine surface water quality monitoring at key locations along the Santry River waterbody. Samples are selected for field measurement / laboratory analysis of all or some of the following parameters; pH, Temperature, Dissolved Oxygen, Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Ammonia (as N), Detergents, and Total Petroleum Hydrocarbons (TPH).

The Santry River runs through the Site in an easterly direction. Analytical surface water monitoring results for the monitoring period 2020-2023, at monitoring location SW-S-3, were reviewed as part of this assessment. SW-S-3 is located downstream of the proposed development, within airport land ownership, in the existing adjacent car park and as such gives an indication of the Santry River's catchment areas water quality as it leaves the airport lands.

Tabulated data for the four year monitoring period, which has been screened against the relevant generic assessment criteria (Surface Water Regulations - S.I. No. 272 of 2009 as amended – S.I. No. 327 of 2012, S.I. No. 386 of 2015 and S.I. No. 77 of 2018), as well as a figure showing the SW-S-3 monitoring location downstream of the site is presented in Appendix 12-1.

It is noted that the SW-S-3 monitoring locations is located downstream of both the proposed development and the existing Holiday Blue car park; hence the results may be influenced by activities in the Existing Holiday Blue car park.

Results

Grab samples were collected on a monthly basis between December 2019 and October 2023, at daa monitoring location SW-S-3. Refer to Appendix 12.2 for Nicholas O 'Dwyer Monitoring Plans Sampling Locations.

pH values for the entire period between 2019 and 2023, ranged from 7.39 to 8.07 pH units. Therefore, all of the samples collected were within the acceptable statutory range of values of 6.0 to 9.0 pH units.

Measured temperatures were only recorded between December 2019 and January 2021, ranging from 6.3 to 16°C. This range is likely due to seasonal fluctuations in ambient temperatures.

Reported Ammonia (as N) concentrations for the entire monitoring period ranged from <0.01 to 1.13 mg/l. Just over 50% of the samples collected, recorded a concentration exceeding the relevant generic acceptance criteria (GAC) of 0.065mg/L (as N) (Surface Water Regulations (S.I. No. 272 of 2009) as amended). The mean value for this monitoring period was ca. 0.113mg/l. TPH concentrations for the entire monitoring period have been consistently recorded as <1 µg/l.

Orthophosphate concentrations for the entire monitoring period ranged from <0.01 to 0.21ug/l. 9no. of the samples collected, recorded a concentration exceeding the relevant GAC of 0.06mg/l. The mean value for this monitoring period was below the relevant GAC, at 0.046mg/l.

Based on a review of available surface water monitoring data over a four year monitoring period, no significant surface water quality issues have been identified at monitoring location SW-S-3, along the Santry River, downstream of the proposed development and the existing car park.

12.5. Hydrogeology

12.5.1. Aquifer Characteristics

The GSI provides a methodology for aquifer classification based on resource value (regionally important, locally important, and poor) and vulnerability (extreme, high, moderate, or low). Resource value refers to the scale and production potential of the aquifer whilst vulnerability refers to the ease with which groundwater may be contaminated by human activities (vulnerability classification is primarily based on the permeability and thickness of subsoils), as presented in Table 12.1.

Table 12.1 - Groundwater Vulnerability Rating Table (Source: GSI, 1999)

Vulnerability Rating	Hydrogeological Conditions				
	Subsoil Permeability (Type) and Thickness			Unsaturated Zone	Karst Features
	High permeability (sand/gravel)	Moderate permeability (e.g. Sandy subsoil)	Low permeability (e.g. Clayey subsoil, clay, peat)	(Sand/gravel aquifers only)	(<30 m radius)
Extreme (E)	0 - 3.0m	0 - 3.0m	0 - 3.0m	0 - 3.0m	-
High (H)	>3.0m	3.0 - 10.0m	3.0 - 5.0m	>3.0m	N/A
Moderate (M)	N/A	>10.0m	5.0 - 10.0m	N/A	N/A
Low (L)	N/A	N/A	>10.0m	N/A	N/A

Notes: (1) N/A = not applicable.
(2) Precise permeability values cannot be given at present.
(3) Release point of contaminants is assumed to be 1-2 m below ground surface.

Groundwater vulnerability is an indication of how easily the aquifer can become contaminated by human activity. It is dependent on the thickness and permeability of the overlying soils and depth to the water table. For example, a bedrock aquifer with minimal thickness of overburden or with a thin layer of permeable overburden will be more vulnerable to contamination than a bedrock aquifer which has a thick layer of low permeability overburden. Extreme groundwater vulnerability is also associated with karst landforms as these are a direct pathway for water and contaminants to enter the aquifer from the surface.

Groundwater vulnerability (in the bedrock aquifer) is Low (L) within the site, as presented in Figure 12-3 (GSI, 2024). Areas of Moderate (M) and High (H) vulnerability are noted to be present offsite, to the west of the site with a small area of High vulnerability located to the east of the site, making it highly vulnerable to groundwater contamination (GSI, 2024)

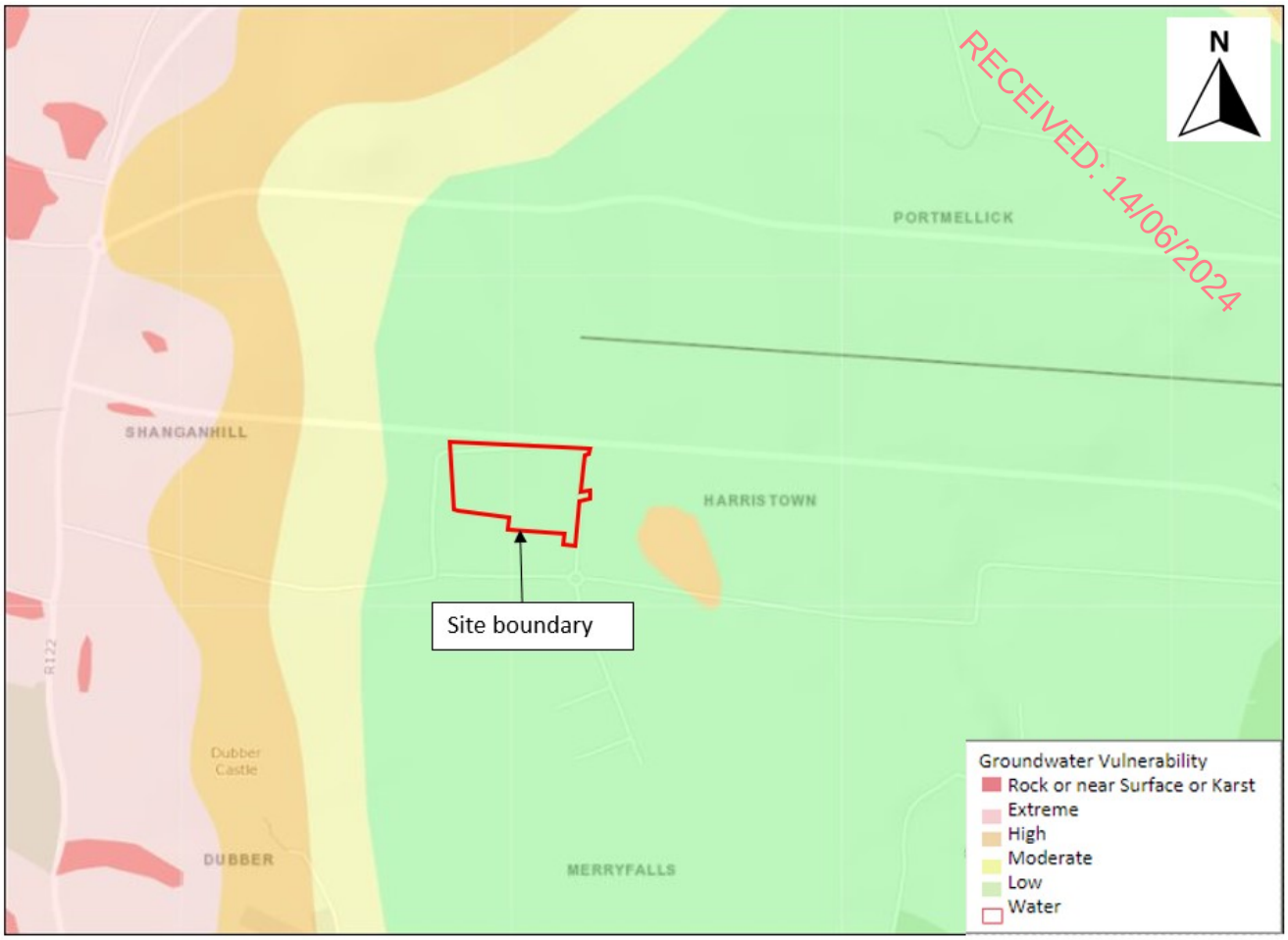


Figure 12-3 - Regional Groundwater Vulnerability Rating (Source: GSI, 2024)

The GSI has devised a system for classifying bedrock aquifers and gravel aquifers in Ireland based on the size and hydrogeological characteristics of these aquifers. The bedrock aquifer beneath the site is classified as a Locally Important Aquifer (LI) (bedrock which is Moderately Productive only in Local Zones), as presented in Figure 12-4 (GSI, 2024). The Liffey Gravels are a locally important gravel aquifer located ca. 6.9km south of the site.

The general vicinity of the site is within the Dublin Groundwater Body (GWB). The Groundwater Body (GWB) is the relevant management unit under the WFD. Groundwater bodies are subdivisions of large geographical areas of aquifers so that they can be effectively managed in order to protect the groundwater and linked surface waters (GSI, 2021). According to the '*Dublin GWB: Summary of Initial Characterisation'* document (GSI, 2004), the majority of groundwater flow in the general region of the site will be a rapid flow in the upper weathered zone but flow in conduits is commonly recorded at depths of 30 to 50 m below ground level. Groundwater circulation from recharge to discharge points will more commonly take place over a distance of less than a kilometre.

There is a karst feature, a 'spring' (St. Doolagh's Well) located ca. 7.4km east of the site (GSI, 2024). Based on the geological setting of the receiving environment, there is no potential for karst features (such as fractures or epikarst) to be present beneath the site. Accordingly, the potential for karst connectivity, and groundwater flow via. conduit pathways does not warrant consideration as part of this assessment.

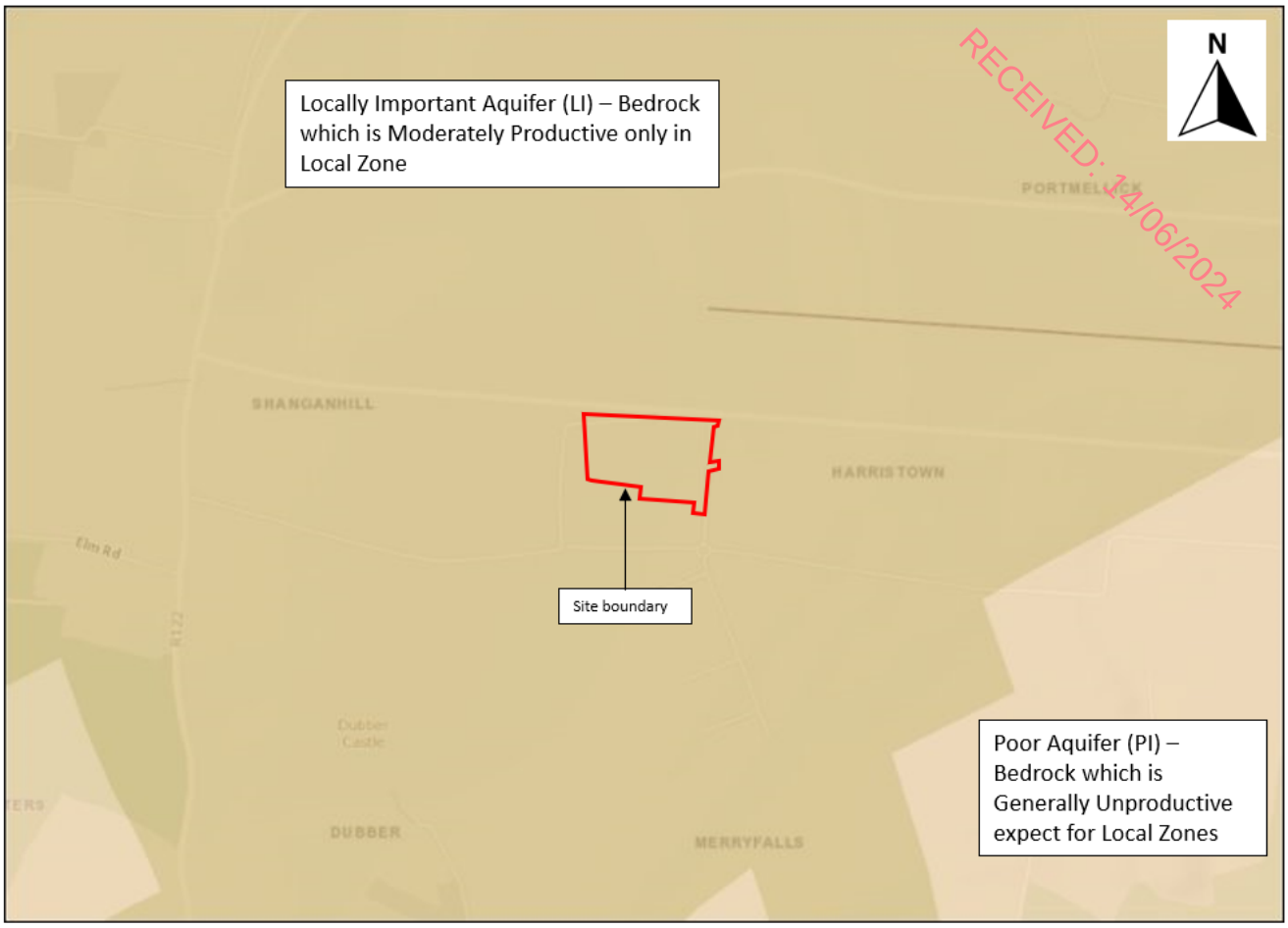


Figure 12-4 - Regional Aquifer Classification (Bedrock Aquifer) (Source: GSI, 2024)

12.5.2. Groundwater Recharge

Recharge is the amount of rainfall which infiltrates to ground and replenishes groundwater levels in the bedrock and gravel aquifers. It is dependent on the following key factors: effective rainfall (i.e. total rainfall less evaporation and surface water run-off), transpiration (i.e. uptake by vegetation) and aquifer characteristics (i.e. how easily the aquifer can accept water and store it). Additionally, not all effective rainfall will contribute to recharge due to impermeable materials in urbanised areas and associated drainage and water management infrastructure. The average recharge rate to the locally important bedrock aquifer beneath the general vicinity of the site is reported to be ca. 31mm/yr (GSI, 2024).

12.5.3. Groundwater Levels and Flow Direction

No groundwater monitoring was carried out at the proposed site. Inferred groundwater flow is expected to follow topography in a general easterly / south easterly direction, towards the Santry River and regionally towards North Dublin Bay and Irish Sea (to the south- east).

12.5.4. Groundwater Use & Available Resource

The GSI maintains a record of groundwater abstractions consisting of wells and springs, in addition to designated drinking water protection zones (referred to as Source Protection Areas). According to the GSI database, there are no group water scheme or public water supply abstraction points, or designated group water scheme or public water supply Source Protection Areas within the vicinity of the site (GSI, 2024).

Based on the GSI database, there are 16no. wells and springs located within the general vicinity of the site, as summarised in Table 12.2, and presented in Figure 12-5. Surface springs are also reported to be present within the general vicinity of the site (albeit a location accuracy of 5km is noted) (GSI, 2024). Taking account of the findings of the site walkover survey, and the reported location accuracy of these wells and springs, no groundwater abstraction wells or springs are known to be present within the site boundary.

Table 12.2 - GSI Groundwater Abstractions Within 5km radius of site (Source: GSI, 2024)

Abstraction ID	Abstraction Type	Location Accuracy (m)	Approximate Location (relative to the site)	Depth (m)	Yield (m^3/d)	Use
2923NEW035	Borehole	500	ca. 0.38km south of site	13.5	48.5 - moderate	Unknown
2923NEW034	Borehole	500	ca. 3.8km north east of the site	13.7	300 - good	Industrial use
2923NEW017	Borehole	500	ca. 1.1km north west of site	9.1	164 - good	Unknown
2923NEW023	Spring	100	ca. 1.4km north west of site	Unknown	Low Spring	Unknown
2923NEW024	Spring	100	ca. 1.6km north west of site	Unknown	Low Spring	Unknown
2923NEW061	Borehole	200	ca. 2.3km east of the site	91.4	87 - moderate	Industrial use
2923NEW062	Borehole	200	ca. 2.3km east of the site	122	200 - good	Industrial use
2923NEW036	Borehole	500	ca. 2km east of the Site	91.4	87 - moderate	Industrial Use
2923NEW037	Borehole	500	ca. 2km east of the site	122	Unknown	Industrial use
2923NEW015	Borehole	500	ca. 2.4km east of the site	48.8	130 - good	Industrial use
2923NEW016	Borehole	500	ca. 2.8km east of the site	35.4	109 - good	Domestic use only
2923NEW034	Borehole	500	ca. 3.7km north east of the site	13.7	300 - good	Industrial use
2923NEW030	Borehole	50	ca. 1.3km south west of the site	1.4	Unknown	Other
2923NEW029	Borehole	50	ca. 1.3km south west of the site	1.4	Unknown	Other
2923NEW031	Borehole	50	ca. 1.3km south west of the site	42.7	83.8 Moderate	Other
2923NEW025	Borehole	50	Ca. 1.3km south west of the site	0.6	Unknown	Unknown
2923NEW026	Borehole	50	ca. 1.3km south west of the site	0.4	Unknown	Other
2923NEW027	Borehole	50	ca. 1.3km south west of the site	0.4	Unknown	Other
2923NEW028	Borehole	50	ca. 1.3km south west of the site	0.2	Unknown	Other

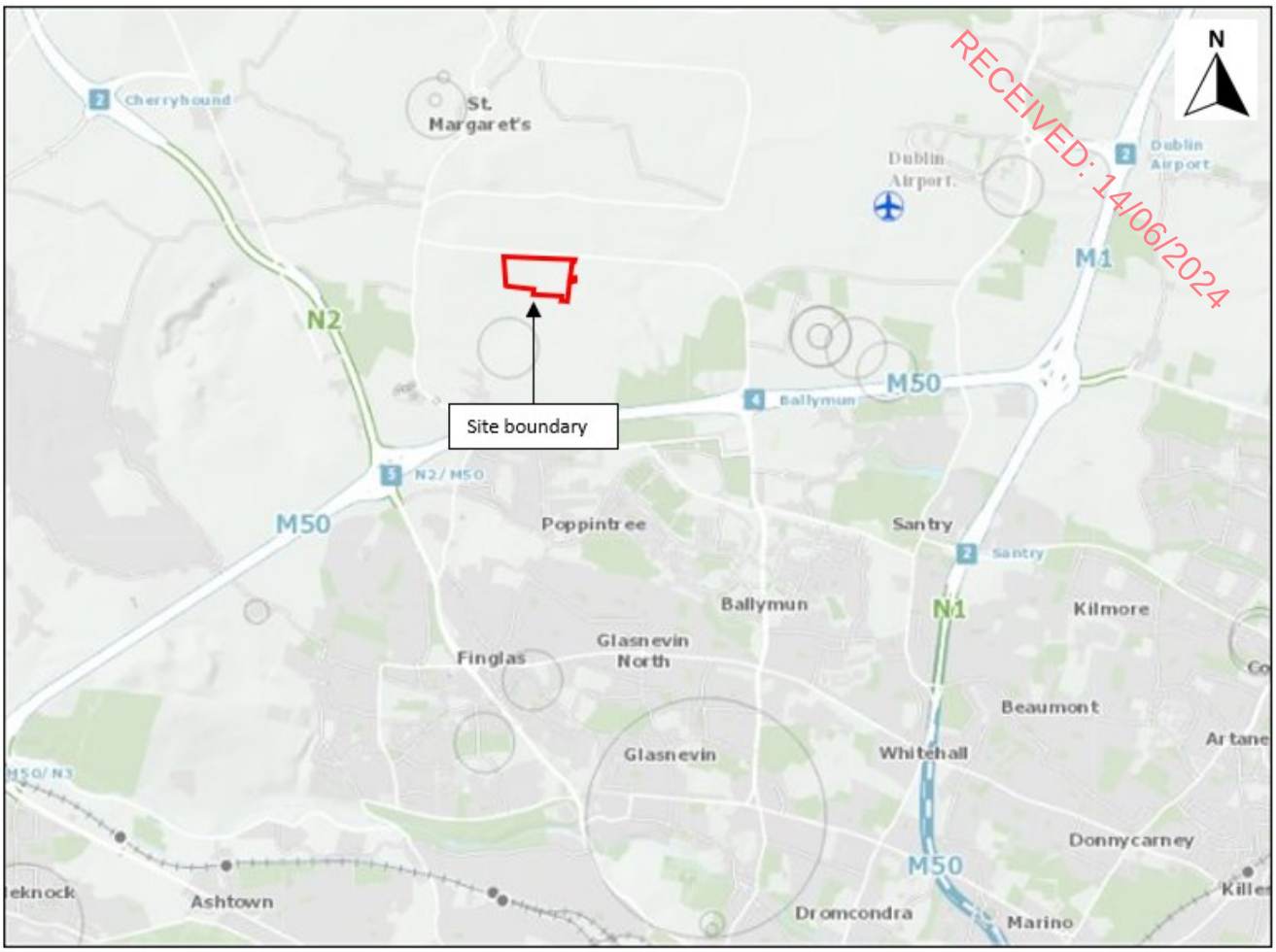


Figure 12-5 - Registered Groundwater Wells and Springs in the vicinity of the site (Source: GSI, 2024)

12.5.5. Groundwater Quality

The European Communities Environmental Objectives (Groundwater) Regulations, (S.I. 9 of 2010) came into effect on 27th January 2010. The aim of the Regulations is to achieve the environmental objectives established for groundwater by Article 4 (1) (b) of the Water Framework Directive (2000/60/EC), as amended. The 2010 Regulations, as amended, set down groundwater quality standards for nitrate (50mg/L) and active substances in pesticides in Schedule 4 and, also established threshold values for pollutants or indicators of pollutants in Schedule 5. Under these regulations the EPA must assign a status of '*Good*' or '*Poor*' to those bodies of groundwater where available data and knowledge allows.

Regional groundwater quality status for the 2016 to 2021 monitoring period (EPA, 2024) is classified under the WFD as '*Good*' beneath the site (EPA GWB ref: Dublin). Refer to Figure 12-6. The risk of failing to meet the relevant WFD objectives in the vicinity of the site (Dublin GWB) by 2027 (EPA, 2024) is '*under review*'.

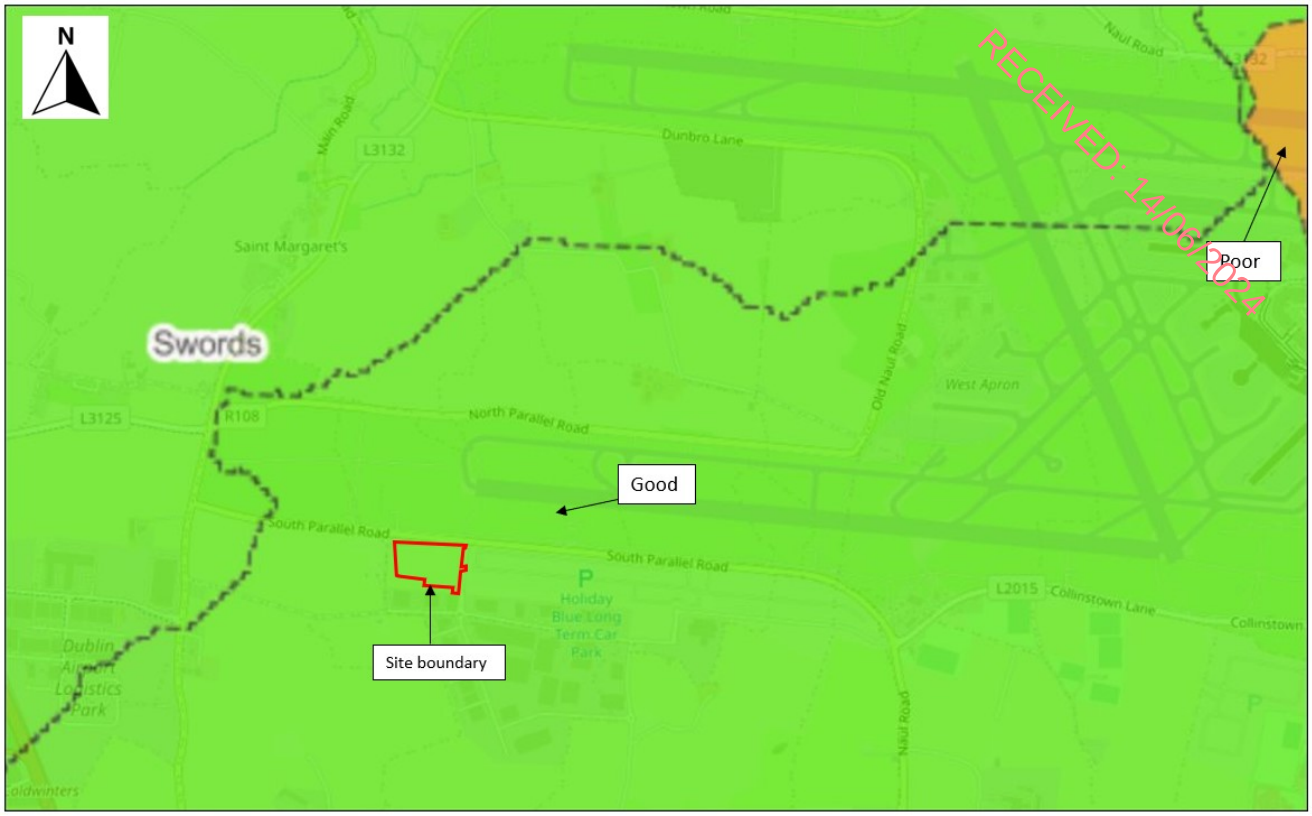


Figure 12-6 - Regional Groundwater Quality in the general vicinity of the site (Source: EPA, 2024)

12.6. Potential Effects of the Proposed Development

12.6.1. Hydrogeological Conceptual Site Model

In addition to flood risk, the following criteria are typically applied when evaluating potential impacts to the water environment.

- Effects to surface water / groundwater quality; and,
- Effects to surface water flows / groundwater resources.

In terms of surface water flows / groundwater resources, no significant effects are anticipated arising from the proposed development based on the following considerations:

- According to the GSI (2024) database, there are 16no. groundwater wells located within 5km of the site. However, due to the nature, scale and location of the proposed development, any offsite groundwater abstraction wells are unlikely to be impacted by the proposed development.
- There will be no significant change to rainfall recharge rates at the proposed development.
- Tracked excavators will likely be sufficient to excavate soils to a maximum depth of 5m across the Site to facilitate the installation of the required surface water drainage infrastructure. Elsewhere across the site the average anticipated excavation depth is ca. 1m (for the development of the car park, roads etc.). The extent of excavation for service / utility trenches will vary. All excavations are anticipated to encounter topsoil and underlying till
- The maximum anticipated depth of excavation across the site is ca. 5 mbgl to facilitate the installation of the required surface water drainage infrastructure. Elsewhere across the site the average anticipated excavation depth is ca. 1m (for the development of the car park, roads etc.).All excavations are anticipated to encounter topsoil and underlying till. Rock breaking will likely be required in a localised area of shallow bedrock just north of the Santry River. The site is underlain by a locally important aquifer (LI - bedrock which is moderately productive only in local zones), therefore, no groundwater level impacts to regional groundwater resources, or surface water level/ flow impacts are likely. Based on the proposed drainage design, surface water level/flow impacts are not likely to occur.

- The design of surface water network upgrades has been carried out in accordance with the requirements of the Greater Dublin Strategic Drainage Scheme (GDSDS) and is summarised as follows:
  - Porous asphalt surfacing with open graded subbase material will be provided on the car-parking areas within the site. This porous pavement will treat surface water, at source, and allow infiltration through to an underlying porous sub-base where water can be stored within the voids of the sub-base before being slowly released to the drainage collection system through natural flow via the porous medium. As the existing subgrade comprises Dublin Boulder Clay, which has minimal infiltration capabilities in the short term, a partial infiltration system is proposed to be used as the existing subgrade (ground) is not capable of absorbing all the water through infiltration during a storm event. This type of permeable paving system includes a permeable geotextile at its base and also includes an outlet to the surface water system in the form of filter drains located below the underside of the pavement. Storage of water (attenuation) in the porous subbase during extreme rainfall events is maximised by carefully designing levels, controls, pipe sizes and connections within the stormwater network. This ensures that surface water draining to, and through, the porous pavement is kept within the system for as long as possible before discharging downstream via the filter drains, thereby mobilising the inherent storage capacity and attenuating capabilities within the system. The drainage network has been designed to mimic the natural response for the site catchment.
  - Access roads within the car park will be constructed of non-permeable asphalt but will be graded such that stormwater runoff drains from the surface to the adjacent porous car parking bays.
  - Filter drains comprising trenches filled with permeable stone material and a perforated collection pipe at their invert will be located under the porous pavement to provide an outlet to the surface water system. Filter drains will result in a reduction of peak runoff, improvement in the quality of surface water draining from paved areas and will also allow groundwater to recharge to its natural state.
  - A proprietary modular geocellular structure with a maintenance/inspection tunnel for providing underground surface water attenuation storage and infiltration to manage storm water runoff system will be provided under each of the car-parking areas (north and south) to the east of the site and will provide further surface water management for the site.
  - A petrol interceptor will be provided on each outfall from the site. Kingspan Klargester Class 1 Bypass Petrol Interceptors or equal approved will be used prior to the discharge points north and south of the Santry River (flow rates have been designed to match greenfield run off rates) and will be NSBE010 and NSBP003 at the north and south catchments respectively. The design SuDS strategy satisfies GDSDS requirements for interception volume, treatment volume and the requirements of the simple index approach to treatment train design are met.
  - The proposed drainage system for the site has thus been designed to mimic the current greenfield drainage regime, and to manage and treat any potential contaminants prior to discharge at 2no. proposed discharge points to the Santry River.
  - The proposed development will incorporate a riparian strip along the length of the section of the Santry River in accordance with FCC Development Plan. The river currently has two existing field crossing points for land access, the existing crossing locations will be re-used for road and pedestrian access for the proposed scheme. In addition, a third new crossing point to the east of the site will be constructed. A new headwall will be constructed at the existing culvert under the proposed access road to the south car-park.

Therefore, given the nature of the proposed development there will be no impact to regional or local groundwater resources or surface water levels / flows in the receiving Santry River. Accordingly, potential effects on groundwater resources, groundwater levels or surface water levels/ flows do not warrant further consideration.

A hydrological connection exists between the site and North Dublin Bay SAC (000206) and North Bull Island SPA (004006) via the Santry River which flows in an easterly direction from the site before outfalling to North Dublin Bay / North Bull Island which is 9.7km direct line distance, 10.9km downstream via Santry River downstream. However, given the nature and scale of the proposed development, it is considered that the construction and/or operational phases of the proposed development will not, either individually or in combination with other plans or projects, give rise to any impacts which would constitute significant effects North Dublin Bay SAC or North Bull Island SPA, or any other European site, in view of their conservation objectives.as detailed previously in Chapter 5 – Biodiversity.

Similarly, the risk of any impacts to Huntstown Quarry geological heritage area (located ca. 2.1km west of the site) have been screened out as being insignificant, as detailed previously within this chapter.

Based on distance and the site specific hydrogeological conceptual site model (CSM). any potential effects to the Irish Sea are unlikely during the construction or operational phases.

Key receptors (in terms of surface water /groundwater quality) have therefore been identified as follows;

- Bedrock aquifer beneath the site (LI - bedrock which is moderately productive only in local zones); and,
- The Santry River which flows through the central portion of the site.

The focus of this assessment will therefore be on potential groundwater quality and surface water quality impacts associated with the proposed development.

Based on relevant IGI guidance (2013) the generic type of geological/hydrogeological environment into which the proposed development will be placed has been determined as *'Type A – Passive geological / hydrogeological environment'*, defined by the IGI as '*areas of thick low permeability subsoil, areas underlain by poor aquifers, recharge areas, historically stable geological environments.'*

12.6.2. Characteristics of the Proposed Development

The surface water infrastructure for the site will mimic the natural drainage catchments of the existing site. The proposed car park drainage system has been split into two catchments, a northern catchment, and a southern catchment. The catchments are separated by the Santry River which intersects the centre of the site flowing from the western boundary to the eastern boundary:

- Both the Northern and Southern catchments will have SuDS porous surfacing parking bays and aisle that will comprise of non-porous asphalt. The stormwater runoff will discharge into the permeable surface prior to collection by perforated drainage pipes. These drains allow for adequate drainage into the proposed carrier drainage network.
- The main car park access circulation road will have an impermeable Stone Mastic Asphalt (SMA) surface which will be drained via the use of traditional road gullies.
- A vortex flow control device will be located downstream of the proposed carrier drainage network limiting flows to a maximum discharge rate of during 7.4l/s for the northern catchment and 1.9l/s for the southern catchment during the critical 1 in 100-year storm event. Prior to discharge into the Santry River a bypass separator will ensure silts and oil is removed.
- Attenuation for both catchments is provided through the use of a proprietary modular geocellular structure with a maintenance/inspection tunnel for providing underground surface water attenuation storage and infiltration to manage storm water runoff (500m3 in the Northern Catchment and 235m3 in the Southern Catchment). These systems will be provided under the car-parking areas and will provide further surface water management for the site. The Aquacell (or similar) systems will include a filter drain surrounded by stone through the spine of the system. The filter drain will be wrapped in woven geotextile fabric and will acts as a settlement chamber that will provide total suspended solids and pollutant removal while providing surface area for infiltration and runoff reduction. Similar to the permeable pavement with partial infiltration, the Aquacell attenuation systems will have a permeable geotextile at their base which will allow some infiltration to the underlying subgrade, as the existing subgrade is not capable of absorbing all the water through infiltration during a storm event. These attenuation systems will result in infiltration, water evaporation and adsorption in small quantities, therefore there will be less run-off in small rainfall events thus mimicking the natural response for this catchment.
- The site will incorporate a riparian strip along the length of the section of the Santry River in accordance with Objective GINHO43 of the FCC Development Plan 2023-2029, to *'…restore a minimum of 10m of natural streamside riparian zone, where possible'*. The riparian strip, on either side of the stream, will be a minimum of 10m in width from the stream and a maximum of 15m in width from the stream. The riparian strip will have a number of crossing points for the access road and pedestrian crossing locations. Culverts will be constructed at these crossing points and sized in accordance with final Section 50 approval from the OPW.

12.6.3. Potential Effects on Water during the Construction Phase

There is potential for degradation in surface water and groundwater quality resulting from potential pollution caused by construction activities e.g. plant, fuel/ chemical spillage etc., particularly during excavations. The maximum anticipated depth of onsite excavation will be approximately 5mbgl. During the construction phase of the proposed development, the following potential effects on surface water or groundwater quality could occur:

- Accidental spillages or leaks onsite in the vicinity of exposed groundwater / surface water pose a potential pollution risk as follows:
  - The Santry River which flows through the central portion of the proposed development is a key onsite sensitive receptor, with a current poor WFD quality classification status (EPA, 2024). This water

course may be very vulnerable to water quality effects through accidental spillages or leaks of oils, fuels, paints, or chemicals. This could result in likely adverse moderate and temporary effects directly to the quality of this surface water receptor (i.e. the Santry River).

- In addition, any localised perched water which may be present beneath the site would be vulnerable to water quality effects through accidental spillages or leaks of oils, fuels, paints or chemicals, which could result in potential slight adverse temporary effects directly to the quality of groundwater receptors (i.e. any localised perched water, and the deeper locally important bedrock aquifer), and potential adverse slight and temporary effects indirectly (via. groundwater migration / interactions with the Santry River as it flows through the site) to the quality of the key surface water receptor (i.e. the Santry River).

- General Site activities during the construction phase associated with cement handling and pouring, pose a potential pollution risk as follows;
  - These activities could result in a likely adverse moderate and temporary effect directly to the quality of the key surface water receptor (i.e. the Santry River).
  - In addition, such general site activities could result in potential adverse slight and temporary effects (via. groundwater pathways) directly to groundwater quality beneath the Site (i.e. any localised perched water, and the deeper locally important bedrock aquifer) and indirectly to surface water quality in the Santry River.
  - Localised temporary dewatering may be required during excavation (in the unlikely event that any perched water may be encountered). However, a dewatering plan will be designed by the Contractor as temporary works, including disposal of water to a suitably licenced [wastewater] disposal / recovery facility, and reviewed and approved by daa plc. prior to being fully implemented. Therefore, potential localised dewatering will not likely have a significant effect on groundwater or surface water quality (namely the Santry River).
  - The importation of ca. 24,136 tonnes of material to site during the construction of the proposed development has the potential to result in likely moderate adverse temporary effects directly to the quality of the key surface water receptor (i.e. the Santry River).
  - Mitigation measures will be implemented during the construction phase to further reduce these potential effects, and to address any potential water management issues; these are listed below.

12.6.4. Potential Effects on Water during Operational Phase

During the operational phase of the development, the following potential effects on surface water and groundwater quality could occur;

- Groundwater and surface water receptors (i.e. any localised perched water areas, the locally important bedrock aquifer, and the Santry River) could be at risk from occasional fuel / oil leaks along the access roads, paved areas, and car park surface. However given that the volumes arising from any such spills / leaks are likely to be very minor and taking account of the localised nature of such events, and site specific geological setting (i.e. the regional presence of low permeability till / clay), the potential risk to any localised perched water areas which may be present beneath the site, and underlying locally important bedrock aquifer is negligible and does not warrant further consideration. The drainage design includes for attenuation which is designed to slow and manage surface water drainage, along with hydrocarbon interceptors as required, before final outfall to the Santry River which will ensure there is protection to the natural flow regimes of the watercourse. Taking account of likely dilution effects, the potential risk to the Santry River is negligible and does not warrant further consideration.
- Identified groundwater and surface water receptors could be at risk of quality impacts in the unlikely scenario of an unplanned event (traffic collision, emergency onsite fuel / oil spill, fire water arising from a fire). The risk of such an event occurring is low given the nature of the development. Taking account of the proposed surface water drainage design, potential adverse effects to groundwater or surface water receptors (i.e. any perched water areas which may be present, the locally important bedrock aquifer, and the Santry River) are negligible, and unlikely to occur, and do not warrant further consideration.
- Groundwater and surface water receptors are at risk of becoming contaminated through routine site maintenance activity during the operational phase. Maintenance of the access road, paved areas, car park surface, utilities, foul, watermain and the storm water drainage system, may result in small quantities of lubricant oils, fuel and chemicals being brought to the site. In the highly unlikely event of a spill this could result in adverse slight and temporary effects, directly to the surface water quality of the Santry

River, and indirectly to the quality of groundwater receptors, and (via. groundwater migration) to the surface water quality of the Santry River.

Mitigation measures will be implemented during the operational phase to avoid these potential effects.

12.7. Mitigation Measures

The mitigation factors and measures for the control of pollution and protection of surface water and groundwater quality are described below.

12.7.1. Construction Phase

With regard to surface water and groundwater quality effects the following mitigation measures are proposed. The Contractor will be responsible for ensuring these measures are fully implemented:

- The construction management of the site will take account of the recommendations of the Construction Industry Research and Information Association (CIRIA) guidelines '*Control of water pollution from construction sites. Guidance for consultants and contractors (C532)'* and *'Groundwater control: design and practice (second edition) (C750)'* and CIRIA 2023 '*Environmental good practice on site guide (fifth edition) (C811)'* to minimise as far as possible the risk of pollution.
- All of the mitigation measures (for the protection of soils and geology) listed in Chapter 11 will be implemented onsite during the construction phase.
- The Contractor will be responsible for ensuring that the existing drainage network along the Santry River will be suitably protected via. the use of physical barriers and signage located a maximum of 15m from river bank on either side of the Santry River.
- Under no circumstances, should any material be stored (including stockpiled soils / imported material, and any hazardous material such as fuels, oils, chemicals, and paints etc.) or the proposed site compound be located within the 15m buffer zone along the Santry River which is has been designed as a designated riparian zone.
- The Contractor will be required to implement a site-specific water run-off management plan, to be documented within the Detailed Construction Environmental Management Plan (CEMP) which the Contractor will develop prior to commencing any onsite construction works (including any enabling works etc.).
- A dewatering plan will be designed by the Contractor as temporary works, including disposal of water to a suitably licenced [wastewater] disposal / recovery facility, and reviewed and approved by daa plc. prior to being fully implemented.
- The proposed development will necessitate the installation of 1 no. new culvert and the extension of 1 no. existing culvert within the Santry River. The following mitigation measures will be implemented for the in-stream works at each culvert location;
  - All in-stream works carried out within the Santry River will be supervised by a suitably qualified Ecological Clerk Of Works (Refer to Chapter 5 - Biodiversity for ECoW details).
  - Works within the Santry River will not be permitted within 24hrs of Met Éireann issuing a yellow, orange or red weather warning.
  - Culvert installation works will only be undertaken after and during a period of dry weather when water levels are low.
  - Culverts will be pre-cast units with no concrete pouring works to be undertaken within the Santry River.
  - Only clean washed stone will be used for the foundation base of the culverts. All imported stone for use in the streambed will be clear of fines.
  - Temporary over pumping will be required to facilitate the installation of the culverts as such the works will be undertaken in dry river bed conditions.
  - Upstream of each culvert works area the watercourse will be temporarily impounded / dammed by use of sand bags (or similar).
  - A silt fence will also be installed across the watercourse channel immediately downstream of the sand bags / dam area.
  - A second silt fence will be installed across the watercourse channel downstream of each culvert works area.
  - The installation of the sand bag dam and associated silt fences will be installed under the supervision of the ECoW.

- Flows from upstream of the temporary dam will be over pumped into a settlement tank (or tanks) with any suspended solids in the water allowed to fully settle before discharge to downstream of the culverts works area.
- The waters in the settlement tank(s) will be visually inspected by the ECoW to ensure settlement is effective and discharge will only be permitted following adequate settlement of suspended solids.
- Dams, silt fences and settlement tanks will be inspected by the ECoW throughout the instream, works to ensure they are functioning effectively.
- Foundation stone and precast culvert installation will only commence once the watercourse is dry.
- Following the installation of the culverts the sand bags and silt fences will be removed to allow flows through the new culverts.
- Downstream surface water quality monitoring, at monitoring location SW-S-3, will continue as part of Dublin Airport's ongoing water quality monitoring programme.

- In order to prevent any potential surface water / groundwater impacts via. release of hydrocarbon / chemical contaminants the following standard measures will be implemented:
  - Fuels, lubricants, and hydraulic fluids for equipment used on the construction site, as well as any solvents, oils, and paints will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to best codes of practice;
  - Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the proposed development for disposal or re-cycling;
- A response procedure will be put in place to deal with any accidental pollution events. Any spillage of fuels, lubricants or hydraulic oils will be immediately contained, and the contaminated soil removed from the proposed development and properly disposed of in accordance with all relevant waste management legislation;
- All site vehicles used will be refuelled in bunded and adequately sealed and covered areas in the construction compound area.
- Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised on-site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the site. This will minimise the risk of groundwater becoming contaminated through site activity.
- All oil stored on site for construction vehicles will be kept in a locked and bunded area;
- Generators, pumps, and similar plant will be placed on drip-trays to prevent contamination;
- All site vehicles used will be refuelled in bunded areas;
- All temporary construction fuel tanks will also be located in a suitably bunded area and all tanks will be double skinned. Relevant Material Safety Data Sheets along with oil absorbent materials will be kept on site in close proximity to any fuel storage tanks or bowsers during proposed site development works; and,
- All fuel / oil deliveries to on-site oil storage tanks will be supervised, and records will be kept of delivery dates and volumes.
- In order to prevent any potential surface water / groundwater impacts via. release of cementitious materials the following measures will be implemented where poured concrete is being used on site;
  - The production, transport and placement of all cementitious materials will be strictly planned and supervised. Site batching/production of concrete will not be carried out on site and therefore these aspects will not pose a risk to the waterbodies present, namely any temporarily exposed perched water or the Santry River;
  - Shutters will be designed to prevent failure. Grout loss will be prevented from shuttered pours by ensuring that all joints between panels achieve a close fit or that they are sealed;
  - Any spillages will be cleaned up and disposed of correctly;
  - Where concrete is to be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening;
  - Where possible, concrete skips, pumps and machine buckets will be prevented from slewing over water when placing concrete;
  - Mixer washings and excess concrete will not be discharged directly into the drainage network, or any drainage ditches, surface water bodies or exposed groundwater; and,

- Surplus concrete will be returned to batch plant after completion of a pour.

- Foul drainage from site compounds will be directed to the existing wastewater network or will be contained and disposed of off-site in an appropriate manner and in accordance with the relevant statutory regulations.
- In the event that ground contamination is encountered beneath the site during the construction works, all works will cease. Advice will be sought from an experienced contaminated land specialist and a phased environmental risk assessment (specifically to assess any associated potential environmental and/ or human health risks) will be undertaken in accordance with relevant EPA guidance '*Guidance On The Management Of Contaminated Land And Groundwater At EPA Licensed Sites'* (EPA, 2013) and UK Environment Agency Guidance *'Land contamination risk management (LCRM)*' (UK EA, 2021).
- The above mitigation measures will be included and added to as required by the Contractor within the project-specific Detailed CEMP which will be in operation during the construction phase.

12.7.2. Operational Phase

With regard to groundwater and surface water quality effects the following mitigation measures are proposed;

- Any minor volumes of fuel, oil or chemicals required during routine maintenance works will be brought to and from the site by the maintenance contractor. While temporarily onsite all chemicals will be kept in secure and bunded areas, with relevant Material Safety Data Sheets available onsite. Any fuel / oil tanks temporarily stored on site will be located in a suitably bunded area and all tanks will be double skinned, with oil / chemical absorbent materials held onsite in close proximity to the tanks. Relevant maintenance contractors will be responsible for ensuring that these measures are fully implemented;
- Under no circumstances, should any material be stored (including stockpiled soils / imported material, and any hazardous material such as fuels, oils, chemicals, and paints etc.) within the 15m buffer zone along the Santry River which is has been designed as a designated riparian zone;
- In the unlikely event of a fuel / oil or chemical spill / leak during routine maintenance works, emergency spill response measures will be implemented with the aim of limiting the volume spilled and recovering as much of the lost product as possible (relevant maintenance contractors will be responsible for ensuring that these measures are fully implemented); and,
- A maintenance programme for the proposed surface water drainage system should be implemented. The Contractor, in consultation with the Client and the design team, will be responsible for ensuring that these measures are fully implemented.

12.8. Cumulative Effects

Provided the mitigation measures listed above are in place for the duration of the construction phase, anticipated effects on surface water or groundwater will be temporary and slight adverse during the Construction Phase. Taking account of proposed mitigation measures, effects on surface water or groundwater will be temporary and slight adverse during the Operational Phase of the proposed development.

Therefore, no significant cumulative effects are likely.

12.9. Residual Effects

The development as proposed shall not result in an adverse impact to the existing hydrological regime of the area. The development will not result in any flood risk to the proposed site or surrounding lands. The proposed development is therefore considered to be appropriate from a flood risk perspective.

Taking account of the relevant mitigation measures, the residual impact to groundwater quality and surface water quality including the Santry River and receiving transitional waters (North Bull Island), resulting from potential pollution caused by site activities e.g. plant, fuel/chemical spillage etc. or associated cement handling and pouring during the construction phase is likely to be insignificant, being adverse, slight and temporary in nature. The residual impact on surface water quality, including the Santry River, resulting from routine site maintenance activity during the operational phase, is adverse, imperceptible and temporary, taking account of the relevant mitigation measures.

Therefore, taking account of proposed mitigation measures, no significant adverse effects are likely to occur to the receiving water environment arising from the proposed development during the construction or operational phases. On a regional scale, the proposed development is not likely to affect or result in further deterioration of the current 'Poor' surface water quality status of the Santry River and is not likely to affect the current 'moderate' transitional waterbody status of North Bull Island, or the current 'Good' coastal water quality status of the Irish Sea, as required under the European Communities Environmental Objectives (Surface Waters) Regulations,

2009 (as amended). Similarly, the proposed development will not affect the current 'Good' groundwater quality status of the Dublin Groundwater Body as required under the European Communities Environmental Objectives (Groundwater) Regulations, 2010, as amended. The proposed development will not be likely to cause a deterioration in surface or groundwater status or compromise the ability of any affected waters to comply with the objectives of the Water Framework Directive.

No significant effects to receiving surface waters or groundwater are likely as a result of the proposed development.

12.10. Monitoring Requirements

Regular checks and maintenance of the proposed surface water drainage system should be implemented. daa carries out monthly monitoring of key surface water locations across the airport campus and associated lands, including downstream of the proposed development at SW-S-3. The monitoring programme will continue during both the construction and operational phases of the proposed development.

12.11. Difficulties encountered during preparation of this chapter

No difficulties were encountered during the data collection and assessment stages of this Water Impact Assessment.

13. Cultural Heritage

13.1. Introduction

This chapter of the EIAR assesses the potential significant effects of the proposed development as described in Chapter 2 on the cultural heritage resource. This resource encompasses several aspects of tangible assets including archaeological sites, monuments and artefacts, architectural heritage structures, including their associated curtilages, industrial and vernacular heritage as well as intangible assets such as folklore, oral tradition, historical associations and language. The chapter is supported by a number of Appendices, and these comprise Appendix 13.1 (Archaeological Test Trenching Report)), Appendix 13.2 (Database of Irish Excavation Reports descriptions) and Appendix 13.3 (Fingal County Council Planning Objectives).

The chapter was prepared by Tony Cummins of John Cronin and Associates. Mr. Cummins is a professional archaeologist and holds primary and post-graduate degrees in archaeology (B.A. 1992 and M.A. 1994, University College Cork). He has accumulated over 29 years' post-graduate experience and was approved as licence eligible archaeologist by the National Monuments Service in 1998. He has extensive experience in the preparation of cultural heritage impact assessments for various development types, including road schemes and associated infrastructure, commercial and residential developments and renewable energy projects.

13.2. Methodology

13.2.1. Study Area

A study area comprising the fields within the boundary of the proposed development and the lands extending for 500m in all directions from its boundary was reviewed as part of the assessment. The review of this study area facilitated an appraisal of the baseline cultural heritage environment of the proposed development and its wider environs which informed the assessment of potential direct impacts on identified constraints as well as indirect impacts on their settings.

The recorded locations of known archaeological sites, Protected Structures, Architectural Conservation Areas and features listed in the National Inventory of Architectural Heritage (NIAH) within this study area were reviewed. For specific types of undesignated constraints with defined extents or routes, such as Areas of Archaeological Potential, townland boundaries, vernacular structures, historic street furniture, the study area was limited to the area within or directly adjacent to the boundary of the proposed development.

13.2.2. Legislation, Planning Policies and Guidelines

This section presents a summary of the legal and planning policy frameworks relevant to this assessment in order to provide a context for the statutory protection assigned to the cultural heritage resource. The management and protection of cultural heritage in Ireland is achieved through a framework of national laws and policies which are in accordance with the provisions of the Valetta Treaty (1995) (formally the European Convention on the Protection of the Archaeological Heritage, 1992) ratified by Ireland in 1997; the Granada Convention (1985) (formally the European Convention on the Protection of Architectural Heritage), ratified by Ireland in 1997; and the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage, 2003, ratified by Ireland in 2015. The locations of World Heritage Sites (Ireland) and the Tentative List of World Heritage Sites submitted by the Irish State to UNESCO were reviewed and none are located within the study area or its wider environs. The National Monuments Service (NMS), which is currently based in the Department of Housing, Local Government and Heritage is responsible for the protection and promotion of Ireland's archaeological heritage.

The following legislation and guidelines are relevant to this assessment:

- Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023
- National Monuments Act 1930 (as amended)
- Heritage Act 1995 (as amended)
- National Cultural Institutions Act 1997
- The Architectural Heritage (National Inventory) and Historic Monuments (Misc) Provisions Act 1999
- Planning and Development Act 2000 (as amended)
- Department of Arts, Heritage and Gaeltacht 2011 Architectural Heritage Protection: Guidelines for Planning Authorities
- Department of Arts, Heritage, Gaeltacht and the Islands 1999 Framework and Principles for the Protection of Archaeological Heritage

- Office of the Public Regulator (2022) A Guide to Architectural Heritage
- Office of the Public Regulator (2021) Archaeology in the Planning Process
- International Council on Monuments and Sites, (ICOMOS) 2011 Guidance on Heritage Impact Assessments for Cultural World Heritage Properties

The Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023 was signed into law on October 13th, 2023. The Department of Housing, Local Government and Heritage published an online guidance note[31] in relation to this Act in November 2023 which provides an overview of its current status, and this is summarised hereafter. While the Act is now law most of its provisions will not enter into force until the Minister of Housing, Local Government and Heritage has made one or more "Commencement Orders". This means that section 7 of the Act (which provides for the repeal of the National Monuments Acts 1930 to 2014 and related legislation) has not entered into force. Accordingly, the National Monuments Acts 1930 to 2014 and other legislation which section 7 of the Act will, when it comes into force, repeal, remain fully in force as they stood on 13th October and will continue to do so for the time being. The Act contains transitional provisions which will, if necessary, enable certain aspects of the existing National Monuments Acts 1930 to 2014 to continue in operation notwithstanding their repeal post-commencement of the Act while successor provisions are being brought fully into operation. This includes provisions enabling the Record of Monuments and Places to continue to have effect pending the establishment of a new Register of Monuments (see section 48 of the Act).

The National Monuments Act 1930 (as amended), the Heritage Council Act 1995 (as amended) and relevant provisions of the National Cultural Institutions Act 1997 therefore currently remain the primary means of ensuring the satisfactory protection of the archaeological resource. There are a number of mechanisms under the National Monuments Act 1930 (as amended) that are applied to secure the protection of archaeological monuments. These include the designation of National Monument status to sites of national importance, the Register of Historic Monuments, the Record of Monuments and Places and the Sites and Monuments Record. In addition, the relevant Minister (currently Minister of Housing, Local Government and Heritage) may also place Preservation Orders and Temporary Preservation Orders on endangered archaeological sites.

A National Monument is described as 'a monument or the remains of a monument, the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic or archaeological interest attaching thereto' (Section 2, National Monument Act, 1930). A review of a published NMS dataset[32] of National Monuments in State Care within Dublin City and County revealed that there are no examples within the study area.

The Record of Monuments and Places (RMP) was established under Section 12 (1) of the National Monuments (Amendment) Act, 1994 and was based on the Register of Historic Monuments (RHM) and Sites and Monuments Record (SMR). These records comprise lists and maps of all known archaeological sites and places for each county in the State. All archaeological sites listed in the RMP receive statutory protection under the National Monuments (Amendment) Act 1994 and no works can be undertaken at their locations, including their surrounding zones of notification, without providing two months advance notice to the NMS. The 'zones of notification' shown around RMP sites on the National Monument Service's online Historic Environment Viewer (HEV), and drawn on RMP maps, do not comprise formal buffer zones but are intended to indicate that archaeological considerations may be an important aspect in the consideration of any development proposed within the environs of a recorded archaeological site[33]. In some instances, recorded sites can be reclassified as 'redundant records' by the Archaeological Survey of Ireland when inspections of their locations have revealed that they are not archaeological in origin. These 'redundant records' typically do not have surrounding zones of notification on the HEV mapping. The SMR/RMP do not record any archaeological monuments within the boundary of the proposed development site while there are four recorded examples within the surrounding study area, which are identified in Section 13.3. None of these archaeological sites are included in a nationwide list of monuments which have been assigned Preservation Orders as published by the NMS[34].

The protection of the architectural heritage resource is provided for through a range of legal instruments that include the Heritage Act 1995, the Architectural Heritage (National Inventory) and National Monuments (Misc. Provisions) Act 1999, and the Planning and Development Act 2000. The Planning and Development Act 2000

[31] https://www.archaeology.ie/news/enactment-of-historic-and-archaeological-heritage-and-miscellaneous-provisions-act-2023-and

[32] https://www.archaeology.ie/sites/default/files/media/pdf/monuments-in-state-care-dublin.pdf

[33] https://www.archaeology.ie/sites/default/files/media/publications/archaeology-planning-process-pl13.pdf

[34] https://www.archaeology.ie/sites/default/files/media/publications/po19v1-all-counties.pdf

requires all Planning Authorities to keep a 'Record of Protected Structures' (RPS) of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. As of the 1st January 2000, all structures listed for protection in current Development Plans, have become 'protected structures'. Since the introduction of this legislation, planning permission is required for any works to a protected structure that would affect its character. A protected structure also includes the land and other structures within its curtilage. While the term 'curtilage' is not defined by legislation, the Architectural Heritage Protection Guidelines for Local Authorities (Department of Arts, Heritage and the Gaeltacht 2011), describes it as the parcel of land immediately associated with a structure and which is (or was) in use for the purposes of the structure. In addition, local authorities must provide for the preservation of places, groups of structures and townscapes of architectural heritage significance through designation of Architectural Conservation Areas (ACAs). A review of the Fingal Development Plan 2023 – 2029 revealed that there are no Protected Structures located within or adjacent to the proposed development site and that it is not located within an ACA. In addition, there are no Protected Structures or ACAs located within the surrounding study area.

The National Inventory of Architectural Heritage (NIAH) was established to record architectural heritage structures within the State and while inclusion in the NIAH does not provide statutory protection it is intended to advise local authorities on compilation of their Record of Protected Structures. The NIAH also includes a Survey of Historic Gardens and Landscapes which comprises a non-statutory, desk-based survey of such features. There are no NIAH-listed structures or historic gardens/landscapes located within the study area.

The Fingal Development Plan 2023 – 2029 includes a wide range of policies and objectives in relation to the protection and promotion of the archaeological, architectural and cultural heritage resources and relevant examples are presented in Appendix 13.3.

13.2.3. Desktop Study

Documentary research on the recorded and potential cultural heritage resource within the study area was carried out in order to identify recorded archaeological and architectural constraints as well as other undesignated cultural heritage sites and features. This information has provided an insight into the development of the study area over time and also assisted in an evaluation of known assets and potential presence of unrecorded cultural heritage sites or features.

The principal sources reviewed for the assessment of the recorded archaeological resource were the Sites and Monuments Record (SMR) and the Record of Monuments and Places (RMP) maintained by the Department of Housing, Local Government and Heritage (DHLGH). The current Fingal County Council's Records of Protected Structures (RPS) and the National Inventory of Architectural Heritage (NIAH) were consulted to assess the designated architectural heritage resource.

Other sources consulted as part of the assessment included, but were not limited to, the following:

- Development Plan: The entire study area is located within the jurisdiction of Fingal County Council and the current Fingal County Development Plan 2023-2029 was consulted as part of this assessment. This outlines the Council's policies and objectives for the protection of the archaeological and architectural heritage resource and relevant examples are presented in Appendix 13.3. While the proposed development site is located outside the south end of the lands covered by the Dublin Airport Local Area Plan 2020[35], the north end of the study area does extend into the local plan area and, therefore, this publication was also consulted as part of the assessment. These publications were reviewed in January 2024.
- Archaeological Survey of Ireland: While there is no published archaeological inventory for the study area, the National Monuments Service's online Historical Environment Viewer (www.archaeology,ie) presents inventory descriptions compiled by the Archaeological Survey of Ireland for the known archaeological sites within the area and this resource was reviewed in January 2024. The full inventory descriptions are presented in Section 13.3 of this chapter.
- National Museum of Ireland Topographical Files: These files, which are archived in the museum's premises in Kildare Street, Dublin, contain records of the known find places of Irish archaeological objects and were reviewed as part of the assessment. The topographical file archive was inspected in August 2023.
- Database of Irish Excavations: This online database contains summary accounts of licensed archaeological excavations carried out in Ireland (North and South) from 1970 onward. A summary of the results of investigations within the environs of the proposed development site are provided in Section

[35] https://fingalppn.ie/wp-content/uploads/2021/10/dublin-airport-lap-2020-1.pdf

13.3 and the full database descriptions are provided in Appendix 13.2. Current data was accessed via www.excavations.ie in January 2024.

- Published Sources: Various published sources were consulted in January 2024 in order to assess the archaeological, historical, architectural and industrial heritage of the study area and references are provided within the chapter.
- Historic Maps: Available cartographic depictions of the study area from the 17th century onward were reviewed in January 2024 and relevant extracts are presented in Section 13.3 of this chapter.
- Aerial/Satellite/LiDAR Imagery: A review of available online images of the study area was undertaken in January 2024 in order to ascertain if any traces of unrecorded archaeological sites were visible within the proposed development site and to review the nature and extent of modern developments within the study area. Relevant extracts are presented in Section 13.3 of this chapter.
- Irish Heritage Council: Heritage Map Viewer: This online mapping resource (www.heritagemaps.ie) is a spatial data viewer which collates various cultural heritage datasets sourced from, among others, the National Monuments Service, National Museum of Ireland, Local Authorities and the Office of Public Works. The online mapping and datasets were reviewed in January 2024.
- Irish National Folklore Collection: A review of transcribed material from the National Folklore Collection archive published online (www.duchas.ie) was carried out in January 2024 to ascertain if the study area is associated with intangible cultural heritage assets.
- Placenames Database of Ireland: This online database (www.logainm.ie) provides a comprehensive management system for data, archival records and place names research conducted by the State and was reviewed in January 2024.
- UNESCO designated World Heritage Sites and Tentative List: There are two world heritage sites in Ireland (Brú na Bóinne and Skellig Michael) and a number of other significant sites are included in a Tentative List (2022) of monuments that the Irish state has nominated for consideration. A review of these sites in 2024 revealed that none are located within the environs of the study area.

13.2.4. Archaeological Test Trenching

A programme of archaeological test trenching of the proposed development site was carried out by Camilla Brännström of John Cronin and Associates in November 2023 under a licence issued by the National Monuments Service (Licence ref. 23E0940). The results of this site investigation are summarised in Section 13.3 and a full copy of the test trenching report is presented in Appendix 13.1.

13.2.5. Assessment of Impacts

The methodology used for this assessment is based on Environmental Protection Agency (EPA) Guidelines for Information to be Contained in EIAR (2022), in accordance EIA requirements of codified EU Directive 2011/92/EU as amended by EU Directive 2014/52/EU, per current Planning Legislation, concerning EIA assessment: Planning and Development Act, 2000 (as amended) (Part X) and in Part 10 of the Planning and Development Regulations, 2001 (as amended).

The following summation of the criteria applied to determine the nature of effects is provided in order to clearly and concisely outline the methodology specifically applied to the cultural heritage resource. Assessment is achieved by a consideration of the duration, quality, type, value and magnitude of effect(s) on the cultural heritage resource:

The duration of effects is assessed based on the following criteria:

- Momentary (seconds to minutes);
- Brief < 1 day;
- Temporary <1 year;
- Short-term 1-7 years;
- Medium Term 7-15 years;
- Long Term 15-60 years;
- Permanent > 60 years; and,
- Reversible: Effects that can be undone, for example through remediation or restoration.

The quality of an effect on the cultural heritage resource can be positive, neutral or negative.

- Positive: a change which improves the quality of the cultural heritage environment (e.g. increasing amenity value of a Site in terms of managed access, signage, presentation etc. or high-quality conservation/restoration and re-use of an otherwise vulnerable derelict structure);
- Neutral: no change or effects that are imperceptible, within the normal bounds of variation for the cultural heritage environment; and,
- Negative: a change which reduces the quality of the cultural heritage resource (e.g. visual intrusion on the setting of an asset, physical intrusion on features/setting of a Site).

The type of effect on the cultural heritage resource can be direct, indirect or no predicted effect.

- Direct Effect: where a cultural heritage site is physically located within the footprint of a proposed development, which will result in its complete or partial removal;
- Indirect Effect: Effects on the cultural heritage environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
- None predicted: where the proposed development will not adversely or positively affect a cultural heritage site.

- Other Types of Effect include:
  - Cumulative: Effects The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.
  - 'Do-nothing Effects' - The cultural heritage environment as it would be in the future should the Project not be carried out.
  - 'Worst-case' Effects - The effects arising from a Project in the case where mitigation measures substantially fail.
  - Indeterminable Effects - When the full consequences of a change in the environment cannot be described.
  - Irreversible Effects - When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
  - Residual Effects - The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
  - No predicted Effects: where the proposed development will not adversely or positively affect a cultural heritage site.

The magnitude of effect (degree of change, incorporating any mitigation measures) can be negative or positive, and is ranked without regard to the value of the asset according to the following scale: High; Medium; Low and Negligible. The assessment of magnitude has been informed by criteria published in the International Council on Monuments and Sites Guidance on Heritage Impact Assessments for Cultural World Heritage Properties (ICOMOS 2011) (Table 13.1).

Table 13.1 Magnitudes of Effect on Cultural Heritage Assets (per ICOMOS 2011)

Magnitude	Description
High	Most or all key cultural heritage constraints affected such that the resource is totally altered. Comprehensive changes to setting. Changes to most or all key historic landscape elements, parcels or components; extreme visual effects; fundamental changes to use or access; resulting in total change to historic landscape character unit. Major changes to areas that affect Intangible Cultural Heritage activities or associations or visual links and cultural appreciation.
Medium	Changes to many key cultural heritage constraint materials/elements such that the resource is clearly/significantly modified. Considerable changes to settings that affect the character of the archaeological asset. Changes to the setting of a historic building, such that it is significantly modified.

Magnitude	Description
	Change to many key historic landscape elements, parcels or components, visual change to many key aspects of the historic landscape, considerable changes to use or access, resulting in moderate changes to historic landscape character. Considerable changes to area that affect the Intangible Cultural Heritage activities or associations or visual links and cultural appreciation.
Low	Changes to key archaeological materials/historic building elements, such that the resource is slightly altered/slightly different. Slight changes to setting of cultural heritage constraints. Change to setting of a historic building, such that it is noticeably changed. Change to few key historic landscape elements, parcels or components; slight visual changes to few key aspects of historic landscape; slight changes to use or access; resulting in limited change to historic landscape character. Changes to area that affect the Intangible Cultural Heritage activities or associations or visual links and cultural appreciation.
Negligible	Very minor changes to key cultural heritage constraint materials or setting. Slight changes to historic building elements or setting that hardly affect it. Very minor changes to key historic landscape elements, parcels or components; virtually unchanged visual effects; very slight changes to use or access; resulting in very small change to historic landscape character. Very minor changes to area that affect the Intangible Cultural Heritage activities or associations or visual links and cultural appreciation

While various legal designations exist for the Irish cultural heritage resource (see Section 13.2), there are currently no formal criteria for grading the values of individual elements of this resource. The National Inventory of Architectural Heritage (NIAH) does apply a ranking system (Regional, National and International) to structures included in that inventory and, while these rankings do not confer a graduated level of protection they have been utilised as a value indicator for NIAH-listed structures for the purpose of assessment.

Given the absence of formal criteria the evaluations used in this assessment have been informed by guidelines presented in the *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* (ICOMOS 2011). The evaluation of the values of cultural heritage assets is not intended as definitive but rather as an indicator which contributes to a wider judgment based the individual circumstances of each asset. The application of values included a consideration of their legal designations (e.g., National Monuments), condition / preservation; historical significance, group value, rarity, visibility in the landscape, fragility/vulnerability and amenity value on a case-by-case basis. It is noted that archaeological monuments, whether extant or levelled, have the potential to possess sub-surface attributes, such as artefacts, human burials or other archaeological remains, that may possess values that cannot be discerned without recourse to archaeological excavation but are unlikely to be affected in the absence of direct negative impacts. The value of all known or potential assets that may be impacted by development are ranked according to the following scale as defined by ICOMOS: Very High; High; Medium; Low, Negligible, Unknown (Table 13.2). The values assigned to relevant cultural heritage assets within the area were determined following the completion of the desktop research combined with subsequent site inspections and are outlined in Section 13.3.

Table 13.2: Factors for assessing the Value of Cultural Heritage Assets (per ICOMOS 2011)

Value	Description
Very High	World Heritage Sites (including Tentative List properties). Sites, buildings or landscapes of acknowledged international importance. Intangible associations with individuals or innovations of global significance.
High	Nationally designated sites, buildings and landscapes of significant quality, rarity, preservation and importance.

Value	Description
	Undesignated assets of the quality and importance to be designated. Assets that can contribute significantly to acknowledged national research objectives. Archaeological Landscapes with significant group value. Intangible associations with individuals or innovations of national significance..
Medium	Designated or undesignated assets that can contribute significantly to regional research objectives, including buildings that can be shown to have exceptional qualities in their fabric or historical associations. Conservation Areas and historic townscapes containing buildings that contribute significantly to its historic character. Intangible associations with individuals or innovations of regional significance.
Low	Assets compromised by poor preservation and/or poor survival of contextual associations. Assets of limited value, but with potential to contribute to local research objectives. Historic Townscape or built-up areas of limited historic integrity in their buildings and settings. Intangible associations with individuals or innovations of local significance.
Negligible	Assets with very little or no surviving archaeological interest. Landscapes little or no significant historical interest. Buildings or urban areas of no architectural or historical note; buildings of an intrusive character.
Unknown	Assets whose importance has not been ascertained. Buildings with some hidden (i.e., inaccessible) potential for historic significance.

The *Significance of Effects* is assessed based on a consideration of the magnitude of effect combined with the value of the cultural heritage asset and can be described as Profound, Very Significant, Significant, Moderate, Slight, Not Significant or Imperceptible (Table 13.3 and Table 13.4).

Table 13.3 Significance of Effects (per EPA Guidelines 2022)

Significance	Description
Imperceptible	An effect capable of measurement but without significant consequences
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends
Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment
Profound	An effect which obliterates sensitive characteristics

Table 13. 4 Significance of Effects Matrix (per EPA Guidelines 2022)

Magnitude of Impact					
	High	Not Significant/ Slight	Moderate/ Significant	Significant/ Very Significant	Very Significant/ Profound
	Medium	Not Significant	Slight	Moderate/ Significant	Significant/ Very significant
	Low	Not Significant/ Imperceptible	Slight/ Not Significant	Slight	Moderate
	Negligible	Imperceptible	Not Significant/ Imperceptible	Not Significant/ Slight	Slight
		Negligible	**Low**	**Medium**	**High**
		Value of the Asset			

13.3. Receiving Environment

13.3.1. Archaeological Context

13.3.1.1. Prehistoric Periods

Until recent years the earliest recorded evidence for human settlement in Ireland dated to the Mesolithic period (7000–4000 BC) although dating evidence recovered from cave sites in Counties Cork and Clare suggests that humans may have been present on the island during the Palaeolithic period. While the Mesolithic period hunter-gatherers did not construct any settlements or monuments that leave any above ground traces, their presence in an area can often be identified by scatters of worked flints in ploughed fields, shoreline shell middens and traces of temporary camps occasionally uncovered during ground works. The archaeological record indicates that these nomadic groups tended to favour coastal, lake and river shorelines which provided a transport resource through the heavily forested landscape as well as a food source for elements of their varied diet. The Neolithic period (4000-2400 BC) began with the arrival and establishment of agriculture as the principal form of economic subsistence, which resulted in more permanent settlements within farmlands created in areas of cleared forestry. As a consequence of the more settled nature of agrarian life, new site-types, such as substantial rectangular timber houses and various types of megalithic tombs, and new artefacts, including pottery, begin to appear in the archaeological record during this period.

Metalworking arrived in Ireland with the advent of the Bronze Age period (ca. 2400–500 BC) and saw the introduction of a new artefactual assemblage, including metal and ceramic objects. This period was also associated with the construction of new monument types such as standing stones, stone rows, stone circles and burnt mounds known as fulachta fia. The development of new burial practices during this period also saw the construction of funerary monuments such as cairns, barrows, boulder burials and cists. The arrival of iron-working technology in Ireland saw the advent of the Iron Age (600 BC – 400 AD). This period has traditionally been associated with a Celtic 'invasion' but recent archaeological evidence points instead to a gradual acculturation of the Irish Bronze Age communities following centuries of contacts with Celtic-type cultures in Europe. Relatively little was known about Iron Age settlement and ritual practices in Ireland until recent decades when the corpus of evidence for the period has been greatly increased by the discovery of sub-surface remains of sites dating to this period during archaeological investigations in advance of development projects.

While there are no recorded prehistoric sites located within the study area, evidence for Bronze Age activity has been identified during archaeological site investigations within the south end of the study area in recent years (see Section 13.3.1.5).

13.3.1.2. Early Medieval Period

This period began with the introduction of Christianity in Ireland and continued up to the arrival of the Anglo-Normans during the 12th-century (c. 400–1169 AD). Prior to the arrival of the Anglo-Normans, the study area was part of the Gaelic kingdom of Brega, belonging to the Síl nÁedo Sláine branch of the southern Uí Néill. Brega came under the control of the kingdom of Mide following the rise of the Viking settlement in Dublin. This period saw the emergence of the first phases of urbanisation around the large monasteries and the Hiberno- Norse

ports. However, the dominant settlement pattern of the period continued to be rural based in sites such as ringforts, which comprise roughly circular enclosures delimited by roughly circular earthen banks formed of material thrown up from a concentric external ditch. These are one of the most numerous monuments in the Irish landscape and the early medieval terms for these sites – rath/lios/dun - still form some of the most common place-name elements in the country. Archaeological excavations indicate that many ringforts were early medieval farmsteads with internal timber buildings and were surrounded by associated field systems. There are two levelled enclosures located within the study area (DU014-008---- and DU014-123----), which appear to correspond with early medieval ringforts. These sites are located at distances of 420m to the north (DU014-008----) and 500m to the southeast (DU014-123---) of the proposed development (Table 13.5 and Figure 13.1). The study area also contains a levelled earthwork (DU014-139----) located 500m to the southeast of the proposed development and while this site is of unknown date, the potential exists that it comprises a ringfort site (Table 13.5 and Figure 13.1).

The two enclosures and the earthwork are described by the Archaeological Survey of Ireland as follows:

Enclosure DU014-008----: Situated in low-lying pasture. A roughly circular single ditched enclosure (diam. C. 35m) appears as a cropmark on an aerial photograph taken in 1971 (FSI 462/1). This may be a levelled ringfort. It is under the Dublin Airport runway. Not visible at ground level. (See Table 13.5 and Figure 13.1)

Enclosure DU014-123----: This monument was identified from geophysical survey (Licence no. 09R195) and confirmed by test excavation (Licence no. 10E0459) as part of the proposed Metro West development. It is a circular enclosure (30m diam.) characterised by a U-shaped ditch (1.1m-2.2m wide by 0.45m deep). Although undated its form, size and shape are consistent with that of a severely truncated early medieval ringfort (O'Donovan 2010, 16) (See Figure 13.1).

Earthwork DU014-139----: In tillage field, with enclosure (DU014-123----) 50m to SW. Circular-shaped cropmark (diam. C. 20m) visible on Apple Maps orthoimage and Google Earth orthoimages (See Table 13.5 and Figure 13.1).

13.3.1.3. High and Late Medieval Period

The arrival of the Anglo-Normans in the late 12th century broadly marks the advent of the Irish high medieval period which continued to c.1400 and was followed by the late medieval period which extended to c.1550. These periods saw the continuing expansion of Irish urbanisation as many of the port cities developed into international trading centres and numerous villages and towns began to develop throughout the country, often within the environs of Anglo-Norman manorial centres which were defended by masonry castles. By the 15th century, the native Irish chieftains and lords began to construct tower-house castles within their own landholdings as centres of territorial control. After the Anglo-Norman conquest, the kingdom of Mide was granted to Hugh de Lacy around 1172 while in 1208, King John of England granted the Lordship of Fingal to Walter de Lacy.

There are no recorded high or late medieval archaeological sites located within the study area.

13.3.1.4. Post-medieval Period

The centuries following 1550 comprise the post-medieval period which continued into the middle of the 19th century and the period thereafter is often described as early modern. The early phase of the post-medieval period was a turbulent time in Ireland and saw a period of wars between the 1560s and 1603 with further conflict during the mid-17th century Cromwellian Wars which resulted in extensive dispossession of forfeited Gaelic lands. An agricultural boom in the late 18th and early 19th centuries saw a rise in prices for both Irish tillage and dairy produce which resulted in landlords investing in extensive land improvement works within their holdings to increase productivity. This included widespread land drainage works and enclosure of open lands into field systems that survive to the present-day. The post-medieval period saw the development of high and low status stone houses throughout the Irish countryside and rural settlement clusters at this time typically consisted of single-storey thatched cottages with associated farm buildings while two-storey farmhouses became more common during the 19th century. The settlement pattern throughout much of the rural landscape was greatly affected by the Famine period and its aftermath in the middle of the 19th century which saw the depopulation of many areas.

The Down Survey was compiled in the mid-17th century to establish records on lands to be forfeited to members of the Cromwellian army as payment for service and records that James Plunkett of Dunshaughlin was the landowner of Harristown, with 300 acres[36]. Samuel Lewis' Topographical Dictionary of Ireland[37], which was

[36] Simington, R.C. (ed.) 1945. The Civil survey, AD 1654-1656. Vol. VII: county of Dublin, Dublin: Irish Manuscripts Commission

[37] Lewis, S. 1837. A Topographical Dictionary of Ireland, 2 vols, London: Samuel Lewis & Son.

published in 1837, records that J. Moore, Esq. was in possession of a residence in Harristown townland at that time.

There is one recorded archaeological site of potential post-medieval date located within the study area and this comprises the site of a levelled 16th/17th century house (DU014-040---) which is now occupied by an airport runway in an area located 220m to the north of the proposed development (Table 13.5 and Figure 13-1). This house was described as being in ruins in the mid-17th century appears to have been replaced by a later house at the same location which is named 'Harristown House' on 19th century cartographic sources (see Section 13.3.3). The Archaeological Survey of Ireland records the 16th/17th century house as follows:

16th/17th century house (DU014-040---): The Down Survey (1655-6) map shows a dwelling near where Harristown House was located. Described in the Civil survey (1654-6) as the 'ruins of old walls of stone' (Simington 1945, 210). Harristown House probably occupied the site. Now the site is part of the runway at Dublin Airport. Not visible at ground level.

13.3.1.5. Database of Irish Excavation Reports

Details on the archaeological test trenching within the proposed development site carried out as part of this assessment are presented in Section 13.3.5 and Appendix 13.2. No other archaeological investigations have been carried out within the site and the nearest example comprised monitoring of ground works during the construction of a of a commercial building c. 90m to the south where nothing of archaeological significance was identified (Excavation Licence 15E0388[38]). A number of other archaeological monitoring and test trenching investigations have carried out within the Horizon Logistics Park in the south end of the study area. While nothing of archaeological significance was identified in the majority of the investigated areas, two locations did contain archaeological remains which comprised burnt spreads and pits of Bronze Age date (see Appendix 13.2; Licences 17E0133 ext.[39] and 19E0177[40]). In addition, a programme of geophysical surveys and archaeological investigations were also undertaken as part of the North Runway project in the lands outside the north end of the study area[41]. These uncovered a number of previously unrecorded, sub-surface archaeological sites within the investigated areas that appear to form part of an early medieval archaeological landscape.

13.3.1.6. Archaeological Test Trenching

The programme of archaeological test trenching within the proposed development site was carried out by Camilla Brännström (John Cronin and Associates) under Excavation Licence 23E0940 over a period of three days between Tuesday 28th and Thursday 30th November 2023.

The two level, poorly drained fields within the proposed site currently in use as rough grazing lands which are separated by an overgrown east-west orientated earth-cut field drain, which is shown as a stream extending along its existing line on historic OS maps (see Section 13.3.3). This narrow drain/stream averages c.1.2m in width and retained very little water at the time of inspection, with extensive vegetation growth within the muddy channel bed While the stream follows the route indicated on the historical OS maps the earthen sides appear to have been subject to machine cutting, likely during modern land drainage improvements. There is also an existing central agricultural culvert to facilitate cattle movement between the two fields. The proposed development will incorporate a 10m-15m wide riparian strip on both sides of the length of the section of the stream within the proposed development site and will include use of the existing central culvert. The proposed development will include 1 no. new culvert installation and the widening of 1 no. existing culvert at pedestrian and road crossing locations. An inspection of the stream at these locations revealed nothing of archaeological significance.

The centre of the northern field is occupied by a modern agricultural concrete-surfaced yard with cattle pen areas. The fields are bounded by trees and bushes on the north and west sides while modern fencing form the boundaries with an existing car park to the east and a commercial premises to the south. The section of an access route to the former location of Harristown House, now under an airport runway to the north, which is visible on historic OS maps (see Section 13.3.3 below) remains as an overgrown farm track within the north end of the landholding. The surface of the track is formed by exposed natural subsoil, likely the result of cattle trampling, and no tree-lining or other potential landscaped features associated with the former house to the north were noted.

Eleven archaeological linear test trenches were excavated across the footprint of the proposed development in order to assess the archaeological potential of the proposed development site (see Figure 13-2 below). Two

[38] https://excavations.ie/report/2015/Dublin/0024574/

[39] https://excavations.ie/report/2019/Dublin/0030585/

[40] https://excavations.ie/report/2020/Dublin/0032321/

[41] Deery, S., McLoughlin, G. and Hickey, S. 2016 'North Runway Project Archaeological Impact Assessment Report'. Unpublished report

potential archaeological deposits with charcoal inclusions (Features 1 and 2), which were interpreted as the fills of potential pit features, were identified on the natural subsoil in two of the test trenches and following the compilation of written and photographic records, both were resealed with topsoil and remain in situ (locations identified in Figure 13-2 below). No other archaeological features were uncovered during test trenching of the proposed development site. Details on the two deposits are summarised below and a full copy of the archaeological test trenching report is presented in Appendix 13.1.

Feature 1: The fill of a potential pit feature which comprised a charcoal rich silty clay with heat fractured stones inclusions was uncovered in the north end of the proposed development site (see Figure 13-2 below). The feature extended slightly beyond the limit of the trench to the north and south but appeared to have an oval shape in plan measuring 1.90m SE-NW by 1.50m NE-SW.

Feature 2: The fill of a potential pit feature which comprised a charcoal rich silty clay and occasional heat fractured stones was uncovered in the south end of the proposed development site (see Figure 13-2 below). The full extent of the circular feature was exposed within the test trench and had a diameter of 1.15m.

13.3.1.7. Summary of Archaeological Context

There are no recorded archaeological monuments located within the proposed development site, or within 200m of its boundary, while there are four recorded examples located within the surrounding 500m study area (Table 13.5 and Figure 13-1). While none of these monuments have surviving above ground remains, the potential exists that they retain sub-surface archaeological features that are of high value. In addition, a review of Archaeological Survey of Ireland descriptions of other archaeological sites within the environs of the study area revealed that the majority have been levelled and were identified as cropmarks during reviews of aerial and satellite imagery. The locations of the two potential archaeological features identified during test trenching of the proposed development site are mapped on Figure 13-2.

Table 13.5: Recorded Archaeological Sites Within Study Area

Monument No.	Classification	Townland	Distance from development
DU014-008----	Enclosure	Harristown	420m to north
DU014-040----	House - 16th/17th century	Harristown	220m to north
DU014-123----	Enclosure	Merryfalls	500m to southeast
DU014-139----	Earthwork	Merryfalls	500m to southeast

Figure 13-1: Location of recorded archaeological sites within study area (boundary of proposed development site in yellow)

Figure 13-2: Location of identified potential archaeological features (boundary of proposed development site in yellow and test trenches in red)

13.3.2. Architectural Heritage Context

There are no protected structures, or any buildings listed in the National Inventory of Architecture located in the proposed development site or within the surrounding study. In addition, the proposed development site is not located within an Architectural Conservation Area.

13.3.3. Review of Cartographic Sources and Aerial/Satellite/LiDAR Imagery

The reviewed cartographic sources were the 17th century Down Survey map, the 1st edition 6-inch OS map (1843), the 25-inch OS maps (1909) and the 2nd edition 6-inch map (1949) (Figure 13-3).

As noted by the Archaeological Survey of Ireland, the Down Survey map shows a house of potential 16th/17th century date within the townland of Harristown which is listed as an archaeological site (DU014-040----). This recorded archaeological site was likely at the location of a later residence named 'Harristown House' which is shown on the 19th/20th century OS maps which is now levelled, and its location is occupied by an airport runway. The detail on the 1st edition 6-inch OS map (1843) shows that the proposed development site comprised vacant farmland fields at that time. The site appears to have been part of the Harristown House landholding and its north end contains a section of an entrance route, which is partially tree-lined, extending towards the house to the north. The detail on this map appears to indicate that the main access avenue to the house was located to the northeast of its location in an area now occupied by the airport runway. No demesne features, such as formal gardens, woodlands or other landscaped features, are shown in the vacant fields within the boundary of the proposed development. A linear section of a stream is shown extending east to west through the centre of proposed development site and no associated features such as a bridge, ford, stepping stones, weir are depicted.

The detail on the 25-inch OS map (1909) and the 2nd edition 6-inch map (1949) indicates that the layout of the proposed development site had remained largely unchanged since the mid-19th century apart from removal of trees along the access route in the north end. No potential unrecorded archaeological, structures of any date or historic townland boundaries were noted within the proposed development site on any of the reviewed cartographic sources.

A review of online aerial and satellite images published by Ordnance Survey Ireland (OSI), Apple, Bing and Google show the extent of modern developments within lands surrounding the proposed development site in the period between 1995 and 2023 (Figure 13-4). A 1995 OSI image shows the proposed development site prior to the construction of the existing car park to the east and commercial buildings to the south and shows the presence of a modern cattle pen within the central area of the site. The coverage area of an OPW LiDAR dataset captured in 2011 and published online by the Geological Survey of Ireland[42] which partially extends into the proposed development site was also reviewed (Figure 13-4). The review of these images did not reveal the presence of any cropmarks or other surface traces of potential unrecorded archaeological features within the proposed development site.

[42] https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=b7c4b0e763964070ad69bf8c1572c9f5

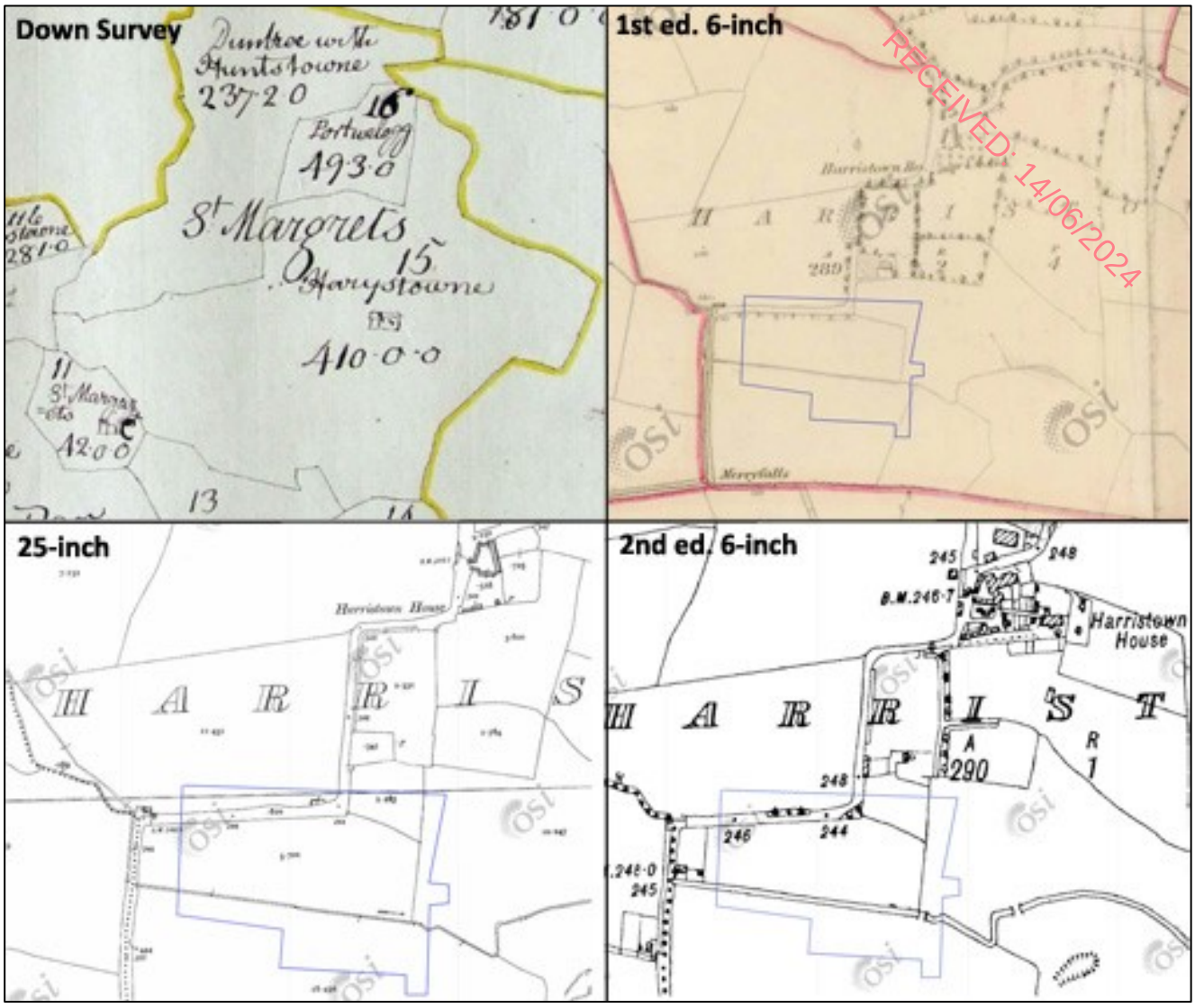


Figure 13-3: Extracts from reviewed historical cartographic sources (boundary of proposed development site indicated by blue line on OS maps) [OSI Licence No. SU 0003320]

Figure 13-4: Extracts from reviewed aerial/satellite/LiDAR images (LiDAR imagery captured in 2011)

13.3.4. Undesignated Cultural Heritage

While encompassing the protected archaeological and architectural heritage resources, cultural heritage also includes various undesignated assets such as historic landscapes and vernacular structures as well as intangible assets such as placenames, folklore, and historical associations. As noted in the review of historical cartographic sources (Section 13.3.3), none indicate the presence of structures or settlement activity of any date within the proposed development site or show any townland boundaries extending within the site. An overgrown, weathered farm track in the north end of the proposed site follows the line of a secondary access route shown on historic OS maps extending to the former location of Harristown House which is now occupied by an airport runway to the north. As noted in Section 13.3.1.4, the RMP lists an earlier 16th/17th century house (DU014-040----) at the same location of Harristown House. This designated house was recorded as being in ruins in the mid-17th century and was likely replaced by Harristown House at some point after that time. The farm track within the north end of the site therefore appears to be the remains of an access route associated with the later Harristown House, which is not listed in the RMP, and it likely comprises a feature of low cultural heritage significance.

A review of the National Folklore Collection UCD Digitisation Project revealed that it contains an account an area named as 'March Hill' within the townland of Harristown "where the men of '98 used to be training with their pikes on moonlight nights[43]". This is likely a reference to the Irish Rebellion of 1798, which included uprisings in County Dublin. While there is no detailed locational information presented in the account, it is noted that the proposed development site is located within an area of flat terrain and the local tradition referring to a hill location may refer to an area of raised ground in the southeast end of the townland.

Townlands are the smallest unit of land division in the Irish landscape and many preserve early Gaelic territorial boundaries that pre-date the Anglo-Norman conquest. The layout and nomenclature of Irish townlands was recorded and standardised by the work of the Ordnance Survey in the 19th century. The Irish translations of the townlands names often refer to natural topographical features, but name elements may also give an indication of the presence of past human activity within the townland, e.g. *dun*, *lios* or *ráth* indicate the presence of a ringfort while *temple*, *saggart*, *termon* or *kill* record an association with a church site. The proposed development site is located within the townland of Harristown, which was first cited in 1586 as Harreston[44], and likely records an association with a historic landowner.

13.4. Potential Effects on Cultural Heritage during Construction Phase

There are no recorded archaeological monuments located in the proposed development site or within 200m of its boundary and the four recorded examples within 500m of the proposed development are levelled and retain no surface remains. The construction phase of the proposed development will, therefore, result in no predicted direct or indirect effects on the locations or settings of recorded archaeological monuments.

The programme of archaeological test trenching within the proposed development site has identified sub-surface remains of two deposits with charcoal inclusions that while of unknown date or importance are considered to be of archaeological potential (see Section 13.3.1.6 and Appendix 13.1). While the origin of these potential archaeological features cannot be ascertained without recourse to full archaeological excavation and post-excavation analysis, the potential exists that they may be of low to medium value. Ground excavation works during the construction phase will result in a high magnitude, permanent, direct, moderate to significant, negative effects on these potential archaeological features which will require mitigation (see Section 13.8).

There are no Protected Structures or NIAH-listed structures located in the proposed development site or within the surrounding 500m study area and it is not located within an Architectural Conservation Area. The construction phase of the proposed development will, therefore, result in no predicted direct or indirect effects on the architectural heritage resource.

There are no undesignated vernacular structures located within the proposed development site and no intangible attributes, such as historical or folklore associations, were noted during the assessment. The construction phase of the proposed development will result in a direct, permanent, slight, negative effect on an overgrown farm track of low cultural heritage which follows an access route shown extending to the former location of Harristown House on historic OS maps.

The proposed development will incorporate a 10m-15m wide riparian strip on both sides of the length of the section of the predominately dry narrow drain/stream channel within the proposed development site and will include use of an existing central culvert. As noted in Section 13.3.1.6, the inspection of the channel indicates that it has been subject to modern improvement works, including potential machine clearance. The proposed

[43] https://www.duchas.ie/en/cbes/4498839/4385832?HighlightText=harristown&Route=stories&SearchLanguage=ga

[44] https://www.logainm.ie/ga/17340

development will include (1 no. new culvert installation and the widening of 1 no. existing culvert channel at pedestrian and road crossing locations. An inspection of the channel from its edges at these locations revealed nothing of archaeological significance and, as noted in Section 13.3.1.6, the inspection of the channel indicates that it has been subject to modern improvement works, including potential machine clearance. The potential for the presence of subsurface archaeological remains within the channel does exist and this will require mitigation (see Section 13.8).

13.5. Potential Effects on Cultural Heritage during Operational Phase

There are no archaeological monuments located within the proposed development site. In addition, given the distances of the recorded monuments within the surrounding 500m study area from the boundary of the proposed development combined with the absence of any extant examples within this area, the operational phase of the proposed development will have no predicted effects on the locations or settings of recorded archaeological monuments.

There are no designated architectural heritage structures located within the proposed development site, it is not located within an Architectural Conservation Area, and it contains no undesignated structures of architectural heritage interest. The proposed development would, therefore, have no predicted effects on the architectural heritage resource during the operational phase.

13.6. Cumulative Effect

A review of the approved and proposed developments detailed in Tables 18.1 and 18.2 was carried out as part of the assessment of potential cumulative effects on the cultural heritage resource arising from the proposed development. This included reviews of any available relevant cultural heritage assessment reports, as well as relevant planning conditions, published on the Fingal County Council planning enquiry system, the An Bord Pleanála website and the Database of Irish Excavation Reports.

This review revealed a number of developments that were subject to advance archaeological investigations which revealed the presence of previously unrecorded features of archaeological potential. The grants of planning for these developments included conditions requiring the archaeological excavation of these features in advance of construction and they are detailed hereafter. A review of the planning files for the Keelings UC warehouse development (FW21A/0187[45]) revealed that a previously unrecorded prehistoric burnt spread was identified within that site during advance archaeological test trenching investigations. The grant of planning for that development included a condition requiring that the identified archaeological remains be excavated in advance of development. A review of the planning files for the HPREF Dublin Office development (FW20A/0187[46]) revealed that the grant of planning for that development included a condition requiring the excavation of identified archaeological areas within that site in advance of construction. The planning files for a Dublin Port Authority solar photovoltaic solar farm (FW22A/0021[47]) revealed that the grant of planning included a condition requiring an appropriate buffer zone around a recorded archaeological monument within that site and archaeological monitoring of the construction phase, The condition also stipulates that in the event that any archaeological remains are identified during monitoring and cannot be avoided that they be subject to archaeological excavation.

There are no recorded archaeological monuments located in the proposed development site or within 200m of its boundary. There are four recorded archaeological sites located within 500m of the proposed development and all of these comprise levelled sites that retain no surface remains. There are no Protected Structures or NIAH-listed structures located in the proposed development site or within the surrounding 500m study area and it is not located within an Architectural Conservation Area. The proposed development is not predicted to result in any significant direct/indirect (construction or operation phase) adverse effects on the cultural heritage resource. Given this cultural heritage context of the proposed development site and its surrounding lands, in combination with the absence of developments within its environs that have been predicted to result in significant cultural heritage effects or will include the implementation of appropriate archaeological mitigation measures to comply with planning conditions, it is concluded that the proposed development will not have the potential to act in combination with other developments to result in any likely significant cumulative effects on the cultural heritage resource.

[45] https://planning.agileapplications.ie/fingal/application-details/95811

[46] https://planning.agileapplications.ie/fingal/application-details/88188#documents

[47] https://planning.agileapplications.ie/fingal/application-details/91588

13.7. Mitigation Measures

The identification of two charcoal rich deposits, which are of archaeological potential, within the proposed development site during the test trenching investigations carried out as part of this assessment will require a programme of archaeological mitigation as the proposed development will have a direct negative impact on both features. The method of mitigation for these features is preservation by record through full archaeological excavation in advance of development works at their locations and this will be carried out under licence by the National Monuments Service. A wider excavation area around both features will be opened in order to reveal their full extent as well as any potential associated features and these areas will extend for 10m from the outermost identified archaeological feature to the edge of the excavation. Following the completion of onsite archaeological excavations, a post-excavation phase of works, including specialist analysis of environment samples, will be carried out. A programme of archaeological monitoring, including the licensed use of a metal detector, of works to facilitate the installation of two culverted crossing points within the drain/stream extending through the proposed development site will also be carried out during the construction phase. In the event that any features of archaeological significance are identified during monitoring in these areas, they will be cordoned off and recorded in situ. The National Monuments Service will then be consulted in relation further mitigation which may include preservation in situ or preservation by record (archaeological excavation) of any identified features. As detailed in Section 13.9, reports on the archaeological excavation and monitoring and specialist analyses will be compiled and submitted to the National Monuments Service, the National Museum of Ireland and the Planning Authority.

13.8. Residual Effects

Preservation by record (excavation) of the two potential archaeological deposits identified during test trenching of the proposed development site will result in a high magnitude of effect, albeit ameliorated by the creation of a full and detailed archaeological record, the results of which will be publicly disseminated. This would result in a potential slight to moderate significance of negative effect in the context of residual impacts on the unrecorded archaeological resource.

13.9. Monitoring Requirements

There are a number of obligatory processes to be undertaken as part of applications to the National Monuments Service for licences to carry out archaeological site excavations and these will allow for monitoring of the successful implementation of the mitigation measures detailed in Section 13.7. A detailed method statement providing written and mapped details on the proposed strategy for these site investigations is required to be included as part of submitted licence applications to the National Monuments Service. This includes the extent of the archaeological works and details on the processes to be enacted in the event that further archaeological features are encountered. Reports on licensed archaeological site investigations are required to be submitted to the National Monuments Service, the National Museum of Ireland and the Planning Authority which will clearly describe the results of all archaeological works in written, mapped and photographic formats. A description of the archaeological excavation results will also be uploaded to the publicly accessible Database of Irish Excavation Reports[48].

13.10. Difficulties encountered during preparation of this chapter

There were no difficulties encounter during the preparation of this chapter.

13.11. Risk of Major Accidents and/or Disasters

There are no risks of major accidents and/or disasters predicted to arise in relation to the cultural heritage resource.

[48] www.excavations.ie

14. Material Assets

14.1. Introduction

According to relevant EPA guidance (EPA, 2022) the following topics warrant consideration under material assets:

- Built Services;
- Roads and Traffic; and
- Waste Management.

Roads and traffic have been assessed separately as part of this EIAR. Refer to Chapter 10 – Traffic. Therefore, this chapter identifies describes and assesses the likely significant effects on material assets serving the proposed development specifically in relation to existing and proposed built services (i.e., foul sewerage, surface water drainage, water supply, gas, electricity, and telecommunications utilities), and waste management; both of which are assessed separately within this section.

14.2. Built Services

14.2.1. Assessment Methodology

The methodology used to prepare this section of the EIAR is in accordance with the EPA (2022) *Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EIAR)'*. The study area for assessment of built services is the redline boundary of the proposed development in Figure 1-2. The following sources have been used to collate information on existing built services within the study area:

- Existing Utility Plan, drawing ref: D21081-ATK-SCS-01-XXX-DR-C-030-0006 (AtkinsRéalis, 2024).

Surface water runoff, foul drainage discharge and water supply requirements have also been designed in accordance with the following guidelines / policies:

- Dublin Airport Drainage Policy;
- Greater Dublin Strategic Drainage Study (GDSDS, 2005) Volume 2 – New Developments; and,
- Uisce Éireann's Code of Practises and Technical Standards (IW-CDS-5030-03 & IW-TEC-800).

14.2.2. Receiving Environment

The proposed development is located on a greenfield site directly south of the western corner of the South Airport Runway; bounded to the North by the R108; to the East by the Holiday Blue Long Term Car Park; to the West by a private access road serving three dwelling, and to the South by the Horizon Logistics Park. Santry River (EPA code: 09S01) flows through the centre of the site and discharges to the North Bull Island transitional waterbody to the east of the site.

14.2.2.1. Storm Water Drainage

The site is predominantly undeveloped, therefore there is no existing surface water infrastructure within the site, apart from gullies and carrier drains along the Former Temporary Construction Entrance to the Business Park. The site is currently separated into two natural drainage catchments, situated to the north and south of Santry River. A storm water drain is located along the eastern boundary of the proposed site. Refer to the planning drawings submitted to support this planning application.

14.2.2.2. Foul Water Drainage

The Dublin Airport Local Area Plan states that Dublin airport lies within the catchment of the North Fringe Sewer with effluent treated at Ringsend Wastewater Treatment Plant (FCC, 2020). There is an existing underground package foul pumping station to the east of the site which discharges to an 80mm diameter foul rising main. This rising main runs south to join the foul rising main network catering to the business park south of the existing car park. Refer to the planning drawings submitted to support this planning application.

14.2.2.3. Water Supply and Distribution

Located within Ballycoolin Reservoir Supply Area, the current airport demand is met from an internal reservoir and boosting system that is controlled by daa (FCC, 2020). There is an existing watermain to the east of the site, located in the entrance road, which runs south to join the watermain network catering to the business park south of the existing car park. Refer to the planning drawings submitted to support this planning application.

14.2.2.4. ESB Supply

Dublin Airport is supplied by the Dardistown substation which has 2no. 40-megavolt amp transformers supplying 4no. Airport ring networks; Terminal 1, Terminal 2, campus, and the airfield (FCC, 2020). There are no overhead ESB lines running through the proposed development. There are ESB assets reported along the northern and eastern site boundaries, including a joint bay along the eastern boundary. Refer to the planning drawings submitted to support this planning application.

14.2.2.5. Gas Supply

The Airport is currently served by a 19-bar gas main (feeding a 315mm diameter 4-bar ring main within the Airport) from the Cloghran Ground Installation located on Swords Road (FCC, 2020). There are no existing gas utilities within the site boundary. A gas line is reported to run in a southern direction to the south of the proposed development.

14.2.2.6. Eir Network

Dublin Airport is serviced by a mixture of copper and fibre networks served by 2no. public node operator points within the airport, operated by eir. There are a number of other telecom service providers, utilised by daa, who are granted access over eir's existing network within the airport. eir services enter the airport via the R132 Swords Road (FCC, 2020). There are no reported eir assets within or bordering the proposed development.

14.2.2.7. Lighting

There are no reported lighting assets reported within the vicinity of the proposed site.

14.2.3. Impact Assessment

14.2.3.1. Characteristics of the proposed development

A detailed description of the proposed development is presented in Chapter 2 - Project Description. In order to identify, describe and assess the likely significant effects from the proposed development, the characteristics of the proposed built services / utilities are considered, as summarised below.

14.2.3.2. Surface Water/Storm Water Drainage

The surface water infrastructure for the site will mimic the natural drainage catchments of the existing site. The proposed site is split into two catchments, a northern catchment, and a southern catchment. At the eastern boundary, the stream is culverted under the unused access road prior to continuing to the south of the existing Holiday Blue car park. There is a second existing culvert crossing at the centre of the site which is currently used as a field crossing. The stormwater drainage system for the proposed development is presented as indicated on Drawings D21081-ATK-SCS-01-XXX-DR-C-520-0001, which is presented as part of this planning application.

Stormwater management for the proposed development is designed to comply with the Greater Dublin Strategic Drainage Study (GDSDS) and CIRIA Design Report C753 'The SuDS Manual'. In addition, the storm drainage system has been designed in accordance with the key documents and standards as listed below:

- Fingal County Council Development Plan, 2023 - 2029;
- Dublin Airport Local Area Plan, 2020; and,
- Dublin Airport Sustainable Drainage Policy Document.

The catchments are separated by the Santry River which intersects and traverses the centre of the site flowing from the western boundary to the eastern boundary:

- The Northern catchment will have SuDS porous surfacing parking bays that will comprise of porous asphalt. The stormwater runoff will discharge into the permeable surface prior to collection by filter drains. The filter drains allow for adequate drainage of the permeable granular stone material into the proposed carrier drainage network.
- The Southern catchment will have SuDS porous surfacing parking bays that will comprise of porous asphalt. The stormwater runoff will discharge into the permeable surface prior to collection by filter drains. The filter drains allow for adequate drainage of the permeable granular stone material into the proposed carrier drainage network.
- It should be noted that internal circulation roads within the car park areas will be constructed of non-permeable asphalt but will be graded such that stormwater runoff drains from the surface to the adjacent porous car-parking bays.
- The main car park access circulation road will have an impermeable Stone Mastic Asphalt (SMA) surface which will be drained via the use of traditional road gullies.

- A vortex flow control device will be located downstream of the proposed carrier drainage network limiting flows to a maximum discharge rate specified below. Prior to discharge into the Santry River a bypass separator will ensure silts and oil is removed.
- Attenuation for both catchments is provided through the use of a proprietary modular geocellular structure with a maintenance/inspection tunnel for providing underground surface water attenuation storage and infiltration to manage storm water runoff. Refer to Engineering Planning Report (AtkinsRéalis, 2024 - D21081-ATK-SCS-01-XXX-RP-C-XXX-0002) for further details.
- A petrol interceptor will be provided on each outfall from the site. Petrol interceptors work on the premise that some hydrocarbons such as petroleum and diesel float on the top of water. Class I bypass separators are proposed which enable the main collection chamber to be by-passed at times of heavy rainfall which prevents any collected oil from being flushed out. Class I bypass separators are designed to achieve a concentration of less than 5mg/l of oil. Kingspan Klargester Class 1 Bypass Petrol Interceptors or equal approved will be used prior to the discharge points north and south of the Santry River and will be NSBE010 and NSBP003 at the north and south catchments respectively.

The car-park proposals incorporate a Riparian strip along the length of the section of the Santry River in accordance with FCC Development Plan. The stream and riparian strip currently have two existing field crossing points for land access, the existing crossing locations will be re-used for road and pedestrian access for the proposed scheme. In addition, a third new crossing point to the east of the site will be constructed. A new headwall will be constructed at the existing culvert under the proposed access road to the south car-park.

Rainwater from the welfare building roof will be collected in a tank to be stored and re-used for greywater usage (toilets) in the block, this is regarded as a source control technique also. The system will be located under the car-park adjacent to the welfare building and the contributing catchment for harvesting will be the roof area of the block. The system will be fitted with an overflow that will discharge into the proposed carrier drain.

14.2.3.3. Foul Drainage

It is proposed to provide a new security hut with toilet and sink on the traffic island along the existing entrance road. In addition, a new welfare facility building shall be located at the entrance to the carpark. The existing package pumping station serving the existing security hut will be removed and the new security hut and welfare building will connect, via a new gravity foul network, to a new package pumping station located adjacent the welfare building. The new pump station will connect to the existing rising main and the redundant sections of rising main will be removed as part of the removal of the existing pump station and the areas made good. The proposed underground packaged pumping station will include duty/standby sewage pumps and will include inbuilt emergency storage in case of breakdown. A pre-connection application to Uisce Éireann was submitted which included calculations of design wastewater flows in September 2022. AtkinsRéalis received a 'confirmation of feasibility' letter from Uisce Éireann in October 2022. All foul drainage related works will be carried out in consultation with Uisce Éireann and in accordance with all relevant Uisce Éireann guidelines and any Site-specific additional requirements. The peak foul discharge from the proposed development was determined to be 0.58 l/s and the daily discharge will be 0.13l/s. The foul drainage system for the proposed development is presented as indicated on Drawings D21081-ATK-SCS-01-XXX-DR-C-520-0002, which is presented as part of this planning application. Refer to Engineering Planning Report (AtkinsRéalis, 2024 -D21081-ATK-SCS-01-XXX-RP-C-XXX-0002) for further details.

14.2.3.4. Water Supply and Distribution

It is proposed to connect the water supply for the development to the existing watermain spur located in the entrance road. For details of the watermains proposals refer to drawing D21081-ATK-SCS-01-XXX-DR-C-530-0001. The water supply for the site has been designed in accordance with Uisce Éireann Code of Practice and standard construction details. A pre-connection application to Uisce Éireann was submitted which included calculations of design water flows in September 2022. AtkinsRéalis received a 'confirmation of feasibility' letter from Uisce Éireann in October 2022. In line Fire Hydrants will be located on the watermains in accordance with Uisce Éireann standard construction details and "2006 Building Regulations" (Part B Fire Safety), so that no Fire Hydrant is > 46m and < 6m from any building. Refer to Engineering Planning Report (AtkinsRéalis, 2024 - D21081-ATK-SCS-01-XXX-RP-C-XXX-0002) for further details.

The water supply for the site has been designed in accordance with Uisce Éireann Code of Practice and standard construction details

14.2.3.4.3. Lighting

A Mechanical, Electrical and Plumbing (MEP) Engineering Report and Energy Statement has been prepared (AtkinsRéalis, 2024 - Document Ref; D21081-ATK-SCS-01-XXX-RP-E-XXX-0001) which notes that '*it is*

proposed that each category of car park such as electrical vehicle car park bays, disabled parking bays, cycle parking, the bus stops, footpaths and a welfare building roads will be designed to its own specific requirements, illuminance level and uniformity to meet the lighting class for each area……The design will consider for both Pedestrian and Vehicular areas such as junctions and traffic conflict areas back (i.e. T-junctions, pedestrian crossings, public and private car parking, etc).'

It also notes that '*The lighting design for the proposed development has been developed with cognisance of the findings of the bat survey. Bat survey evidence indicates that the west side of the proposed development site (i.e. around the woodland and western treeline along Harristown Lane) were the main areas of bat activity and the lighting design has been developed in this area to be 'bat friendly'. The design of the lighting within and around the proposed development has also been designed to be cognisant of minimising effects on local nocturnal species, such as bats and badgers, and has been developed so as to allow for a darker area around the western boundary of the proposed development site and also along the riparian corridor of the Santry River.*

The lighting design follows Institute Lighting Professionals (ILP) Guidance Note 08/18 Bats and artificial lighting scheme for key bats area aims to minimise disturbance or disruption in key bats through the following design principles:

- *LED luminaires shall be used due to the fact that they are highly directional, have lower intensity, have good colour rendition and dimming capability;*
- *On the western sections of the proposed development a warm white spectrum <2700 Kelvins shall be used to reduce the blue light component of the LED spectrum;*
- *Luminaires shall feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats;*
- *On the western sections of the proposed development column heights shall be carefully considered to minimise light spill. The shortest column height allowed shall be used where possible (6m).*
- *All luminaires shall lack UV/IR elements to reduce impact;*
- *Only illuminating what needs to be illuminated (e.g. light directed to the car park area only)*
- *Reducing night time light levels'.*

Trees and other vegetation will not impede the functions of public lighting units. A separation of 5 metres between the lighting column and the outside of the crown will be allowed for the lighting to work as designed. Trees or vegetation will not be planted within 7 metres of a public light column. The design will take into consideration the layout of the proposed lighting column locations and the proposed landscape design. The layout will be coordinated to achieve the 7 metres separation between all trees and public lighting columns. The public lighting layout is detailed and on drawing reference; D21081-ATK-SCS-01-XXX-DR-E-600-0001.

14.2.3.5 Potential Effects on Material Assets during Construction Phase

The following potential impacts could occur during the Construction phase: -

- Damage to existing foul rising main, along the eastern boundary of the site;
- Damage to existing ESB assets which runs along the eastern site boundary;
- Damage to existing storm water drain which runs along the eastern site boundary;
- Damage to the existing watermain which runs along the eastern site boundary;
- Contamination to the existing public water supply network during connection into the water supply network.

Given the nature and scale of proposed development and the fact that a CEMP will be prepared and implemented by the contractor during construction and demolition these potential effects are considered to be unlikely and should they occur, would be temporary and not significant in nature.

14.2.3.6 Potential Effects on Material Assets during Operational Phase

As previously stated, utilities will be connected into within the proposed development in accordance with the relevant service providers guidelines and requirements and standard best practice guidelines. There will be a requirement for waste water discharge and use of Electricity during the operational phase. There potential effects are considered to be adverse, not significant and long term during the operational phase.

14.2.6. Proposed Mitigation Measures

14.2.6.1. Construction Phase

The following mitigation measures will be implemented during the construction phase;

- Prior to demolition and construction, Ground Penetrating Radar (GPR) surveys will be undertaken to accurately locate existing utilities along the boundaries of the site;

- An Outline CEMP has been prepared to support this planning application. Prior to the commencement of construction works the appointed contractor will alter, if necessary, in light of conditions which may be imposed on the permission, the CEMP further. This CEMP will take account of all of the environmental considerations (including water, dust and noise nuisance control; soil / stockpile management; temporary groundwater management; appropriate Site management of compound area; fuel, oil and chemical storage and use; and waste management) set out in the CEMP submitted as part of this planning application;
- The construction compound will include adequate temporary welfare facilities including foul drainage and potable water supply;
- All newly installed utilities/ services will be assessed, tested and certified as required prior to being fully commissioned;
- Connections to the existing and proposed foul networks will be coordinated with the relevant utility provider. All works associated with the existing utilities for the proposed development will be carried out in strict accordance with the guidelines of the relevant stakeholders (specifically ESB, eir and Uisce Éireann), Health and Safety Authority and any additional site-specific requirements;
- A copy of all available existing, and as built utility plans will be maintained on Site during the construction of the proposed development. The underground power lines and foul and water mains within the existing Uisce Éireann services, located onsite will be clearly marked and all Site personnel will be made aware of the known location of any onsite underground or over ground services during the construction phase; and,
- Local drainage will be surveyed and, where necessary, blocked off to prevent runoff of potentially contaminated surface water entering the surface water drainage system. A detailed Surface Water Management Plan will be included in the CEMP to be prepared by the Contractor, to deal with the treatment of surface water runoff prior to discharge to the site drainage system.

14.2.6.2. Operational Phase

No mitigation measures are required during the operational phase.

14.1.1. Cumulative Effects

Due to the nature and scale of the proposed development, no cumulative impacts are anticipated during the construction or operational phases of the proposed development associated with built services. There will be no likely significant effects regarding built services due to cumulative effects.

14.3. Waste Management

14.3.1. Assessment Methodology

This section of the EIAR has been prepared in accordance with the EPA '*Guidelines on the information to be contained in Environmental Impact Assessment Reports'* (2022), *'*and '*Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects*' (EPA 2021).

This assessment has also been informed by findings of the Chapter 11 – Land, Soils and Geology section of this EIAR.

14.3.2. Receiving Environment

Based on a review of available historic mapping and aerial photography, historic land-use at the Site was greenfield, albeit localised areas of made ground have been identified via. site specific ground investigation works. The GSI bedrock geology 100k map identified the underlying bedrock of the site as the Malahide Formation, comprised of shale, and argillaceous bioclastic limestone (as detailed in Chapter 11 – Land, Soils and Geology). A summary of site specific ground conditions are presented in Chapter 11- Land Soils and Geology. Based on available evidence, and taking account of proposed mitigation measures, soils beneath the Site are not considered likely to have a significant effect on human health, building and services, or environmental receptors.

14.3.3. Impact Assessment

14.3.3.1. Characteristics of the proposed development

A detailed description of the proposed development is presented in Chapter 2 – Project Description. The following summary relates to the characteristics of the proposed development specifically in relation to waste management. The proposed development will be designed, planned, constructed and operated to minimise waste generation at every stage.

The management of waste generated during the demolition and construction of the proposed development will be in accordance with the CEMP submitted as part of this application. The scope of works for the project includes the demolition of an existing cattle pen and hard standing area, totalling 911m^2 and the removal of 1no. existing gated site entrance. The hedgerows and vegetative will be removed as part of the proposed development. The maximum excavation depth is ca. 5mbgl.

The following waste streams will be generated during the construction and demolition phases: concrete, mechanical, electrical containment, wood, aluminium, iron and steel, and soils.

14.3.3.2. Potential Effects during Construction phase

During the construction phase, it has been estimated that the various waste streams will be generated and managed as follows (refer to the CEMP submitted as part of this application).

The total volume of soil to be excavated is ca. 20,220 tonnes. There will be ca. 550 tonnes of topsoil retained on site for landscaping. Soils should be placed in clearly identified stockpiles and chemical testing undertaken to confirm the potential for re-use on site, or, if considered inappropriate for re-use (due to geotechnical or chemical properties or being surplus), to inform off site treatment and/or disposal routes. Where soil materials meet the geotechnical and chemical criteria for re-use given the proposed end use scenario, such materials may be re-used on site, if required, for landscape purposes. Therefore there is potential to obtain additional excavation soil onsite for landscaping, depending on the chemical testing to confirm re-use. Table 14.1 identifies the estimated volume of waste for each key stream that will be generated during the construction and demolition phase of the proposed development.

Table 14.1 - Estimated Volumes of waste generation

Waste Stream	Estimated Volume (tonnes)
Soils	19,670
Mixed C & D	70
Plasterboard	2
Wood / Timber	46
Metals	35
Paper, Plastics and Packaging	18
Canteen / Office Waste	5
Inert Waste	23
Insulation	5
Total Demolition and Construction Waste	19,876

For the proposed development imported material will be required. Table 14.2 lists this material and preliminary estimated volumes.

Table 14.2 - Estimated Volumes of Imported Material

Material	Category	Volume	Units
Asphalt-Average	Series 900 - Road Pavements - Bituminous Materials	26,988	m2
Blinding concrete <150mm	Series 1700 - Structural Concrete	188.93	m3

Bracings, purlins and cladding walls	Series 1800 - Structural Steelwork	559	tonnes
Close graded asphalt 40mm nominal size aggregate; depth 60mm	Series 900 - Road Pavements - Bituminous Materials	14373	m2
Close graded asphalt 40mm nominal size aggregate; depth 80mm	Series 900 - Road Pavements - Bituminous Materials	14373	m2
Concrete- Average	Series 1700 - Structural Concrete	220	m3
Geotexiles - Average	Series 900 - Road Pavements - Bituminous Materials	26988	m2
Granular material Type 1 depth 100mm	Series 800 - Road Pavements - Unbound and Cement Bound Mixtures	2022	m2
Granular material Type 1 depth 200-250mm	Series 800 - Road Pavements - Unbound and Cement Bound Mixtures	26,427	m2

The waste management strategy during the construction phase of the proposed development has been developed in accordance with the waste management hierarchy and relevant EU and Irish policy. The overarching objectives of the Eastern-Midlands Region Waste Management Plan 2015-2021 have been incorporated into the latest development plans pertinent to this Site i.e., Fingal County Development Plan 2023 – 2029 and Dublin Airport Local Area Plan 2020. According to FCC (2023), the Regional Waste Management Plan has the following objectives:

- Prevent or minimise the production of waste in the first instance;
- Reduce, re-use and recycle to the maximum extent possible;
- Endeavour to recover energy from waste where possible; and
- Ensure the efficient and safe disposal of any residual waste.

The Fingal County Development Plan 2023-2029 sets out the following objective with regards to construction and demolition waste management:

'*CAP25 – Have regard to existing Best Practice Guidance on Waste Management Plans for Construction and Demolition Projects as well as any future updates to these Guidelines in order to ensure the consistent application of planning requirements.*

The Dublin Airport Local Area Plan 2020 sets out the following objectives with regards to waste management:

'WM01 – Support, where appropriate, the provision of proposals to aid the transition from a waste management economy to a green circular economy.

WM02 – Promote a waste prevention and minimisation programme to target all aspects of waste in the LAP boundary area, focusing on all airport, commercial and domestic waste producers.'

As with any construction project, there is potential for nuisance issues to arise during the construction phase, associated with dust or waste materials impacting roads adjacent to the proposed development. Therefore, while waste will be generated during the construction of the proposed development, all waste streams will be managed in accordance with statutory waste management and environmental requirements, regional waste related policy, best practice waste management guidance, and a project specific Resource and Waste Management Plan (RWMP) which will be developed by the Contractor in advance of the commencement of construction or demolition works. The potential effects of waste generated during the construction phase (via. transport and disposal / recovery to appropriately permitted / licenced facilities; and potential nuisance issues) will be temporary, slight adverse and short-term in nature.

14.3.3.3. Potential Effects during Operational Phase

During the operational phase all waste materials will be removed offsite to an appropriately permitted or licenced waste disposal / recovery facility. All such waste will be transported and disposed of in accordance with relevant waste management legislation (including but not limited to the Waste Management Acts 1996 to 2011.

Therefore, while waste will be generated during the operational phase of the proposed development, all such waste will be managed in accordance with statutory waste management and environmental requirements, regional waste related policy, and best practice waste management guidance. The potential effects of waste generated during the operational phase (via. transport and disposal / recovery to appropriately permitted / licenced facilities;) will be long-term and imperceptible.

14.3.4. Cumulative Effects

Based on the scale and nature of the proposed development and given that a RWMP will be prepared and implemented for the construction phase, no cumulative effects are anticipated during the construction or operational phases of the proposed development associated with waste generation. There will be no likely significant effects associated with waste management and / or generation.

14.3.5. Proposed mitigation measures

14.3.5.1. Construction Phase

The following mitigation measures will be implemented during the construction phase;

- All waste management procedures implemented onsite during the construction phase will be in accordance with the Outline CEMP submitted as part of this planning application, and a project specific RWMP to be prepared by the Contractor, in accordance with the '*Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects*' (EPA 2021). The RWMP will take account of the relevant requirements of the Outline CEMP, the EIAR and any relevant planning conditions etc., and will be prepared by the Contractor in advance of the commencement of any construction or demolition works.
- The contractor will supply all waste containers / skips, as required, for each of the identified waste streams. Waste will be segregated and removed to licensed facilities by licenced hauliers and all containers will be emptied before they are full to avoid overflowing. The contractor is to provide a waste forecast for waste types and quantities expected to be generated.
- Good working practices and take back schemes will be used to reduce the amount of waste generated, as an initial step, with waste management routes for each waste stream to be recorded in the site Waste Management Plan. There is a target of 98% diversion of construction waste from landfill to be achieved with a minimum diversion of 90%. In order to reduce waste generation as far as possible, off cuts, surplus materials and packaging is to be returned to suppliers for closed loop recycling, single used plastics are to be avoided where possible and all materials are to be stored correctly to avoid waste generation from damage and contamination of incorrectly stored materials.
- All waste materials will be segregated onsite into the various waste streams, via. dedicated skips and storage areas. All waste will be removed from Site by one or more waste haulage contractor(s) who hold a current valid waste collection permit issued by the National Waste Collection Permit Office (NWCPO). All waste materials generated during the construction phase will be removed offsite to an appropriately permitted or licenced waste disposal / recovery facility. All waste removed offsite will be appropriately characterised (under the correct LoW / EWC code), transported and disposed of in accordance with relevant waste management legislation (including but not limited to the Waste Management Act of 1996 and 2001, as amended and all subsequent waste management regulations). All waste management and disposal / recovery records will be maintained onsite throughout the project and will be made available for viewing by the Client, Employer's Representative and statutory consultees (FCC, EPA) as required.
- Scheduling and planning the delivery of materials will be carried out on an '*as needed'* basis to limit any surplus materials;
- Materials will be ordered in sufficient dimensions so as to optimise the use of these materials onsite, and will be carefully handled and stored so as to limit the potential for any damage;
- Where feasible, sub-contractors will be responsible for the provision of any materials they require onsite in order to help reduce any surplus waste;
- All loaded trucks entering and exiting the Site will be appropriately secured and covered;
- Dust will be controlled at entry and exits to the Site using wheel washes (as required) and/or road sweepers, and tools and plant will be washed out and cleaned in designated areas. Wheel / road sweeper washings will be contained and treated prior to discharge;
- Secure lockable and controlled storage to be provided for the storage of chemicals and other hazardous materials, e.g., asbestos;

- The Contractor is to provide details of proposed measures to be implemented to mitigate against Foreign Object Debris (FOD) and windblown materials; and,
- All waste containers are to be enclosed and lockable to prevent FOD.

Mitigation measures will be implemented as required to further manage the potential effects. There will be no likely significant effects associated with waste management during construction.

14.3.5.2. Operational Phase

Waste management during the operational phase of the development will be undertaken by private waste contractors (in accordance with statutory waste management and environmental requirements, regional waste related policy, and best practice waste management guidance), and regulated by Fingal County Council. Therefore, no further mitigation measures are required with regard to the transport and disposal or recovery of all waste streams which will be generated during the operational phase. Mitigation measures will be implemented as required to further manage the potential effects. There will be no likely significant effects associated with waste management during operation.

14.4. Residual Effects

Cumulative effects on built services and waste management have been considered between both project elements and with other proposed / committed future developments within the vicinity of the study area. Further details are provided in Chapter 17 – Future Airport Development, and Chapter 18 – Cumulative Effects. It has been determined that there will be no likely significant cumulative effects.

Taking account of the proposed mitigation measures for Material Assets, specifically built services the residual effects of the proposed development will be short-term and not significant during the construction phase, and long-term and not significant during the operational phase. There will be no likely significant residual effects associated with built services.

Taking account of the proposed mitigation measures for Material Assets, specifically waste management, the residual effects of the proposed development will be short-term and imperceptible during the construction phase, and long-term and imperceptible during the operational phase. There will be no likely significant residual effects associated with waste management and / or generation.

14.5. Monitoring Requirements

The Contractor will be responsible for maintaining waste records and documentation for the full duration of the construction phase. The Contractor will track and monitor all waste volumes transported offsite. All waste records will be maintained onsite throughout the project and will be made available for viewing by the Client, Employer's Representative and statutory consultees (FCC, EPA) as required.

No monitoring is required during the operational phase of the proposed development.

15. Interactions

15.1. Introduction

This chapter describes interactions between impacts on different environmental factors. All potential interactions have been addressed as required throughout the EIAR. During the scoping, baseline assessment and impact assessment stages of this report, contributors (as set out in Chapter 1 of the EIAR) have liaised with each other where relevant to ensure that all such potential interactions have been assessed. A detailed description of the proposed development is presented in Chapter 2 – Project Description.

15.2. Summary of Interactions

The interactions between each of the topics as discussed within Chapter 4 to Chapter 14 of this EIAR have been considered in order to determine the potential direct and indirect environmental impacts, via various pathways, which could arise as a result of the proposed residential development. This section of the EIAR has been prepared in accordance with EPA 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2022) which states the following;

> '*Some topics could be placed under more than one heading, for example where hydrogeology is a relevant topic it may be relevant under the heading of 'Aquatic Ecology' as well as under 'Water' or 'Ground Water.' Another example would be amenity which may be relevant under 'Population and Human Health' and 'Landscape'. The requirement for the EIAR to consider 'Interactions' addresses this issue by ensuring that effects are cross-referenced between topics, thus reducing the need to duplicate coverage of such topics.*'

A summary matrix showing significant interaction and interdependencies between environmental attributes specifically in relation to the proposed development is presented in Table 15.1. Each environmental topic considered within this EIAR is further discussed below, in Section 15.3 (Population and Human Health) to Section 15.12 (Material Assets).

	Chapter 4 - Population & Human Health		Chapter 5 - Biodiversity		Chapter 6 - Landscape and Visual		Chapter 7 - Air Quality		Chapter 8 – Climate		Chapter 9 - Noise & Vibration		Chapter 10 - Traffic		Chapter 11 - Land, Soils & Geology		Chapter 12 - Water		Chapter 13 - Cultural Heritage		Chapter 14 - Material Assets	
	Con.	***Op.***	***Con.***	***Op.***	***Con.***	***Op.***	***Con.***	***Op.***	***Con.***	***Op.***	***Con.***	***Op.***	***Con.***	***Op.***	***Con.***	***Op.***	***Con.***	***Op.***	***Con.***	***Op.***	***Con.***	***Op.***
Chapter 4 - Population & Human Health			✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✓	✓	✓	✓	✗	✗	✗	✗
Chapter 5 - Biodiversity	✗	✗			✓	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗
Chapter 6 - Landscape & Visual	✗	✗	✗	✗			✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Chapter 7 - Air Quality	✓	✓	✗	✗	✗	✗			✗	✗	✗	✗	✓	✓	✓	✓	✗	✗	✗	✗	✗	✗
Chapter 8 – Climate	✓	✓	✗	✗	✗	✗	✓	✓			✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓
Chapter 9 - Noise & Vibration	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗			✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
Chapter 10 - Traffic	✗	✗	✗	✗	✗	✗	✓	✓	✗	✗	✓	✓			✗	✗	✗	✗	✗	✗	✗	✗
Chapter 11 - Land, Soils & Geology	✓	✓	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗			✓	✓	✗	✗	✓	✓
Chapter 12 - Water	✓	✓	✓	✓	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✓	✓			✗	✗	✗	✗
Chapter 13 - Cultural Heritage	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗			✗	✗
Chapter 14 - Material Assets	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗		

Table 15.1 – Summary Interactions Matrix

15.3. Population & Human Health

Population and human health attributes interact with other environmental attributes as outlined in Chapter 4 of this EIAR and summarised as follows:

- **Air Quality** - Potential impacts on the receiving air quality environment could also result in associated human health impacts. However, the mitigation measures referenced in Chapter 4 – Population and Human Health, and those relevant in Chapter 7 – Air Quality, once in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the effect of construction of the proposed development is likely to be negative, short-term, imperceptible and non-significant with respect to human health. Traffic related air emissions have the potential to effect air quality which can affect human health. As the operational phase air dispersion modelling has shown that emissions of air pollutants are significantly below the ambient air quality standards which are based on the protection of human health, impacts to human health are long-term, neutral, localised, imperceptible and non-significant.
- **Climate** - Potential impacts on the receiving climate environment could also result in associated human health impacts. However, the mitigation measures referenced in Chapter 4 – Population and Human Health, and those relevant in Chapter 8 – Climate, once in place during construction and operation of the proposed development, specifically in relation to flooding. As per the assessment criteria in Chapter 8 the effect the proposed development in relation to GHG emissions is considered long-term, moderate, adverse and not significant in EIA terms.
- **Noise & Vibration** - Potential impacts on the receiving noise and vibration environment could also result in associated human health impacts. However, the mitigation measures referred to in Chapter 4 – Population and Human Health, and those relevant in Chapter 9 – Noise and Vibration, once in place, will result in no potential for impact when these topics do interact.
- **Land, Soils & Geology** - Potential impacts on the receiving land, soils and geology environment could also result in associated human health impacts. However, the mitigation measures referenced in Chapter 4 – Population and Human Health, and those relevant in Chapter 11 – Land, Soils and Geology, once in place, will result in no potential for impact when these topics do interact.
- **Water** - Potential impacts on the receiving water environment could also result in associated human health impacts. However, the mitigation measures described in Chapter 4 – Population and Human Health, and those relevant in Chapter 12 – Water, once in place, will result in no potential for impact when these topics do interact.

15.4. Biodiversity

Biodiversity attributes interact with other environmental attributes as outlined in Chapter 5 of this EIAR and summarised as follows:

- **Water** – Potential impacts on the receiving hydrology and hydrogeology environment could also result in associated biodiversity impacts. However, the mitigation measures described in Chapter 5 – Biodiversity, and those relevant in Chapter 12 – Water, once in place, will result in no potential for impact when these topics do interact.

15.5. Landscape and Visual

Refer also to the biodiversity chapter (Chapter 5) for effects on habitats/ vegetation and watercourses. Refer also to the Water chapter (Chapter 12) for effects on watercourses/ surface water. Refer also to the Land, Soils & Geology chapter (Chapter 11) for effects on land use and soils.

15.6. Air Quality

15.6.1. Population & Human Health

The most significant interactions are between population and human health and air quality. An adverse impact due to air quality in either the construction or operational phase has the potential to cause health and dust nuisance issues. The mitigation measures that will be put in place at the proposed development will ensure that the impact of the proposed development complies with all ambient air quality legislative limits. Therefore, the predicted impact is short-term, imperceptible and negative with respect to population and human health during construction and long-term, imperceptible and neutral during operation phase.

15.6.2. Land, Soils and Geology

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land and soils. In this assessment, the impact of the interactions between land and soils and air quality are considered to be **long-term, imperceptible** and **neutral**.

15.6.3. Biodiversity

As set out in Chapter 11 (Soils, Land and Geology), dust generation can occur during extended dry weather periods as a result of construction traffic. Dust suppression measures (e.g., dampening down) will be implemented as necessary during dry periods and vehicle wheel washes will be installed, for example. The works involve stripping of topsoil and excavations, which will remove some vegetation such as trees and scrub. It will also generate dust and potentially impact on the air quality in the locality. However, the generation of dust will be temporary during construction phase and is not anticipated to have a significant impact on biodiversity. In this assessment, the impact of the interactions between biodiversity and air quality are considered to be **long-term, imperceptible** and **neutral.**

15.6.4. Traffic & Transportation

Interactions between air quality and traffic (see Traffic Impact Assessment) can be significant. With increased traffic movements and reduced engine efficiency, i.e., due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the impact of the interactions between traffic and air quality are considered to be **long-term, imperceptible** and **neutral**.

15.6.5. Climate

Air quality and climate have interactions due to the potential emissions during the construction and operational phases generating both air quality and climate impacts. There is no impact on climate due to air quality however the sources of impacts on air quality and climate are strongly linked. In this assessment, the impact of the interactions between climate and air quality are considered to be **long-term, imperceptible** and **neutral.**

15.7. Climate

15.7.1. Hydrology

Climate has the potential to interact with a number of other environmental attributes. The impact of flood risk has been assessed and the surface water drainage network will be designed to cater for run-off from the building and the surrounding hardscaped areas. The overall impact of this interaction is considered **negative** and **not significant** in EIA terms.

15.7.2. Waste Management

Interactions across many areas can be used to minimise the GHG emissions from both the construction and operational and operational phases. For instance, waste management measures will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling or incineration. The overall impact of this interaction is considered **negative** and **slight** in EIA terms.

15.7.3. Building Design

The risk to building design in terms of material vulnerability to climate change, specifically extreme heat and cold, has been considered. These aspects of climate interact with drainage design, operational power, landscaping and building design. The overall impact of this interaction is considered **negative** and **not significant** in EIA terms.

15.8. Noise and Vibration

The Noise and Vibration Chapter has used information from the Traffic chapter to inform the assessment of noise and vibration impacts. With increased traffic movements, the noise levels in the surrounding area increase. The impacts of the proposed development on the noise environment are assessed by reviewing the change in traffic flows on roads close to the site. In this assessment, the impact of the interactions between traffic and noise are considered to be **long term** and **not significant** due to the low-level changes in traffic flows associated with the proposed development.

15.9. Traffic

All interactions with traffic during both Construction and Operational Phases have been identified in the relevant Chapters and where appropriate, mitigation measures have been applied. The following provides a summary of the identified interactions:-

- **Air Quality and Climate** - During the construction stage, on-site construction works will contribute to a temporary decrease in air quality. In the development operational stage traffic generation associated with the development will contribute to increased traffic volumes on the surrounding network which in turn will decrease air quality. Further details in relation to direct impacts are addressed in Chapter 7 – Air Quality and Chapter 8 - Climate.
- **Noise and Vibration** - During the construction stage, development of the Site will result in a short-term increase of construction traffic. Further details in relation to direct impacts and mitigation are addressed in Chapter 9 – Noise and Vibration.

15.10. Land, Soils and Geology

- **Potential human health** risks associated with quality impacts to soils arising from the proposed development during the Construction Phase have been identified as follows;
    - Potential risk to receptors (i.e., construction workers) through direct contact, ingestion or inhalation with any soils which may potentially contain hydrocarbon concentrations from Site activities (potential minor leaks and spills of fuels, oils, and paint).

However, this risk will be addressed by implementation of the mitigation measures outlined in Chapter 11 - Land, Soils & Geology, therefore once in place, will result in no potential for impact when these topics do interact.

- **Air Quality & Climate** - Potential impacts on the receiving Land, Soils and Geology environment could also impact on air quality conditions present. However, the mitigation measures described in Chapter 11 – Land, Soils & Geology, and those relevant in Chapter 7 - Air Quality and Chapter 8 – Climate, once in place, will result in no potential for impact when these topics do interact.
- **Water** - Potential impacts on the receiving land, soils and geology environment could also impact on hydrology and hydrogeology conditions present. However, the mitigation measures described in Chapter 11 – Land, Soils & Geology, and those relevant in Chapter 12 – Water, once in place, will result in no potential for impact when these topics do interact.
- **Material Assets –** Resource and waste minimisation and management play a key role in minimising Land Soils and geology impacts. Mitigation measures described in Chapter 8 – Climate, and those relevant in Chapter 14 – Material Assets, once in place, will result in no potential for impact when these topics do interact.

15.11. Water

Water attributes interact with other environmental attributes are summarised as follows: -

- **Population & Human Health** - Potential impacts on the receiving hydrology and hydrogeology environment could also impact on human health. However, the mitigation measures described in Chapter 12 – Water, and those relevant in Chapter 4 – Population and Human Health, once in place, will result in no potential for impact when these topics do interact.
- **Biodiversity** - Potential impacts on the receiving hydrology and hydrogeology environment could also impact on biodiversity conditions present, due to indirect connectivity. However, the mitigation measures described in Chapter 12 – Water, and those relevant in Chapter 5 – Biodiversity will ensure that this will not occur.
- **Land, Soils & Geology** - Potential impacts on the receiving hydrology and hydrogeology environment could also impact on land, soils, and geology conditions present. However, the mitigation measures described in Chapter 12 – Water, and those relevant in Chapter 11 – Land, Soils and Geology will ensure that this will not occur.

15.12. Cultural Heritage

No direct or indirect effects are predicted to occur due to interactions with cultural heritage and other environmental aspects during the construction or operational phases of the proposed development.

15.13. Material Assets

Traffic is one of the environmental attributes typically assessed under Material Assets. For the purposes of this EIAR a full Traffic Impact Assessment has been undertaken and is presented in Chapter 10 – Traffic, along with all relevant mitigation measures.

Material Assets attributes interact with other environmental attributes as outlined in Chapter 14 of this EIAR and summarised as follows: -

- **Land, Soils and Geology** – Potential impacts could arise from waste soils / materials generated during the proposed development. However, the mitigation measures described in Chapter 14 – Material Assets, and those relevant in Chapter 11 – Land, Soils and Geology, once in place, will result in no potential for significant impact when these topics do interact .
- **Climate –** Resource and waste minimisation and management play a key role in minimising climate related impacts. Mitigation measures described in Chapter 14 – Material Assets, and those relevant in Chapter 8 – Climate, once in place, will result in no potential for significant impact when these topics do interact .

16. Schedule of Environmental Commitments

- All mitigation and monitoring commitments detailed within this EIAR have been included in a separate compendium and are presented in Table 16.1 and 16.2 below. Together these tables form the Schedule of Environmental Commitments which will be implemented as required during the construction and operational phases of the proposed development at Dublin Airport. In addition, the following reinstatement commitments must be fully implemented upon completion of the construction phase:
  - The temporary construction compound is to be removed upon completion of the construction phase. Such areas are to be reinstated in accordance with the landscape architects plan and engineer's drawings;
  - All construction waste and / or scrapped building materials are to be removed from the Site on completion of the construction phase;
  - Oil, fuel etc. storage areas are to be decommissioned on completion of the construction phase; and,
  - Any remaining liquids are to be removed from Site and disposed of at an appropriately licenced waste facility.
- All of the mitigation and monitoring commitments detailed below have been incorporated into the Outline Construction Environmental Management Plan (CEMP) submitted as part of this planning application; this is a live document which will be further added to in the Detailed CEMP prepared by the Contractor and will include any future additional mitigation measures (including any planning conditions etc.) as may be required.

Table 16-1 - Schedule of Environmental Commitments – Mitigation Measures (Construction and Operational Phases)

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 4 – Population and Human Health	The proposed development will have minor adverse effects during the construction and operation phase on population and human health as stated above in Table 4-3. However, mitigation measures as presented within the relevant technical chapters (Chapter 7 - Air Quality; Chapter 8 – Climate; Chapter 9 – Noise and Vibration; Chapter 11 – Land, Soils and Geology; and Chapter 12 – Water) and Chapter 16 - Schedule of Commitments, will be implemented as part of the proposed development		
Chapter 5 – Biodiversity	Construction phase ecological mitigation measures shall be developed and undertaken in relation to sensitive receptors (e.g. the Santry River) in close proximity to the proposed development site. **Protection of Sites Designated for Nature Conservation** Protection of sites designated for conservation, and the features of interests associated with designated sites, is through prevention of potential impacts to the aquatic environment during the construction phase. Mitigation measures as set out in Chapter 11 – Land, Soils and Geology; and Chapter 12 – Water will be implemented during the Construction phase, ensuring water quality of the Santry River is not negatively affected during the construction phase of the proposed development. These mitigation measures will ensure that instream works do not negatively impact the Santry River and also that surface water run-off quality is appropriately treated and ensured before it discharges to the river. Works will follow best practice guidance as outlined in *Guidelines on the Protection of Fisheries during Construction Works in and Adjacent to Waters* (IFI, 2016). With the implementation of mitigation measures, effects on sites designated for nature conservation will imperceptible. **Mitigation of habitat loss/damage during construction** Boundary hedgerows are to be retained on-site. Site boundaries will be protected from any accidental damage during construction by means of exclusion through use of fencing. Measures will be taken by the Contractor to ensure that trees and hedges being retained are incorporated into the development without being impacted upon. With the implementation of mitigation measures the effects to retained habitats will be imperceptible. Site clearance of potential bird nesting habitat is detailed below. To compensate for the loss of treeline and hedgerow habitat substantial native tree and hedgerow planting will be planted on the Site and existing hedges which are to be retained will be reinforced with native planting. This will reduce the impact of the proposed development upon habitats in the area and there will be no significant long term effect upon habitats due to the provision of substantial native and pollinator friendly habitats proposed for the Site (refer to Landscape Planting Plan). Landscape enhancement measures are outlined in greater detail below in Section 5.5.1.9.		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 5 – Biodiversity	**Prevention of pollution to surface waters** Mitigation measures as set out in Chapter 11 – Land, Soils and Geology; and Chapter 12 – Water will be implemented during the Construction phase to avoid any impacts to the water quality of the Santry River. An Ecological Clerk of Works (ECoW) will be appointed by the Contractor in advance of construction. All in-stream works carried out within the ecologically sensitive area of the Santry River will be supervised by a suitably qualified ECoW. The ECoW will: - • be a full member of a relevant environmental institute, such as the Chartered Institute of Ecology and Environmental Management (CIEEM), the Institute of Environmental Management, or equivalent; and • have demonstrable experience with overseeing construction sites. In the detailed CEMP, which the Contractor will be required to prepare and adhere to, the Contractor will provide all necessary method statements to the ECoW to demonstrate how mitigation measures within this EIAR will be implemented. Such method statements will include the installation and removal of silt control measures (silt fences). The ECoW will be responsible for monitoring the Contractor, and (importantly) identifying to the Contractor any additional or refined mitigation measures (i.e. adaptive management measures required). The ECoW will concisely report the findings of monitoring, including any adaptive management measures recommended to the Contractor, and the effectiveness of same. The ECoW will have the authority to ensure all mitigation measures are being implemented effectively and will have the authority to stop works activities if required. The ECoW and Site Manager will deliver site induction and training to all construction personnel prior to commencement of construction activities. The Contractor will maintain a record of training completed. The ECoW will monitor Met Éireann's weather forecast and will instruct the Contractor that works within the Santry River will not be permitted within 24hrs of Met Éireann issuing a yellow, orange or red weather warning. The ECoW will monitor all construction works within the Santry River features which has connectivity to European sites. The Contractor (following ECoW advice and recommendations) will be responsible for the implementation of mitigation measures. In the unlikely event that the implemented measures are not performing effectively, emergency measures will be put in place e.g. bunding or spill kits and all works will cease immediately. Such measures are included in an Emergency Response Plan (ERP) which is included in the submitted Outline CEMP (AtkinsRéalis, 2024) which the Contractor will be required to adhere to. This will ensure that mitigation measures are responsive to unexpected issues that may arise on-site during the construction works.		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 5 – Biodiversity	With the implementation of mitigation measures, effects on the water quality of the surface water feature within the proposed development site (and subsequently the aquatic environment), will be temporary and slight adverse at a localised level. Bats **Loss of Foraging and Commuting Habitat** Loss of commuting and foraging habitat at the proposed development site will be mitigated by the landscaping proposals, which include hedgerow planting and woodland mix planting. Boundary treelines and hedgerows are to be retained and in addition the specific landscaping design incorporates additional planting of an ecological buffer zone along the riparian corridor of the Santry River. These measures are included in the design so as to ensure connectivity between habitats and will ensure important bat flight lines, foraging areas and commuting routes are provided for to avoid impact on foraging and commuting bats. Planting schemes should ensure connectivity to linear/ woodland habitats in the wider landscape. It is noted that the landscaping proposals also include retention of hedgerow and boundary treeline and the planting of hedgerow where none is currently in situ. In the long term, once landscaping has established, the effects on local foraging bats will be imperceptible. **Lighting** To minimise disturbance to bats that are active at night, no construction operations will be undertaken during the hours of darkness. If construction lighting is required during the bat activity period (dusk April to September), lighting shall be directed away from all hedgerow/ treeline habitats to be retained. This can be achieved by using directional lighting (i.e. lighting which only shines on the proposed works and not nearby countryside) to prevent overspill. With the aforementioned construction phase lighting measures, significant adverse effects to bats are not anticipated. Effects to bats from construction phase lighting are considered to slight adverse over the short term at a local level. **Birds** Removal of nesting habitat (hedgerows, treelines utilised by local and common bird species) will be carried out outside the breeding bird season from 1st March to 31st August inclusive. Where nesting habitat clearance cannot be avoided during this period the NPWS will be consulted in advance and if, in consultation, it is deemed necessary then a suitably qualified ecologist will be appointed by the Contractor to oversee clearance of nesting habitat and ensure the area is free of nesting birds. The appointed ecologist will develop a method statement for the nesting habitat clearance in consultation with local NPWS staff. The comprehensive landscaping design calls for the planting of native trees and plant species suitable for pollinating insect species. The landscape design provides for a net gain in suitable bird nesting and foraging habitat. Given there will be a loss of hedgerow and treeline habitats there will be a slight adverse effects to local bird populations over the medium term until landscaping has established.		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 5 – Biodiversity	**Terrestrial mammals** During the construction phase the Contractor will adhere to the '*Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes*' (NRA 2006). The Site and all areas within 150m around the perimeter of the Site will be resurveyed for badger activity and the presence of setts by a suitably qualified ecologist (appointed by the Contractor) prior to the commencement of construction activities. Should an active sett be noted within the Site or survey area, NPWS will be informed and consulted. The suitably qualified ecologist will develop a method statement in agreement with NPWS for construction activities near an active badger sett. During the construction phase no works will be undertaken during night time hours and as such the construction activities will not take place whilst local badgers are foraging. During the construction phase the following standard management and protection measures will be implemented during the construction works and monitored by the project ecologist: • No excavations are to be left uncovered overnight or without a means of egress (e.g. a ramp or sloped plank) to prevent badgers from falling in or entering in search of food and becoming trapped; • No storage units are to be left open overnight to prevent badgers from entering in search of food and becoming trapped; • All food waste is to be properly secured and disposed of to avoid attracting badgers to the Site; • No toxic, poisonous or potentially harmful substances or materials are to be left unsecured overnight; and, • Should any new badger setts or mammal burrows be discovered within the Site or immediately adjoining areas the project ecologist is to be contacted for immediate inspection, advice and liaison with NPWS as necessary. There will be a loss of a small area of potential badger foraging habitat, however, given the wide availability of lands to the south and east of the proposed development site and the fact that no evidence of badgers (or other terrestrial mammals) has been recorded in the proposed development site, the effects to local foraging badgers will be slight adverse over the long term. The proposed development site is fenced in on three sides with the runway to the north, car park to the east and industrial buildings to the south, as such the proposed development site does not provide for an ecological corridor for local terrestrial mammas. As such, the proposed development will have no adverse effect on the commuting routes of terrestrial mammals. **Invasive species prevention** No legally restricted invasive species, such as Japanese knotweed, have been recorded within the proposed development site. Strict bio-security protocols will be implemented during the construction phase so as to ensure no imported materials potentially contaminated with invasive plant species are brought to site. The Contractor will		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 5 – Biodiversity	source materials from reputable sources and all materials will be visually inspected for any evidence of invasive species. Given the inclusion of biosecurity measures the effects from invasive species will be imperceptible. **Additional Construction Phase Ecological Mitigation Measures** With regard to potential effects on ecological features the following mitigation measures are proposed: • The Contractor shall employ good practice environmental and pollution control measures with regard to current best practice guidance such as Environmental Good Practice On-site Guide (CIRIA, 2018); • The construction management of the Site will take account of the recommendations of the Construction Industry Research and Information Association (CIRIA) guides 'Control of Water Pollution from Construction Sites' and 'Groundwater control - design and practice' to minimise as far as possible the risk of pollution; • All of the mitigation measures for the protection of soils listed in Chapter 11 Soils will be implemented onsite during the construction phase; • The Contractor shall take all necessary precautions to potential impact upon aquatic species of the Santry River from construction activities. The mitigation measures for prevention of potential surface water impacts as detailed in Water Chapter 12 shall be implemented; • The Contractor shall take all necessary precautions to prevent potential impact upon aquatic species of the Santry River via the local groundwater body. All groundwater mitigation measures as outlined in Chapter 12 - Water shall be implemented; and, • The Contractor shall take all necessary precautions to prevent potential impact upon habitats and species from dust generated during the construction phase. All air quality mitigation measures as outlined in Chapter 7- Air Quality shall be implemented. The above mitigation measures will form part of the Outline Construction Environmental Management Plan (CEMP) submitted as part of this planning application, and which will be further added to by the Contractor within the project-specific Detailed CEMP which will be in operation during the construction phase. **Design Measure Mitigation** **Landscaping** A comprehensive landscaping design has been developed for the Site which will include for additional boundary planting and the creation of an ecological zone along the riparian corridor of the Santry River. In line with FCC Biodiversity Action Plan and the All Ireland National Pollinator Plan and in order to create a biodiversity net grain at the Site the landscaping plan will include areas of ecological enhancement such as substantial areas of native tree planting.		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 5 – Biodiversity	There are 91 no. standard sized trees included within the proposal including oaks, alders and sycamores. The soft landscaping design includes for 4,448m^2 of woodland mix and 562m linear length of new hedgerow including only native species. This planting is comprised of an appropriate mixture of native trees and shrubs, preferably of local provenance, and includes species attractive to pollinators. The planting will incorporate a range of species that will attract feeding invertebrates, including moths, butterflies and bees. The mixtures of flowering plants, trees and shrubs will encourage a diversity of insects to sustain bats and other wildlife throughout the year. The landscape planting design provides for a net gain in number of trees within the Site. Refer to Landscape Planting Plans for details of the landscaping design (Appendix 6.4 – Volume 3 Appendices).		
	The following operational mitigation measures will be implemented through the design of the proposed development (e.g. lighting, drainage, landscaping etc.), or by those in charge of maintenance and management of the development. **Lighting** The design of the lighting within and around the proposed development has been designed to be cognisant of minimising effects on local nocturnal species, such as bats and badgers, and has been developed so as to allow for a darker area on the western side of the Site. The lighting scheme for the Site has been developed with the following principals; only illuminating what needs to be illuminated (e.g. light directed to the car park only), reducing night time light levels, reducing the height of the luminaires, shielding of luminaires and correct choice of light (e.g. a warm white spectrum <2700 Kelvins). Project specific lighting designs include for: • All luminaires shall lack UV/IR elements to reduce impact; • LED luminaires shall be used due to the fact that they are highly directional, have lower intensity, have good colour rendition and dimming capability; • A warm white spectrum <2700 Kelvins shall be used to reduce the blue light component of the LED spectrum; • Luminaires shall feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats; • Column heights have been carefully considered to minimise light spill. The shortest column height allowed (6m) shall be used on the western side of the Site; • Only luminaires with an upward light ratio of 0% and with good optical control shall be used; • Luminaires shall be mounted on the horizontal, i.e. no upward tilt;		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 5 – Biodiversity	• The lighting scheme has been designed in accordance with guidance contained in; *Institution of Lighting Professionals; Guidance Note 08/18; Bats and artificial lighting in the UK* (ILP 2018). • Whilst the lighting design has been developed with cognisance of the prime bat foraging areas within the proposed development site there will areas of the proposed development site which are subject to more illumination that currently exists. As such, during the operational phase of the proposed development effects on foraging bats from lighting of the proposed development will be slight adverse on the long term. **Surface water drainage** Stormwater management for the proposed development is designed to comply with the Greater Dublin Strategic Drainage Study (GDSDS) and CIRIA Design Report C753 'The SuDS Manual'. In addition, the storm drainage system has been designed in accordance with the key documents and standards as listed below; • Fingal County Council Development Plan, 2023 – 2029; • Dublin Airport Local Area Plan, 2020; and, • Dublin Airport Sustainable Drainage Policy Document. Sustainable drainage (SuDS) is a key focus for the entire design of the development. Along with porous paving for parking areas, the design calls for the inclusion of filter drains, interceptors and underground attenuation. Refer to drainage design details in the Engineering Report accompanying this report (Document Ref; 21081-ATK-SCS-01-XXX-RP-C-XXX-0002). During the operational phase of the proposed development routine maintenance of the car park will be required. Section 12.7.2 in Chapter 12 Water outlines mitigation measures to be implemented during routine maintenance of the proposed car park. The residual impact on surface water quality of the Santry River, resulting from routine site maintenance activity during the operational phase, is adverse, imperceptible and temporary, taking account of the relevant mitigation measures. **Landscaping Establishment** The landscape design calls for an ecological zone along the riparian corridor of the Santry River. This planted buffer zone will ensure the area provides for future bat flight lines. Once operational the implementation of the landscape plan and compensatory habitat such as additional planting will be inspected by the Contractor within one year post planting. If measures have failed due to lack of management an alternative solution will be proposed by the Contractor. Operational phase monitoring (in order to ensure the continued success of the landscape features) shall be undertaken by those in charge of the maintenance and management of the development site. Given the inclusion of the comprehensive landscape measures, following establishment of planting, there will be a net gain in terms of the number of trees within the proposed development site. The creation of the riparian ecological corridor along the watercourse, and also the removal of cattle (poaching) from the watercourse, will also increase		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
	the ecological value of the watercourse and riverbanks within the proposed development site. As such, once landscaping has established, there will be a long term positive effect as a result of the landscaping measures.		
Chapter 7 – Air Quality	The proposed development has been assessed as having a low risk of dust soiling impacts and a low risk of dust related human health impacts during the construction phase as a result of earthworks, construction and trackout activities (see Section 7.2.3). Therefore, the following dust mitigation measures shall be implemented during the construction phase of the proposed development. These measures are appropriate for sites with a low risk of dust impacts and aim to ensure that no significant nuisance occurs at nearby sensitive receptors. The mitigation measures draw on best practice guidance from Ireland (DCC, 2018), the UK (IAQM (2024), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997). These measures will be incorporated into the overall Construction Environmental Management Plan (CEMP) prepared for the site. The measures are divided into different categories for different activities. *Communications* • Develop and implement a stakeholder communications plan that includes community engagement before works commence on site. Community engagement includes explaining the nature and duration of the works to local residents and businesses. • The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details. *Site Management* • During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions. Dry and windy conditions are favourable to dust suspension therefore mitigations must be implemented if undertaking dust generating activities during these weather conditions. • A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out. • *Preparing and Maintaining the Site* • Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. • Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site. • Avoid site runoff of water or mud. • Keep site fencing, barriers and scaffolding clean using wet methods.		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 7 – Air Quality	• Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below. • Cover, seed or fence stockpiles to prevent wind whipping. *Operating Vehicles / Machinery and Sustainable Travel* • Ensure all vehicles switch off engines when stationary - no idling vehicles. • Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable. • Impose and signpost a maximum-speed-limit of 15 kph haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate). • Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials. • Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing) *Operations* • Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g., suitable local exhaust ventilation systems. • Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. • Use enclosed chutes and conveyors and covered skips. • Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. • Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods. *Waste Management* • Bonfires and burning of waste materials is not permitted. *Measures Specific to Earthworks* • Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. • Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 7 – Air Quality	• Only remove the cover in small areas during work and not all at once. • During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust. *Measures Specific to Construction* • Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. • Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. • For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust. *Measures Specific to Trackout* • A speed restriction of 15 kph will be applied as an effective control measure for dust for on-site vehicles. • Avoid dry sweeping of large areas. • Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. • Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. • Record all inspections of haul routes and any subsequent action in a site log book. • Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned. • Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). • Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits. • Access gates to be located at least 10 m from receptors where possible. *Monitoring* • Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 7 – Air Quality	surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary. • Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.		
Chapter 8 – Climate	Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. Best practice measures to reduce the embodied carbon of the construction works include: • Appointing a suitably competent contractor who will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled; • Materials will be reused on site where possible; • Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods; • Ensure all plant and machinery are well maintained and inspected regularly; • Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site; and • Sourcing materials locally where possible to reduce transport related CO_2 emissions. In terms of impact on the proposed development due to climate change, during construction the Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will be required to mitigate against the effects of fog, lighting and hail through site risk assessments and method statements.		
Chapter 9 – Noise and Vibration	The noise and vibration impact assessment has concluded that significant effects associated with construction are not expected. The following noise and vibration reduction measures are included in order to ensure noise and vibration impacts are controlled using best practice measures. The construction phase of the proposed development will require site clearance, surfacing and general construction, hence avoidance of these elements are not considered appropriate for noise mitigation. • N & V CONST 1: Screening – Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Construction site hoarding will be constructed around the site boundaries as standard. The hoarding will be constructed of a		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 9 – Noise and Vibration	suitable material in order to provide a good level of sound insulation. In addition, careful planning of the site layout will also be considered. The placement of site buildings such as offices and stores will be used, where feasible, to provide noise screening when placed between the source and the receiver. • N & V CONST 2 : Selection of Quiet Plant – This practice is recommended in relation to static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' proprietary acoustic enclosures. The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item should be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action should be to identify whether or not said item can be replaced with a quieter alternative. • N & V CONST 3: Project Programme – The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. During high noise generating works are in progress on a site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to prevent unacceptable disturbance at any time. • N & V CONST 4: The contract documents will clearly specify the construction noise criteria included in this chapter which the construction works must operate within. The Contractor undertaking the construction of the works will be obliged to take specific noise abatement measures and comply with the recommendations of BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise and the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001. Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise and vibration monitoring, where required. • N & V CONST 5: Noise Control at Source – If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control "at source". This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact. Referring to the potential noise generating sources for the works under consideration, the following best practice migration measures should be considered: • For mobile plant items such as dump trucks, excavators and loaders, the installation of an acoustic exhaust and or maintaining enclosure panels closed during operation can reduce noise levels by up to 10 Db. • Mobile plant should be switched off when not in use and not left idling. • For all materials handling ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 9 – Noise and Vibration	• For compressors, generators and pumps, these can be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation. • Demountable enclosures can also be used to screen operatives using hand tools and will be moved around site as necessary. • All items of plant should be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures. • N & V CONST 6: Liaison with the Public – A designated environmental liaison officer will be appointed to site during construction works. Any noise complaints should be logged and followed up in a prompt fashion by the liaison officer. In addition, where a particularly noisy construction activity is planned or other works with the potential to generate high levels of noise, or where noisy works are expected to operate outside of normal working hours etc., the liaison officer will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.		
	The results of the assessment have concluded that once operational, noise impact from the carpark shall be long-term and not significant. Noise mitigation measures are not deemed necessary for the proposed development. During the operational phase of the development, noise mitigation measures with respect to noise associated with car park activities are not deemed necessary During the operational phase of the development, noise mitigation measures with respect to traffic along the surrounding road network from the development are not deemed necessary.		
Chapter 10 – Traffic	The following measures will be adopted around the perimeter of the project for security and protection purposes: • All site access will be well lit, clean, robust level hard-standings, well signed and controlled by experienced gatemen. Doors and gates will be closed at all times when not providing access. • The traffic management team will be clean and well presented at all times. • The contractor's detailed Construction Traffic Management Plan will address the following key issues: - Maintaining free traffic flow along the local road networks. - Ensuring all footpaths and road surfaces are always free from debris. - Ensuring the efficient free flow of operatives entering and exiting the proposed development site. - Managing the distribution flow of materials within the site and debris removal to maintain the required levels of productivity whilst achieving the high-quality standards expected. - Plant and operative segregation during all stages of the proposed development.		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 10 – Traffic	- Robust traffic management principles and practices will need to be enforced to ensure construction traffic does not create congestion and cause inconvenience to the adjacent tenants and the public. - Protection to the public for the duration of the project construction phase on all elevations. • All deliveries will be through regional road R108. The contractor will develop a detailed Logistics Plan to identify the delivery schedule requirements for every delivery. It is anticipated that the contractor will operate a "Just in Time" delivery philosophy to minimise materials stored on site and reduce congestion in and around the works compound.		
Chapter 11 – Land, Soils and Geology	Stripping of hardstanding and topsoil will be carried out in a controlled and carefully managed way, coordinated with the proposed staging for the development, and will be removed from Site as soon as possible. Most of this material (ca. 19,670 tonnes) will be removed for offsite disposal to a suitably licenced / permitted waste facility, with the appropriate soil testing carried out, as detailed below. The Contractor, in consultation with the Client and the Engineer, will be responsible for removing and replacing with suitable material as required. The design of road levels has been carried out in such a way as to minimise cut/fill type earthworks operations. The duration that subsoil layers are exposed to the effects of weather will be minimised. Disturbed subsoil layers will be stabilised as soon as practicable (e.g., backfill of service trenches, construction of road capping layers, construction of building foundations and completion of landscaping). The excavation of material will be minimised as much as possible to reduce the impact on soils and geology. All waste soils (including made ground) will be classified in accordance with the EPA Guidance Document *'Waste Classification, List of Waste & Determining if Waste is Hazardous or Non-Hazardous'* (2015). It will be the Contractors responsibility to ensure that all waste soils are classified correctly and managed, transported and disposed of offsite in accordance with the requirements of the Waste Management Act 1996, as amended, the Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste and any relevant subsequent waste management legislation. It will be the Contractors responsibility to ensure that a project specific Detailed Resource and Waste Management Plan (developed in accordance with relevant 2021 EPA Guidance) is fully implemented onsite for the duration of the project. Further mitigation measures for the prevention of soil / bedrock contamination during construction are proposed below. The Contractor will be responsible for ensuring these measures are fully implemented. Mitigation measures outlined in Chapter 12 - Water are also applicable to the protection of soils and geology during the construction phase: • In the event that ground contamination is encountered beneath the site during the construction works, all works will cease. Advice will be sought from an experienced contaminated land specialist and a phased environmental		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 11 – Land, Soils and Geology	risk assessment (specifically to assess any associated potential environmental and/ or human health risks) will be undertaken in accordance with relevant EPA guidance 'Guidance On The Management Of Contaminated Land And Groundwater At EPA Licensed Sites' (EPA, 2013) and UK Environment Agency Guidance 'Land contamination risk management (LCRM)' (UK EA, 2021). • Earthworks / piling plant and vehicles delivering construction materials to Site will be confined to predetermined haul routes around the Site for each phase of the proposed development; • The need for vehicle wheel wash facilities will be assessed by the Contractor depending on the phasing of works and onsite activity and will be installed as needed, near any Site entrances and road sweeping implemented as necessary to maintain the road network in the immediate vicinity of the Site; • Dust suppression measures (e.g., dampening down) will be implemented as necessary during dry periods; • All excavated materials will be stored away from the excavations / immediate works area, in an appropriate manner at a safe and stable location. The maximum height of temporary stockpiles will be 3m; • A comprehensive monitoring and supervisory regime including monitoring of all excavations and stability assessments as required will be put in place to ensure that the proposed construction works do not constitute a risk to the stability of the Site; • The employment of good construction management practices will serve to minimise the risk of pollution from construction activities at the proposed development in line with the Construction Industry Research and Information Association (CIRIA) publication entitled, Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors, CIRIA - C532 (2001) which are also detailed in Chapter 12 – Water; and, • Specifically, regarding pollution control measures, the following will be adhered to; - Fuels, lubricants and hydraulic fluids for equipment used on the construction Site, as well as any solvents, oils, and paints will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to best codes of practice; - Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the proposed development for disposal or re-cycling; - Any spillage of fuels, lubricants or hydraulic oils will be immediately contained, and the contaminated soil removed from the proposed development and properly disposed of; - All Site vehicles used will be refuelled in bunded and adequately sealed and covered areas in the construction compound area; - All machinery will be serviced before being mobilised to Site;		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 11 – Land, Soils and Geology	- Refuelling will be completed in a controlled manner using drip trays at all times; - Mobile bowsers, tanks and drums will be stored in secure, impermeable storage areas away from open water; - Ancillary equipment such as hoses and pipes will be contained within the bund; - Taps, nozzles, or valves will be fitted with a lock system; - Fuel and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage; - Drip-trays will be used for fixed or mobile plant such as pumps and generators to retain oil leaks and spills; - Only designated trained operators will be authorised to refuel plant on Site; - Procedures and contingency plans will be set up to deal with emergency accidents or spills; - An emergency spill kit with oil boom, absorbers etc. will be kept on-site for use in the event of an accidental spill. A specific team of staff will be trained in the use of spill containment; - Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised on-Site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the Site. This will minimise the risk of soils and bedrock becoming contaminated through Site activity; and, - The highest standards of Site management will be maintained, and utmost care and vigilance followed to prevent accidental contamination or unnecessary disturbance to the Site and surrounding environment during construction. A named person will be given the task of overseeing the pollution prevention measures agreed for the Site to ensure that they are operating safely and effectively. The above mitigation measures will be incorporated (as required) during Detailed Design Stage and form part of the Detailed Construction Environmental Management Plan (CEMP) which will be implemented during the Construction Stage (including initial Site preparatory / enabling works).		
	The potential risk posed by localised car park maintenance as required will be mitigated by the fact that any excavation works will be carried out in localised areas for short durations only, and will generate minor volumes of excavated soils. Specifically, with regards to soils and bedrock the following mitigation measures will be adhered to at both the car park: - • All car park maintenance works will be planned and managed carefully; • Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised on-site is in good working condition. Any equipment not meeting the required standard will not be permitted for use		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 11 – Land, Soils and Geology	within the site. This will minimise the risk of soils, sub soils and bedrock becoming contaminated through operational maintenance activity; • Fuels, lubricants, hydraulic fluids and paints will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment as per best codes of practice; • Any spillage of fuels, paints, lubricants or hydraulic oils will be immediately contained and the contaminated soil / bedrock removed from the car park and properly disposed of in accordance with all relevant waste disposal legislation; • There will be no temporary storage of any fuels, oils or chemicals in the vicinity of shallow excavations; • Excavated soils will be carefully managed to prevent dust nuisance; and. • Soils generated on-site during localised maintenance works will be re-used on-site, where possible, or disposed of appropriately in accordance with all relevant waste disposal legislation.		
Chapter 12 – Water	The Contractor will be responsible for ensuring these measures are fully implemented: • The construction management of the site will take account of the recommendations of the Construction Industry Research and Information Association (CIRIA) guidelines '*Control of water pollution from construction sites. Guidance for consultants and contractors (C532)'* and *'Groundwater control: design and practice (second edition) (C750)'* and CIRIA 2023 '*Environmental good practice on site guide (fifth edition) (C811)'* to minimise as far as possible the risk of pollution. • All of the mitigation measures (for the protection of soils and geology) listed in Chapter 11 will be implemented onsite during the construction phase. • The Contractor will be responsible for ensuring that the existing drainage network along the Santry River will be suitably protected via. the use of physical barriers and signage located a maximum of 15m from river bank on either side of the Santry River. • Under no circumstances, should any material be stored (including stockpiled soils / imported material, and any hazardous material such as fuels, oils, chemicals, and paints etc.) or the proposed site compound be located within the 15m buffer zone along the Santry River which is has been designed as a designated riparian zone. • The Contractor will be required to implement a site-specific water run-off management plan, to be documented within the Detailed Construction Environmental Management Plan (CEMP) which the Contractor will develop prior to commencing any onsite construction works (including any enabling works etc.). • A dewatering plan will be designed by the Contractor as temporary works, including disposal of water to a suitably licenced [wastewater] disposal / recovery facility, and reviewed and approved by daa plc. prior to being fully implemented.		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 12 – Water	• The proposed development will necessitate the installation of 1 no. new culvert and the extension of 1 no. existing culvert within the Santry River. The following mitigation measures will be implemented for the in-stream works at each culvert location; - All in-stream works carried out within the Santry River will be supervised by a suitably qualified Ecological Clerk Of Works (Refer to Chapter 5 - Biodiversity for ECoW details). - Works within the Santry River will not be permitted within 24hrs of Met Éireann issuing a yellow, orange or red weather warning. - Culvert installation works will only be undertaken after and during a period of dry weather when water levels are low. - Culverts will be pre-cast units with no concrete pouring works to be undertaken within the Santry River. - Only clean washed stone will be used for the foundation base of the culverts. All imported stone for use in the streambed will be clear of fines. - Temporary over pumping will be required to facilitate the installation of the culverts as such the works will be undertaken in dry river bed conditions. - Upstream of each culvert works area the watercourse will be temporarily impounded / dammed by use of sand bags (or similar). - A silt fence will also be installed across the watercourse channel immediately downstream of the sand bags / dam area. - A second silt fence will be installed across the watercourse channel downstream of each culvert works area. - The installation of the sand bag dam and associated silt fences will be installed under the supervision of the ECoW. - Flows from upstream of the temporary dam will be over pumped into a settlement tank (or tanks) with any suspended solids in the water allowed to fully settle before discharge to downstream of the culverts works area. - The waters in the settlement tank(s) will be visually inspected by the ECoW to ensure settlement is effective and discharge will only be permitted following adequate settlement of suspended solids. - Dams, silt fences and settlement tanks will be inspected by the ECoW throughout the instream, works to ensure they are functioning effectively. - Foundation stone and precast culvert installation will only commence once the watercourse is dry. - Following the installation of the culverts the sand bags and silt fences will be removed to allow flows through the new culverts.		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 12 – Water	- Downstream surface water quality monitoring, at monitoring location SW-S-3, will continue as part of Dublin Airport's ongoing water quality monitoring programme. • In order to prevent any potential surface water / groundwater impacts via. release of hydrocarbon / chemical contaminants the following standard measures will be implemented: - Fuels, lubricants, and hydraulic fluids for equipment used on the construction site, as well as any solvents, oils, and paints will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to best codes of practice; - Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the proposed development for disposal or re-cycling; • A response procedure will be put in place to deal with any accidental pollution events. Any spillage of fuels, lubricants or hydraulic oils will be immediately contained, and the contaminated soil removed from the proposed development and properly disposed of in accordance with all relevant waste management legislation; • All site vehicles used will be refuelled in bunded and adequately sealed and covered areas in the construction compound area. • Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised on-site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the site. This will minimise the risk of groundwater becoming contaminated through site activity. • All oil stored on site for construction vehicles will be kept in a locked and bunded area; • Generators, pumps, and similar plant will be placed on drip-trays to prevent contamination; • All site vehicles used will be refuelled in bunded areas; • All temporary construction fuel tanks will also be located in a suitably bunded area and all tanks will be double skinned. Relevant Material Safety Data Sheets along with oil absorbent materials will be kept on site in close proximity to any fuel storage tanks or bowsers during proposed site development works; and, • All fuel / oil deliveries to on-site oil storage tanks will be supervised, and records will be kept of delivery dates and volumes. • In order to prevent any potential surface water / groundwater impacts via. release of cementitious materials the following measures will be implemented where poured concrete is being used on site; ▪ The production, transport and placement of all cementitious materials will be strictly planned and supervised. Site batching/production of concrete will not be carried out on site and therefore these aspects will not pose a risk to the waterbodies present, namely any temporarily exposed perched water or the Santry River;		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 12 – Water	▪ Shutters will be designed to prevent failure. Grout loss will be prevented from shuttered pours by ensuring that all joints between panels achieve a close fit or that they are sealed; ▪ Any spillages will be cleaned up and disposed of correctly; ▪ Where concrete is to be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening; ▪ Where possible, concrete skips, pumps and machine buckets will be prevented from slewing over water when placing concrete; ▪ Mixer washings and excess concrete will not be discharged directly into the drainage network, or any drainage ditches, surface water bodies or exposed groundwater; and, ▪ Surplus concrete will be returned to batch plant after completion of a pour. • Foul drainage from site compounds will be directed to the existing wastewater network or will be contained and disposed of off-site in an appropriate manner and in accordance with the relevant statutory regulations. • In the event that ground contamination is encountered beneath the site during the construction works, all works will cease. Advice will be sought from an experienced contaminated land specialist and a phased environmental risk assessment (specifically to assess any associated potential environmental and/ or human health risks) will be undertaken in accordance with relevant EPA guidance '*Guidance On The Management Of Contaminated Land And Groundwater At EPA Licensed Sites'* (EPA, 2013) and UK Environment Agency Guidance *'Land contamination risk management (LCRM)*' (UK EA, 2021). • The above mitigation measures will be included and added to as required by the Contractor within the project-specific Detailed CEMP which will be in operation during the construction phase.		
	With regard to groundwater and surface water quality effects during the operational phase the following mitigation measures are proposed; • Any minor volumes of fuel, oil or chemicals required during routine maintenance works will be brought to and from the site by the maintenance contractor. While temporarily onsite all chemicals will be kept in secure and bunded areas, with relevant Material Safety Data Sheets available onsite. Any fuel / oil tanks temporarily stored on site will be located in a suitably bunded area and all tanks will be double skinned, with oil / chemical absorbent materials held onsite in close proximity to the tanks. Relevant maintenance contractors will be responsible for ensuring that these measures are fully implemented; • Under no circumstances, should any material be stored (including stockpiled soils / imported material, and any hazardous material such as fuels, oils, chemicals, and paints etc.) within the 15m buffer zone along the Santry River which is has been designed as a designated riparian zone;		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 12 – Water	• In the unlikely event of a fuel / oil or chemical spill / leak during routine maintenance works, emergency spill response measures will be implemented with the aim of limiting the volume spilled and recovering as much of the lost product as possible (relevant maintenance contractors will be responsible for ensuring that these measures are fully implemented); and, • A maintenance programme for the proposed surface water drainage system should be implemented. The Contractor, in consultation with the Client and the design team, will be responsible for ensuring that these measures are fully implemented.		
Chapter 13 – Cultural Heritage	The identification of two charcoal rich deposits, which are of archaeological potential, within the proposed development site during the test trenching investigations carried out as part of this assessment will require a programme of archaeological mitigation as the proposed development will have a direct negative impact on both features. The method of mitigation for these features is preservation by record through full archaeological excavation in advance of development works at their locations and this will be carried out under licence by the National Monuments Service. A wider excavation area around both features will be opened in order to reveal their full extent as well as any potential associated features and these areas will extend for 10m from the outermost identified archaeological feature to the edge of the excavation. Following the completion of onsite archaeological excavations, a post-excavation phase of works, including specialist analysis of environment samples, will be carried out. A programme of archaeological monitoring, including the licensed use of a metal detector, of works to facilitate the installation of two culverted crossing points within the drain/stream extending through the proposed development site will also be carried out during the construction phase. In the event that any features of archaeological significance are identified during monitoring in these areas, they will be cordoned off and recorded in situ. The National Monuments Service will then be consulted in relation further mitigation which may include preservation in situ or preservation by record (archaeological excavation) of any identified features. As detailed in Section 13.9, reports on the archaeological excavation and monitoring and specialist analyses will be compiled and submitted to the National Monuments Service, the National Museum of Ireland and the Planning Authority.		
Chapter 14 – Material Assets	The following mitigation measures will be implemented during the construction phase (built services); • Prior to demotion and construction, Ground Penetrating Radar (GPR) surveys will be undertaken to accurately locate existing utilities along the boundaries of the site; • An Outline CEMP has been prepared to support this planning application. Prior to the commencement of construction works the appointed contractor will alter, if necessary, in light of conditions which may be imposed on the permission, the CEMP further. This CEMP will take account of all of the environmental considerations (including water, dust and noise nuisance control; soil / stockpile management; temporary groundwater management; appropriate Site management of compound area; fuel, oil and chemical storage and use; and waste management) set out in the CEMP submitted as part of this planning application;		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 14 – Material Assets	• The construction compound will include adequate temporary welfare facilities including foul drainage and potable water supply; • All newly installed utilities/ services will be assessed, tested and certified as required prior to being fully commissioned; • Connections to the existing and proposed foul networks will be coordinated with the relevant utility provider. All works associated with the existing utilities for the proposed development will be carried out in strict accordance with the guidelines of the relevant stakeholders (specifically ESB, eir and Uisce Éireann), Health and Safety Authority and any additional site-specific requirements; • A copy of all available existing, and as built utility plans will be maintained on Site during the construction of the proposed development. The underground power lines and foul and water mains within the existing Uisce Éireann services, located onsite will be clearly marked and all Site personnel will be made aware of the known location of any onsite underground or over ground services during the construction phase; and, • Local drainage will be surveyed and, where necessary, blocked off to prevent runoff of potentially contaminated surface water entering the surface water drainage system. A detailed Surface Water Management Plan will be included in the CEMP to be prepared by the Contractor, to deal with the treatment of surface water runoff prior to discharge to the site drainage system The following mitigation measures will be implemented during the construction phase (waste); • All waste management procedures implemented onsite during the construction phase will be in accordance with the Outline CEMP submitted as part of this planning application, and a project specific RWMP to be prepared by the Contractor, in accordance with the '*Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects*' (EPA 2021). The RWMP will take account of the relevant requirements of the Outline CEMP, the EIAR and any relevant planning conditions etc., and will be prepared by the Contractor in advance of the commencement of any construction or demolition works. • The contractor will supply all waste containers / skips, as required, for each of the identified waste streams. Waste will be segregated and removed to licensed facilities by licenced hauliers and all containers will be emptied before they are full to avoid overflowing. The contractor is to provide a waste forecast for waste types and quantities expected to be generated. • Good working practices and take back schemes will be used to reduce the amount of waste generated, as an initial step, with waste management routes for each waste stream to be recorded in the site Waste Management Plan. There is a target of 98% diversion of construction waste from landfill to be achieved with a minimum diversion of 90%. In order to reduce waste generation as far as possible, off cuts, surplus materials and packaging is to be returned to suppliers for closed loop recycling, single used plastics are to		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 14 – Material Assets	be avoided where possible and all materials are to be stored correctly to avoid waste generation from damage and contamination of incorrectly stored materials. • All waste materials will be segregated onsite into the various waste streams, via. dedicated skips and storage areas. All waste will be removed from Site by one or more waste haulage contractor(s) who hold a current valid waste collection permit issued by the National Waste Collection Permit Office (NWCPO). All waste materials generated during the construction phase will be removed offsite to an appropriately permitted or licenced waste disposal / recovery facility. All waste removed offsite will be appropriately characterised (under the correct LoW / EWC code), transported and disposed of in accordance with relevant waste management legislation (including but not limited to the Waste Management Act of 1996 and 2001, as amended and all subsequent waste management regulations). All waste management and disposal / recovery records will be maintained onsite throughout the project and will be made available for viewing by the Client, Employer's Representative and statutory consultees (FCC, EPA) as required. • Scheduling and planning the delivery of materials will be carried out on an '*as needed*' basis to limit any surplus materials; • Materials will be ordered in sufficient dimensions so as to optimise the use of these materials onsite, and will be carefully handled and stored so as to limit the potential for any damage; • Where feasible, sub-contractors will be responsible for the provision of any materials they require onsite in order to help reduce any surplus waste; • All loaded trucks entering and exiting the Site will be appropriately secured and covered; • Dust will be controlled at entry and exits to the Site using wheel washes (as required) and/or road sweepers, and tools and plant will be washed out and cleaned in designated areas. Wheel / road sweeper washings will be contained and treated prior to discharge; • Secure lockable and controlled storage to be provided for the storage of chemicals and other hazardous materials, e.g., asbestos; • The Contractor is to provide details of proposed measures to be implemented to mitigate against Foreign Object Debris (FOD) and windblown materials; and, • All waste containers are to be enclosed and lockable to prevent FOD. Mitigation measures will be implemented as required to further manage the potential effects. There will be no likely significant effects associated with waste management during construction.		
	Waste management during the operational phase of the development will be undertaken by private waste contractors (in accordance with statutory waste management and environmental requirements, regional waste related policy, and best practice waste management guidance), and regulated by Fingal County Council. Therefore, no further		

Environmental Topic	Schedule of Environmental Commitments – Mitigation Measures	Construction Phase	Operational Phase
Chapter 14 – Material Assets	mitigation measures are required with regard to the transport and disposal or recovery of all waste streams which will be generated during the operational phase. Mitigation measures will be implemented as required to further manage the potential effects. There will be no likely significant effects associated with waste management during operation.		

Table 16-2 – Schedule of Environmental Commitments – Monitoring Requirements (Construction and Operational Phases)

Environmental Topic	Schedule of Environmental Commitments – Monitoring Measures	Construction Phase	Operational Phase
Chapter 4 – Population and Human Health	The proposed development will have minor adverse effects during the construction and operation phase on population and human health as stated above in Table 4-3. However, mitigation measures as presented within the relevant technical chapters (Chapter 7 - Air Quality; Chapter 8 – Climate; Chapter 9 – Noise and Vibration; Chapter 11 – Land, Soils and Geology; and Chapter 12 – Water) and Chapter 16 - Schedule of Commitments, will be implemented as part of the proposed development.		
Chapter 11 – Land, Soils and Geology	A comprehensive monitoring and supervisory regime including monitoring of all excavations and stability assessments as required will be put in place to ensure that the proposed construction works do not constitute a risk to the stability of the Site. All waste soils (including made ground) will be classified in accordance with the EPA Guidance Document *'Waste Classification, List of Waste & Determining if Waste is Hazardous or Non-Hazardous'* (2015). It will be the Contractors responsibility to ensure that representative soil samples are taken in advance of removal and disposal offsite. As noted previously, it will be the Contractors responsibility to ensure that all waste soils are classified correctly and managed, transported and disposed of offsite in accordance with the requirements of the Waste Management Act 1996, as amended, the Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste and any relevant subsequent waste management legislation.		
Chapter 12 – Water	Regular checks and maintenance of the proposed surface water drainage system should be implemented. daa carries out monthly monitoring of key surface water locations across the airport campus and associated lands, including downstream of the proposed development at SW-S-3. The monitoring programme will continue during both the construction and operational phases of the proposed development.		

	Regular checks and maintenance of the proposed surface water drainage system should be implemented. daa carries out monthly monitoring of key surface water locations across the airport campus and associated lands, including downstream of the proposed development at SW-S-3. The monitoring programme will continue during both the construction and operational phases of the proposed development.		
Chapter 13 – Cultural Heritage Chapter 13 – Cultural Heritage	There are a number of obligatory processes to be undertaken as part of applications to the National Monuments Service for licences to carry out archaeological site excavations and these will allow for monitoring of the successful implementation of the mitigation measures detailed in Section 13.7. A detailed method statement providing written and mapped details on the proposed strategy for these site investigations is required to be included as part of submitted licence applications to the National Monuments Service. This includes the extent of the archaeological works and details on the processes to be enacted in the event that further archaeological features are encountered. Reports on licensed archaeological site investigations are required to be submitted to the National Monuments Service, the National Museum of Ireland and the Planning Authority which will clearly describe the results of all archaeological works in written, mapped and photographic formats. A description of the archaeological excavation results will also be uploaded to the publicly accessible Database of Irish Excavation Reports .		
Chapter 14 – Material Assets	The Contractor will be responsible for maintaining waste records and documentation for the full duration of the construction phase. The Contractor will track and monitor all waste volumes transported offsite. All waste records will be maintained onsite throughout the project and will be made available for viewing by the Client, Employer's Representative and statutory consultees (FCC, EPA) as required.		

17. Future Airport Development

17.1. Introduction

This chapter is intended to give an overview of future developments within Dublin Airport so that the environmental impacts of future plans can be assessed as far as practically possible as part of this EIAR, consistent with the purpose of the EIA Directive.

The proposed development is designed to ensure that Dublin Airport can cater more efficiently for existing staff car parking needs subject to planning permission being granted. It is considered appropriate that the Competent Authority assessing the proposed development would have an overview of long-term Dublin Airport plans, so that the proposed development can be viewed and assessed in the wider context.

There are numerous development proposals required for future airport growth to 40 million passengers per annum which have been submitted for planning permission but not yet decided. Future development proposals will require a grant of planning permission in order to be realised, which in itself will entail planning and environmental impact assessment.

The proposed development is a standalone application and is not reliant on any other project or future airport growth to be realised. The proposed development is designed to ensure that it will have capacity to cater for the planned growth subject to planning permission. Best practice in design of large infrastructure means that it is designed not just to cater for existing requirements but that it is fit for purpose over the entire life of that infrastructure so far as practically foreseeable.

An awareness of future airport plans is relevant in considering the proposed development given the potential for interaction in the future. The future development plans discussed hereafter are listed in relation to the future development in Dublin Airport and do not form part of the current application for the proposed development.

For the purposes of clarity, it is noted that all relevant developments i.e. consented developments and planned projects currently pending a planning decision, and any major infrastructure developments and/or strategic plans or projects which are in the pre-planning stages are assessed in terms of potential cumulative impacts with the proposed development within Chapter 18 – Cumulative Impacts. This chapter (Chapter 17 – Future Airport Development), focuses on all relevant projects / schemes which warrant consideration with respect to potential environmental effects, but which have not yet been consented or lodged, or those that are pending a planning decision and are subject to change before final design is confirmed.

17.2. Assessment Methodology

Preceding chapters in this report have identified the assessment methodology and current State of the Environment in relation to the proposed development. Desk studies (including available surveys) have informed the understanding of current environmental conditions.

The proposed development is assessed, with regards to the potential for environmental effects to arise from other future projects. Projects are broadly described under the following key categories:

- **Lodged Projects** – Projects with which have been lodged for planning and are pending a planning decision; and,
- **Planned Future Projects** – Future projects that are known but have not yet undergone assessment or have been finalised.

Typically, the level of design information available for each of the above categories of projects decreases, as per the above list order. Accordingly, an assessment of the potential environmental effects has been carried out, for each of the above groups of projects as far as is practically possible. It is noted that the assessment is not an EIA and that each project will be subject to assessment when planning application is made.

17.2.1. Limitations & Assumptions

There are numerous future proposals that are still under development and proposed for Dublin Airport with the potential that final proposals may be subject to change in scale, scope and / or nature from those listed below.

Factors include budgetary constraints, safety and security reviews, and the need to ensure proposals meet the constantly evolving needs of passengers and airlines. In the period 2020-2022, the Covid-19 pandemic demonstrated that circumstances, and hence plans, can change unexpectedly and significantly. Such global events and other significant matters external to the aviation sector but which affect the sector are most often unpredictable in advance.

17.3. Future Development Overview

17.3.1. Lodged Projects

17.3.1.1. Airfield Drainage Project (ADP)

The Drainage Master Plan (DMP) is a holistic long-term masterplan for drainage infrastructure at Dublin Airport. The DMP contains daa's commitments to undertaking incremental actions now and as the Airport grows in the future, in line with the masterplan, ensuring that any impacts on water quality of the waterbodies surrounding the airport campus will be positive and support compliance with the water quality objectives of the Water Framework Directive (WFD).

The Airfield Drainage Project (ADP) has been designed to meet all of the objectives of the DMP at project level. The purpose of the ADP will be:

- To provide a nett improvement in the degree of protection afforded to the receiving waters by the surface water management system;
- To optimise the performance of the surface water management system at Dublin Airport for improved efficiency, greater operational flexibility and resilience to a broad range of extreme weather events; and,
- To improve the hydraulic capacity of the surface water network and alleviate historic capacity issues.

The ADP was submitted to FCC for planning in October 2023, and it is intended for the ADP to propose the following:

- Upgrades to existing drainage infrastructure and construction of additional drainage infrastructure to improve performance of the surface water management system at Dublin Airport including:
- a contamination detection and response (CD&R) system comprising detection devices, network decision points (DPs), control kiosks, and ancillary infrastructure including local access roads, local drainage and communications and power ducts;
- clean water supply pipelines consisting of large diameter trunk pipelines;
- airfield contaminated pipelines consisting of large diameter trunk pipelines;
- upgrades to the West Apron surface water collection network including reconfiguration of the existing network, construction of an underground attenuation tank, installation of a local CD&R system, network DPs and a control kiosks, construction of an underground pollution storage tank, a pumping station, and ancillary development including local ductwork, local access roads and local drainage;
- upgrades to the existing surface water collection network in the vicinity of the South Apron including reconfiguration of the existing network, construction of network DPs, upgrade of the existing flow diversion structure (FDS) and reconfiguration of the existing Cuckoo supply channel;
- a central pollution control facility (CPCF) consisting of underground pollution control storage tanks, a pumping station, a discharge pipeline to the Uisce Éireann network, mechanical and electrical equipment, a control building, an electrical substation, and ancillary development including a local access road, local drainage, and ducting;
- a CPCF pipeline consisting of a large diameter trunk pipeline; h) a central supervisory control and data acquisition (SCADA) system comprising kiosks and associated electrical power and signal connections;
- repurposing of the central section of the existing Airfield Trunk Culvert (ATC) as a contaminated pipeline; and ancillary and associated development including pipework, mechanical and electrical service connections and upgrades, temporary compounds and site works.

17.3.1.2. Infrastructure Application

The Infrastructure Application (IA) is a project to increase the passenger capacity of the airport to 40mppa and the infrastructure required to facilitate that growth, likely to be reached post 2030, whilst maintaining service levels at the airport.

Included in the IA are as follows:

- New Apron 7;
- South Apron Expansion;
- North Apron Development;
- Terminal 1 Central Search;

- Long Term Car Parking Red;
- New Staff Car Park North;
- Terminal 2 Multi-Storey Car Park;
- Underpass beneath Runway 16/34;
- Surface Access Infrastructure;
- Airfield Drainage Project; and,
- Construction Compounds.

- AECOM (2023) submitted the EIAR for the IA application to FCC in December 2023. Of note, the IA would also seek permission to raise the annual passenger capacity (currently 32mppa) to 40mppa. The principal operational environmental impact of the IA is likely to be the increase in air and ground traffic movements from Dublin Airport, with associated aircraft / ground noise and greenhouse gas emissions. Construction waste will be generated during the construction phase and this will entail an increase in traffic volumes, including HGV traffic on the major roads around the airport.

The timeline for the construction programme of the IA is anticipated to be ca. 10 - 15 years, offering opportunities to manage the timing of potential impacts to limit their cumulative effects.

17.3.2. Planned Future Projects

17.3.2.1. Capital Investment Programme 2020+

Dublin Airport has been a regulated entity as of 2011, required periodically to submit its proposals for capital investment to the Commission for Aviation Regulation (CAR). In February 2019, the plans for investment to commence the next stage of Dublin Airport's development were submitted to CAR as the Capital Investment Programme (CIP 2020+)[49], with the objective of transforming the airport into a major European airport, welcoming 40 mppa and continuing as one of the top five European transatlantic hubs.

daa is undertaking the CIP 2020+ with significant infrastructural investments that are intended to improve the built environment, from 2022-2026. This programme of incremental infrastructure replacement and upgrades will be delivered in a sustainable manner to enable Dublin Airport maintain existing and future operations subject to planning permission where relevant. The CIP 2020+ informs the projects that should be considered in the Planned Future Projects section of this Chapter.

17.4. Assessment of Lodged and Future Projects

17.4.1. Lodged Projects

17.4.1.1. Airfield Drainage Project (ADP)

The ADP involves drainage system enhancement measures with Dublin Airport. The ADP will operate as part of an integrated airfield-wide surface water management system designed to protect water quality in the receiving waters. It is also proposed to provide hydraulic upgrades to the existing network. The following drainage infrastructure upgrades form part of the ADP Project Element:

- Contamination bifurcation pipeline;
- West Apron network upgrades;
- South Apron network upgrades;
- Central Pollution Control Facility; and,
- Contamination Bifurcation Pipeline

- The ADP is an advanced project submitted to Fingal County Council (FCC) for planning consent in October 2023. Nicholas O 'Dwyer (2023) prepared an EIAR for this project. The proposals include construction of trunk pipelines from the West Apron designed to convey flows from future developments to the west and north-west of the airfield.
- The proposed remote south car park is not located with the same surface water management catchment at Dublin Airport, i.e. the Santry River Sub-catchment, and so surface water run-off from the proposed development will not discharges to the same receiving surface waters as the ADP. Also there is no overlap in the red-line boundary of either project.

[49] https://www.dublinairport.com/corporate/airport-development/cip-2020

- An EIAR was prepared for the proposed ADP project which assessed any likely potential significant environmental effects which may arise from the ADP project, and which will also take account of potential cumulative effects including the proposed development. Based on the justification presented in Table 17.1 it is not likely that significant cumulative environmental effects will arise.

Table 17-1 - Potential Environmental Effects of the Airfield Drainage Application

Environmental Factor	Comments
Population and Human Health	There is potential for loss of amenity associated with traffic, noise, dust and vibration during construction, however this would be minimised through the introduction of construction environmental management and construction traffic management measures. A full assessment of the effects on population and human health was carried out in Nicholas O 'Dwyer (2023) EIAR. Accordingly, the cumulative effects from the proposed development on Population and Human Health, are not likely to be significant.
Traffic and Transport	Traffic around the airport is likely to increase as a result of construction traffic associated with the proposed ADP application. However, based on the location, scale and nature of the proposed ADP project and any likely associated effects with regards to traffic will not be significant (based on the assessments carried out in the EIRA and taking account of proposed mitigation measures). As per the Nicholas O 'Dwyer (2023) EIAR construction of the ADP is ca. 27 months. The anticipated opening year for the proposed development is 2028. Accordingly the cumulative effects from the proposed development on Traffic, are not likely to be significant.
Major Accidents and Disasters	Nicholas O 'Dwyer (2023) EIAR state that '*the majority of worst-case scenarios were deemed to have a low resultant risk level given the primary mitigation measures included in the ADP design.'* The proposed risk to the proposed development from offsite hazards is considered unlikely and the nature of such offsite hazards would not change. Similarly, risk from the proposed development to offsite receptors is considered unlikely. Accordingly, the cumulative effects from the proposed development in relation to major accidents and disasters, are not likely to be significant.
Air Quality & Climate	There is potential for increase in public exposure to short-term concentrations of small particles and pollutants during construction, although construction impacts would be managed by a CEMP. According to the IAQM guidance (2014) should the construction phase of the proposed development coincide with the construction phase of any other developments within 350m then there is the potential for cumulative construction dust related impacts to nearby sensitive receptors. However the proposed development is further than 350m from the ADP. Based on the EIAR (Nicholas O 'Dwyer, 2023), any likely effects with regards to Air Quality and Climate arising from the proposed ADP application, once proposed mitigation measures are in place will not likely be significant. Accordingly the cumulative effects from the proposed development on Air Quality and Climate, are not likely to be significant.
Noise & Vibration	Based on the EIAR (Nicholas O 'Dwyer, 2023) any likely effects with regards to Noise Quality and Vibration arising from the proposed ADP application, once proposed mitigation measures are in place, will not likely be significant. Accordingly the cumulative effects from the proposed development on Noise Quality and Vibration, are not likely to be significant.
Landscape and Visual	Based on the EIAR (Nicholas O 'Dwyer, 2023), any likely effects with regards to Landscape and Visual arising from the proposed ADP application, once proposed mitigation measures are in place, will not likely be significant. Accordingly the cumulative effects from the proposed development on Landscape & Visual, are not likely to be significant.

Cultural Heritage	Based on the EIAR (Nicholas O 'Dwyer, 2023) any likely effects with regards to cultural heritage arising from the proposed ADP application, once proposed mitigation measures are in place, will not likely be significant Accordingly the cumulative effects from the proposed development on Cultural Heritage, are not likely to be significant.
Land, Soils and Geology	There is potential for the mobilisation of contaminants via pathways to subsurface during construction, but such impacts are capable of mitigation through the application of a CEMP. Also potential for loss of soil cover, soil erosion and compaction during construction, but again this can be mitigated through application of a CEMP. The conclusions of this EIAR in terms of the Land & Soils factor are as follows: Following the implementation of the project design, the predicted residual impact on the soil, geological are '*neutral, not significant and short-term'* (Nicholas O 'Dwyer, 2023). Accordingly, based on available information, the cumulative effects from the proposed development on Land, Soils and Geology, are not likely to be significant.
Biodiversity	Construction phase controls and mitigation measures (as per the EIAR) will be implemented during the proposed ADP development. Based on available information it is likely that there will be no significant ecological effects arising from construction works proposed for the ADP project, once mitigation measures are in place. Designated conservation sites will not likely be impacted by the proposed development during construction. The conclusion of this EIAR in terms of the biodiversity factor is as follows: *'In conclusion, during construction the proposed project would be expected to have a minor adverse short-term impact resulting in a temporary slight adverse significance. Mitigation measures are outlined. During operation the long-term impact of the proposed project would be considered to be neutral to slight positive and not significant'* (Nicholas O 'Dwyer, 2023). Accordingly the cumulative effects from the proposed development on Biodiversity, are not likely to be significant.
Water	There is potential for the mobilisation of contaminants via numerous pathways to surface waters and groundwater during construction, but such impacts are likely to be capable of mitigation through the application of a CEMP. The conclusions of this EIAR in terms of the Water factor would be unaffected as, taking account of proposed mitigation measures, any effects on surface water or groundwater will be temporary and slight adverse, during both the construction and operational phase of the proposed development. Based on the EIAR (Nicholas O 'Dwyer, 2023) any likely effects with regards to water arising from the proposed ADP application, once proposed mitigation measures are in place, will not likely be significant. Following the implementation of the project design, and mitigation measures proposed residual impact on the surface water environment once the proposed development is construction phase is as follows: *'Potential surface water contamination is neutral, imperceptible and short-term'.* Following the implementation of the project design, and mitigation measures proposed residual impact on the surface water environment once the proposed development is operational phase is as follows: • *Alteration of surface water flows – positive, significant and long-term impact;* • *Improvement of water quality conditions in Cuckoo stream - positive, significant and long-term impact; and,* • *Change to hydrological regime – neutral, imperceptible and long-term impact.*

	Accordingly, based on available information, the cumulative effects from the proposed development on Material Assets, are not likely to be significant.
Material Assets	There is potential for additional waste to be generated during construction and operation, as well as the use of materials during the construction process. The Resource and Waste Management Plan was prepared for the ADP (Nicholas O 'Dwyer, 2023)….'*The mitigation measures outlined in the RWMP will be implemented in full and will form part of a mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development'* (Nicholas O 'Dwyer, 2023)**.** The conclusions of the Nicholas O 'Dwyer (2023) EIAR in terms of Material Assets (Built Services) are as follows: *'The works contractor will be obliged to put best practice measures in place and work in accordance with the pCEMP measures to ensure that there are no interruptions to service from the existing telecommunications network, watermain, sewer and electrical grid. Any planned interruptions will be agreed in advance with the utilities suppliers. The implementation of mitigation measures and adherence to the pCEMP will ensure that the residual impacts on the material assets during the construction phase will be neutral, imperceptible, and short-term. Following the implementation of the mitigation measures outlined in the CTMP the potential impacts on traffic and transportation are negative, slight, and short term for the construction phase'. As power will be provided from the internal daa supply, there are no predicted impacts associated with power and electricity supply. There are no predicted impacts associated with telecommunications for the proposed development for the operational phase. The implementation of the mitigation measures within each chapter, and detailed above, will ensure that the residual impacts on material assets during the operational phase will be neutral, imperceptible and long-term'* (Nicholas O 'Dwyer, 2023)**.** Accordingly, based on available information, the cumulative effects from the proposed development on Material Assets, are not likely to be significant.

17.4.1.2. Infrastructure Application (IA)

According to the latest projections, provided by daa, potential passenger demand at Dublin Airport will reach 40mppa between 2027 and 2031. Therefore, it is reasonable to assume that daa would seek to have permission for and have aimed to complete construction, providing the infrastructure necessary to allow the airport to operate at 40mppa whilst maintaining service levels, by 2030.

A full Environmental Impact Assessment of the likely significant environmental effects of an airport operating at 40mppa and appropriate mitigation, as required by the EIA Directive, have been presented, and the planning application has been submitted to FCC in December 2023.

The potential for the proposed development to result in likely significant cumulative environmental effects with respect to the Infrastructure Application has been reviewed.

Based on the justification presented in Table 17.2 it is not likely that significant cumulative environmental effects will arise.

Table 17-2 - Potential Environmental Effects of the Infrastructure Application

Environmental Factor	Comments
Population and Human Health	There is the potential for IA to have beneficial effects from airport operations, construction and supply chain jobs created due to increased spending in the local area by employees. There is also potential for loss of amenity associated with traffic, noise, dust and vibration during construction, however this would be minimised through the introduction of construction environmental management and construction traffic management measures. Effects upon the actual and perceived health and well-being of local residents are possible, owing to additional air traffic movements associated with an increase to 40mppa. This is not easy to quantify at this stage; although the number of passengers passing through the airport would be 25% higher than in 2018 this would not necessarily translate into 25% more flights, and aircraft in future are likely to be quieter than at present. Taking into account, that effects from the proposed development (Remote South Staff Car Park) on the Population & Human Health factor would not be likely be significant.
Traffic and Transport	Traffic around the airport is likely to increase as a result of construction traffic, however the extent is not known and will be offset / reduced by the introduction of more sustainable transport options such as BusConnects and Metrolink and implementation of the forthcoming campus Mobility Management Plan. As per the AECOM (2023) EIAR construction of the IA is '*expected to take approximately ten years. For the purposes of this EIAR, construction is assumed to commence at the beginning of 2026 which allows up to two years for the process of gaining planning consent'*. The anticipated opening year for the proposed development is 2028. Accordingly the cumulative effects from the proposed development (Remote South Staff Car Park) on Traffic, are not likely to be significant.
Major Accidents and Disasters	Chapter 18 Major, Accidents and Disasters (Traffic and Transport) of AECOM (2023) state that '*the Proposed Development is assessed as being at risk of minor impact from on-site risks, principally the risks of fire, explosion, or other accidents, during construction. The likelihood of such disasters occurring is assessed as likely (once in 1-10 years). Once operational, the Proposed Development is assessed as being at risk of minor impact from onsite hazards, road traffic accidents being considered the main threat. The likelihood of such disasters occurring is assessed as unlikely (once in 10-100 years). The Proposed Development is assessed as being at risk of minor impact from offsite hazards during both construction and operation. The likelihood of such disasters occurring is assessed as unlikely (once in 10-100 years).'* Chapter 18 Major, Accidents and Disasters (Traffic and Transport) of AECOM (2023) state that '*offsite receptors are assessed as being at risk of limited impact from the Proposed Development, in particular road traffic accidents, during construction. The likelihood of such disasters occurring is assessed as unlikely (once in 10-100 years). Once operational, the Proposed Development will introduce impacts outside the airport as there will be increases to aircraft operations or operational ground traffic generated to allow for an uplift in passenger capacity to 40 million passengers per annum. However, as safety critical infrastructure, the Proposed Development is designed to reduce risk and improve the safety and mitigation will include health and safety measures at site to avoid off-site risks'*.

Environmental Factor	Comments
	Accordingly the cumulative effects from the proposed development (Remote South Staff Car Park) on major accidents and disasters, are not likely to be significant.
Air Quality	There is potential for increase in public exposure to short-term concentrations of small particles and pollutants most commonly associated with road traffic emissions during construction, although construction impacts would be managed by a CEMP. There is potential for increase in public exposure to pollutants most commonly associated with combustion during operation of the IA, but the likelihood is that there would be little change in assessed air quality if the airport was operating at 40mppa. AECOM (2023) EIAR states that '*the assessment has identified that construction phase site emissions can be adequately mitigated to ensure that there is not a significant effect. It has also demonstrated that construction phase traffic movements do not increase exposure to emissions to the extent that they would cause a significant effect… The assessment has demonstrated that operational phase impacts do not increase exposure to emissions to the extent that they would cause a significant effect. Nor will they notably alter odour conditions beyond that currently experienced… The residual cumulative effect therefore remains not significant'.* As per the AECOM (2023) EIAR construction of the IA is '*expected to take approximately ten years. For the purposes of this EIAR, construction is assumed to commence at the beginning of 2026 which allows up to two years for the process of gaining planning consent'.* The anticipated opening year for the proposed development is 2028. Accordingly the cumulative effects from the proposed development (Remote South Staff Car Park) on air quality, are not likely to be significant.
Noise & Vibration	Noise from the airport operating at 40mppa would be expected to increase given the growth in air traffic movements and changes in aircraft movements on the ground, taxiing and engine testing. Overall noise effects are likely to reduce over time if past trends are continued as the fleet is modernised. As per the AECOM (2023) EIAR construction of the IA is '*expected to take approximately ten years. For the purposes of this EIAR, construction is assumed to commence at the beginning of 2026 which allows up to two years for the process of gaining planning consent'.* The anticipated opening year for the proposed development is 2028. Accordingly the cumulative effects from the proposed development (Remote South Staff Car Park) on noise and vibration, are not likely to be significant.
Climate Change	Scope 1+2 carbon emissions from the airport operating at 40mppa would tend to increase, however this would be offset by measures in the Applicant's Carbon Reduction Strategy and incorporated in the IA. Following the recommended adaptation measures there are no risks rated as high or extreme, but rather 19 rated as low and 6 rated as medium under both Representative Concentration Pathways [50](RCPs) scenarios. The risk posed by the identified climate risks reduced greatly once adaptation and monitoring measures are implemented alongside the embedded controls for the Carbon emissions from the construction of the Proposed Development would not be affected by the IA.

[50] IPCC AR5 Synthesis report: https://www.ipcc.ch/site/assets/uploads/2018/02/SYR_AR5_FINAL_full.pdf

Environmental Factor	Comments
	The cumulative effects from the proposed development (Remote South Staff Car Park) in relation to Climate Change, are not likely to be significant.
Landscape and Visual	With the adoption of mitigation measures, the overall effects on landscape character may be considered to be neutral in significance. With the adoption of mitigation measures, the overall effects on visual amenity may be considered to be of neutral in significance. Accordingly the cumulative effects from the proposed development (Remote South Staff Car Park) on Landscape & Visual, are not likely to be significant.
Cultural Heritage	There is potential for physical and setting impacts on known cultural heritage assets, and possible physical impacts on unknown archaeological assets. However, it is unlikely that there would be significant cultural heritage effects as development would be primarily confined to the airport campus. Subject to the implementation of mitigation measures during the construction phase of the development, no residual cumulative impacts on archaeological, architectural and cultural heritage are predicted. Accordingly, the cumulative effects from the proposed development (Remote South Staff Car Park) on Cultural Heritage, are not likely to be significant.
Land, Soils and Geology	There is potential for the mobilisation of contaminants via numerous pathways to subsurface during construction, but such impacts are capable of mitigation through the application of a CEMP. Also potential for loss of soil cover, soil erosion and compaction during construction, but again this can be mitigated through application of a CEMP. The conclusions of this EIAR in terms of the Land & Soils factor would be unaffected based on the following key points: As per the AECOM (2023) EIAR construction of the IA is '*expected to take approximately ten years. For the purposes of this EIAR, construction is assumed to commence at the beginning of 2026 which allows up to two years for the process of gaining planning consent'.* The anticipated opening year for the proposed development is 2028. Accordingly the cumulative effects from the proposed development on noise and vibration, are not likely to be significant. There will be permanent impacts with regards to land (including land take), soils or geology during the operational phase. During the construction phase, taking account of proposed mitigation measures, effects with respect to offsite soil removal is likely to be slight negative and permanent. During the construction phase, taking account of proposed mitigation measures, effects (with the exception of offsite soil removal) will be slight negative and short term in duration. Accordingly, the cumulative effects from the proposed development (Remote South Staff Car Park) on Land, Soils and Geology, are not likely to be significant.
Biodiversity	There is potential for increased disturbance of wintering birds using functional land at the airport by increased noise / visual disturbance from increased aircraft flights and possible increase in bird strikes. Effects on European Sites are also possible with an increase in flights over such locations. A Natura Impact Statement (NIS) was completed for the IA. The NIS concluded that '*in view*

Environmental Factor	Comments
	of best scientific knowledge and on the basis of objective information, that the Proposed Development will have no adverse effect on the integrity of any European site in view of its conservation objectives, either alone or in-combination with other plans or projects'. The proposed development site is comprised of ecologically low value agricultural land. Taking account of proposed mitigation measures, the residual ecological impacts of the development proposals are not expected to be significant and are expected to be localised to the proposed works site and immediate environs. Taking account of proposed mitigation measures and any monitoring requirements, especially in relation to surface water run-off, no cumulative impacts are expected as a result of the proposed development. Accordingly the cumulative effects from the proposed development (Remote South Staff Car Park) on Biodiversity, are not likely to be significant.
Water	There is potential for the mobilisation of contaminants via numerous pathways to surface waters and groundwater during construction, but such impacts are likely to be capable of mitigation through the application of a CEMP. The conclusions of this EIAR in terms of the Water factor would be unaffected as, taking account of proposed mitigation measures, any effects on surface water or groundwater will be temporary and slight adverse, during both the construction and operational phase of the proposed development. As per the AECOM (2023) EIAR construction of the IA is '*expected to take approximately ten years. For the purposes of this EIAR, construction is assumed to commence at the beginning of 2026 which allows up to two years for the process of gaining planning consent'.* The anticipated opening year for the proposed development is 2028. Accordingly the cumulative effects from the proposed development (Remote South Staff Car Park) on Water, are not likely to be significant.
Material Assets	There is potential for additional waste to be generated during construction and operation, as well as the use of materials during the construction but such impacts are capable of mitigation through the application of a CEMP. AECOM (2023) EIAR states that '*As the Proposed Development will not have any significant effects on Material Assets (Built Services), there is no requirement for mitigation to be implemented. No monitoring measures are proposed'.* As per the AECOM (2023) EIAR construction of the IA is '*expected to take approximately ten years. For the purposes of this EIAR, construction is assumed to commence at the beginning of 2026 which allows up to two years for the process of gaining planning consent'.* The anticipated opening year for the proposed development is 2028. Accordingly the cumulative effects from the proposed development (Remote South Staff Car Park) on Water, are not likely to be significant.

17.4.2. Planned Future Projects

This section addresses planned future projects that have been identified in the CIP 2020 but are still at an early design stage and no environmental assessment have been undertaken.

17.4.2.1. Other daa Projects

It is unlikely that any of the other daa projects will lead to significant environmental effects, although they may generate noise and some traffic on the surrounding roads during the construction phase. As these projects are 'business as usual' projects, it is reasonable to conclude that, as the works are of similar scale to current and previous works, the effects on noise and traffic are already part of the Current State of the Environment due to existing ongoing upgrade and maintenance projects.

Table 17-3 lists these projects and gives a brief description of what they entail with emphasis on any potential environmental effects. In some cases, there is potential for interaction with the construction of the proposed development, as they would occur close to or within the site. It is not likely that significant environmental effects would occur as a result of interaction due the nature of the proposed works and distance from sensitive receptors from the site and wider environs and hence will not impact the conclusion of this EIAR.

Table 17-3 - Upcoming daa projects

Project	Details	Comments
Cycle Infrastructure	Development of a number of cycle shelters and a 'cycle-port' on the airport campus.	Currently at Feasibility stage. Based on the scale and nature of the Cycle Infrastructure project, no likely significant cumulative environmental effects will arise.
Cargo Relocations	Development of new cargo facilities and relocation of tenants	Currently at pre-planning stage. Based on the scale and nature of the Cargo Relocations project, no likely significant cumulative environmental effects will arise.
West Apron Plane/Fuel Spur	Development of new fuel spur	Currently at Feasibility stage. Based the scale and nature of the West Apron Plane/Fuel Spur project, no likely significant cumulative environmental effects will arise.
Car Rental	Upgrade Car Rental Facilities	Currently at Feasibility stage. Based the scale and nature of the Car Rental project, no likely significant cumulative environmental effects will arise.

17.5. Summary

Given the information available at this time, an overview and broad assessment of the possible environmental effects of future development plans has been provided. It should be noted that these proposals are likely to change as many have not yet been the subject of preplanning consultations or other stakeholder engagement (including scoping) which may affect the assessment methodology and final designs. Other influencing factors include budgetary constraints, safety and security reviews, and the need to ensure proposals meet the evolving needs of passengers and airlines.

The future development plans discussed in this chapter do not form part of the proposed development and will be subject to requiring full consents and additional environmental assessments as deemed necessary before they can be implemented.

The above assessment does not give rise to any concern about the likely environmental effects of the proposed development when viewed in the context of policy and plans for the future expansion of Dublin Airport and the environmental impact. In addition, it provides the local authority with an overview of future development plans so that, consistent with the purpose of the EIA Directive and case law, account be taken of the impacts of future plans in the context of the assessment of the likely significant environmental effects of the Proposed Development.

18. Cumulative Effects

18.0. Introduction

This chapter assesses the potential for the proposed development to act in combination with committed developments within the vicinity to result in cumulative impacts on the environment. Each of the technical chapters within this EIAR (i.e. Chapters 4 to 14) have considered the potential for cumulative impacts with committed developments in the vicinity of the proposed development.

The EIA Directive states that an EIAR should contain cumulative effects, which are defined as:

'A description of the likely significant effects of the project on the environment resulting from…the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources.'

The cumulative effects assessment considers developments which have potential for cumulative effects with the proposed development and which have planning permission and/ or which are in the planning system but where a planning decision is not expected to have been made by the time the proposed development is operational. Those developments that already exist, including existing facilities in the airport itself, are part of the Current State of the Environment and therefore are already part of the assessment baseline. The assessments of interactions and cumulative effects presented in this chapter draw on the method of assessment and assessment findings reported in Chapters 4 to 14 and information available in the public domain relating to other known schemes within the study area (as described below)

18.1. Methodology

Potential cumulative impacts are defined as 'the addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects' (EPA 2022) and have been considered for each environmental topic within this EIAR.

A summary of all relevant developments i.e. consented developments which have been approved by Fingal County Council and an Bord Pleanála (ABP) and planned projects currently pending a planning decision, and any major infrastructure developments and/or strategic plans or projects which are in the pre-planning stages have been reviewed.

The committed project which have been approved by Fingal County Council and an Bord Pleanála (ABP) within the last 5 years, and/ or which are in the planning system but where a planning decision is not expected to have been made by the time the proposed development is operational have been reviewed as part of the preparation of this EIAR. The majority of these developments have already been constructed or are of small scale in nature (i.e. extension works or property retention works) or are considered to be a reasonable distance from the proposed development and do not warrant further consideration as part of this assessment.

Based on a review of planning records a list of committed developments has been compiled which require further consideration in relation to potential cumulative effects with the Proposed Development, as part of this assessment.

18.2. Cumulative Impact Assessment

Cumulative effects consider the impacts of other schemes which have potential for cumulative effects with the proposed development. As explained above, this chapter focusses on developments which have planning permission and / or which are in the planning system pending a planning decision, but which do not form part of the Current Receiving Environment or the Future Receiving Environment.

These projects have been assessed, as follows:

- Cumulative Impacts Assessment for Projects - daa developments; and,
- Cumulative Impacts Assessment for Projects – wider environs.

Refer to Table 18.1 and 18.2 respectively.

Those developments that already exist, including existing facilities in the airport itself, are part of the Current State of the Environment and therefore are already part of the assessment baseline. Other future airport related projects have been assessed separately within Chapter 17 – Future Airport Development.

Table 18-1 - Cumulative Impacts Assessment for Projects - daa developments

Projects	Project	Project Summary	Project Status / Planning Status	Cumulative Impacts Assessment
F23A/0786	North Apron Operation (FOD/NALMAC)	The development will consist of: a 2 -storey airside operations building of c.1,698 sq.m and c.8.4m in height (max. height of c.9.5m including plant) accommodating a passenger reception centre for airside emergency incidents and primary support function for the airport to include operations, maintenance and storage facilities required for the airfield's foreign object debris and snow bases	Live in Process	Based on the scale and nature of the North Apron Operation project, no likely significant cumulative environmental effects will arise.
F24A/0309E	EV Bus Charging infrastructure	Pantographs and associated infrastructure for EV Bus Fleet	Live in Process Further Information Requested	Due to the location and scale of this project,, it is unlikely there will be significant cumulative effects during construction and operation of the proposed development. No cumulative operational effects are likely. Therefore, no cumulative significant effects are likely to occur.
FW22A/0021	PV Panels	Ground mounted solar photovoltaic (PV) array with associated development and ancillary works	Under Construction	Due to the location (west of the proposed development) of this project, and that the project is at the construction stage, it is unlikely there will be significant cumulative effects during construction and operation of the proposed development. No cumulative operational effects are likely. Therefore, no cumulative significant effects are likely to occur.

Projects	Project	Project Summary	Project Status / Planning Status	Cumulative Impacts Assessment
F19A/0426	Airside Operational Buildings	Animal Welfare Facility, Airside Operations Facilities & Substation	Pre-Commencement	Taking into account the location, nature and scale of the proposed development for the Airside development, and based on available planning documentation submitted for the project significant cumulative environmental effects (Animal Welfare Facility, Airside Operations Facilities & Substation) are not likely to occur.
F20A/0553	Terminal 1 Upgrade	Façade and office upgrade	Construction Underway	Taking into account the location, nature and scale of the proposed development for the Terminal 1 development, and based on available planning documentation submitted for the project significant cumulative environmental effects (Façade and office upgrade) are not likely to occur.
F20A/0550	North Apron Extension, Apron 5H	Extension of North Apron for 12 no. replacement aircraft stands & ground servicing equipment area	Construction Underway	Due to the location (North Apron), nature and scale of the scheme, it is unlikely there will be significant cumulative effects during construction. No cumulative operational effects are likely. Therefore, no cumulative significant effects are likely to occur.
FS5/024/20	South Apron Widening	Enhancement of taxiway system to ease airfield congestion	Underway	Based on the nature, location and scale of the development, no cumulative significant effects are likely to occur.
F23A/0121	South apron Animal Welfare Relocations	Planning amendment to F19A/0426	Underway	Based on the nature, location and scale of the development, no cumulative significant effects are likely to occur.

Projects	Project	Project Summary	Project Status / Planning Status	Cumulative Impacts Assessment
F16A/0155 ABP: 247299	Dublin Airport Central	Demolition and part demolition of buildings to provide for 4 no. office blocks and other works at the former Aer Lingus Head Office Building and modifications to F14A/0436 for new access road	Construction Underway	Based on the nature, location and scale of the development, no cumulative significant effects are likely to occur.
F21A/0255	T2 Hotel	410 bedroom hotel with pedestrian link	Pre-Commencement	Based on the nature, location and scale of the development, no cumulative significant effects are likely to occur.
F20A/0668 ABP Ref: V Add ABP Ref: ABP-314485-22	CTPRO/Relevant Action	Change to permitted runway operations. (Relevant Action)	Live – In Process	This scheme relates to the night-time use of the runway system at Dublin Airport. Due to the programme, nature and scale of the scheme it is unlikely there will be significant cumulative effects during construction. No cumulative operational effects are likely. No significant cumulative effects are likely to occur.
F22A/0460	Underpass	Airfield Underpass of Runway 16/34	Pre-Commencement	Based on the location nature and scale of the proposed development no likely significant effects are anticipated. No significant cumulative effects are likely to occur.
F23A/0245	Hangar 7 (watching brief)	Application by RYA for new aircraft hangar (for 4no. Aircraft)	Live – In Process	Taking into account the location, nature and scale of the proposed development, and based on available planning documentation submitted for the Hanger 7 project; significant cumulative environmental effects (with respect to the proposed Hanger 7 project) are not likely to occur.

Projects	Project	Project Summary	Project Status / Planning Status	Cumulative Impacts Assessment
				No significant cumulative effects are likely to occur.
F23A/0132	North Apron Extension	Extension of North Apron to accommodate Hangar 7	Pre-Commencement	Taking into account the location, nature and scale of the proposed development, and based on available planning documentation submitted for the North Apron Extension project; significant cumulative environmental effects (with respect to the proposed North Apron Extension project) are not likely to occur. No significant cumulative effects are likely to occur.
F23A/0301	Customs Border Protection and South Apron Support Centre	US Pre-clearance and new pier and construction support centre	Live – In Process	Taking into account the location, nature and scale of the proposed development, and based on available planning documentation submitted for the Customs Border Protection and South Apron Support Centre project; significant cumulative environmental effects are not likely to occur. No significant cumulative effects are likely to occur.
Multiple	Noise Monitoring Terminals	NMT's at various locations (outside airport boundary)	Live – In Process	Based on the nature and scale of these projects, it is not anticipated that significant cumulative effects are likely to occur. Additionally, each of these projects will require separate planning applications prior to noise monitoring terminals being erected and environmental assessments will be undertaken as required.

Table 18-2 - Cumulative Impacts Assessment for Projects - Wider Environs[51]

Refer Number	Project Applicant	Project Summary	Cumulative Impacts Assessment
ABP Ref: NA29N.314724	MetroLink Rail Order Application	This project comprises the development of a proposed railway, approximately 18.8 kilometres in length, which is mostly underground, through Swords, Dublin Airport, Ballymun, Glasnevin and City Centre to Charlemont, Co. Dublin. It includes a 9.4km section of single bore tunnel running beneath Dublin City Centre running from Charlemont to Northwood Station and a 2.3km section of single bore tunnel running beneath Dublin Airport. This application was lodged by TII (accompanied by an EIAR and NIS) and is due to be decided by 22/05/2023. The construction period provided for in the draft Railway Order is ten years from the date it comes into effect. The works will generally comprise but are not limited to the construction of a Railway approximately 18.8 kilometres in length which is mostly underground. It includes a 9.4km section of single bore tunnel running beneath Dublin City Centre running from Charlemont to Northwood Station and a 2.3km section of single bore tunnel running beneath Dublin Airport. Tunnel sections include intervention access facilities for emergency services including Dublin Airport. Tunnel Portal structures will be provided including at Dublin Airport. North of Dublin Airport the railway will emerge from tunnel and will run at surface level and in cut and cover structures to Estuary Station. There will be a total of 16 stations, including at Dublin Airport. The works will also include railway signalling, command and control and communications systems; provision of electrical substations; establishment of temporary construction compounds; establishment of	The extent of the proposed works in the vicinity of Dublin Airport comprises tunnelling, emergency access, Dublin Airport station, north portal and south portal, and associated site compounds (3no.). Subject to the outcome of the planning and procurement processes. The Metrolink is to commence preliminary construction in ca. 2025. Taking into account the nature and scale of the proposed development and based on available planning documentation submitted for the proposed MetroLink project, significant cumulative environmental effects (with respect to the proposed MetroLink project) are not likely to occur.

[51] A search of the following sites / planning portals was undertaken on 26/01/2024:

- Fingal County Council Planning Search - https://www.fingal.ie/view-or-search-planning-applications
- An Bord Pleanála - https://www.pleanala.ie/en-ie/Map-search
- Transport Infrastructure Ireland - https://www.tii.ie/projects/
- Uisce Éireann - Projects | Uisce Éireann (formerly Irish Water)
- MyPlan.ie; National Planning Application Map Viewer - https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=9cf2a09799d74d8e9316a3d3a4d3a8de

Refer Number	Project Applicant	Project Summary	Cumulative Impacts Assessment
		temporary traffic management and road diversions; and other infrastructural modifications to facilitate the overall project.	
ABP Ref: PA06F.312131	Greater Dublin Drainage Project	This project consists of a new wastewater treatment plant, sludge hub centre, orbital sewer, outfall pipeline and regional biosolids storage facility	This project is predominantly linear in nature and is located ca. 0.6km south of the proposed development at their closest with the proposed biosolids storage facility located ca. 1.8km west of the proposed development. There is potential for cumulative effects from construction. However, given the nature and scale of the project (and the fact that an Environmental Impact Assessment was submitted to support the planning application) it is unlikely there will be significant cumulative effects during construction. No cumulative operational effects are likely.
F17A/0244	Dublin Cemeteries t/a Glasnevin Trust	Permission for the installation of 1 no. ecolation unit, associated internal alterations and plant area within the existing crematorium building (permitted under Reg. Ref: F14A/0216). The proposal also seeks permission for the retention and completion of the car park adjacent to the crematorium to provide 95 no. car parking spaces, 11 no. car parking spaces adjacent to the substation and lodge, 24 no. car parking spaces at the Entrance Plaza together with associated landscaping, upgrade of internal road network, traffic management measures including electronic barrier and site works.	Due to the location of the scheme, ca. 4km east of the Proposed Development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.
FW23A/0250	HPREF Dublin Office Dev Co 1 Limited	Permission for construction of 1 no. light industrial unit, including ancillary office use / visitor centre / staff facilities / reception areas over two levels (Unit P2) with a gross floor area (GFA) of c. 10,106 sq.m (including 1,424 sq.m of ancillary welfare, reception, visitor, and office space). Provision of 105 no. car parking spaces. Provision of an ESB substation and switchroom . Provision of a service yard and loading bays. Provision of 2 no. sprinkler tanks, a pumphouse a storeroom with a recycling, and bin store along with ancillary works including landscaping and area of integrated constructed wetland.	This project is located ca. 0.8km south east of the proposed development and there is potential for cumulative effects from construction. However, given the nature and scale of the project (and the fact that a Construction Environmental Management Plan was submitted to support the planning application) it is unlikely there will be significant cumulative effects during construction. No cumulative operational effects are likely.

Refer Number	Project Applicant	Project Summary	Cumulative Impacts Assessment
FW21A/0187	Keelings UC	The development will comprise the construction of a warehouse unit with associated facilities, 69no. car parking spaces and other vehicular spaces and all other associated works.	Due to the location of the scheme, ca. 2.8km north of the Proposed Development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.
FW20A/0202	AGRO Merchants Dublin RE Limited	The development will comprise the provision of a food processing warehouse facility (11,696 sq m)	Due to the location of the scheme, ca. 2.9km north of the Proposed Development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.
ABP Ref: 301798	Uisce Eireann	10-year permission for development of the Ringsend wastewater treatment plant upgrade project including a regional biosolids storage facility at Newtown, North Road (R135) Dublin 13 which includes Demolition of existing single storey structures on site comprising of a security kiosk (approximately 22 square metres gross floor area), the weighbridge kiosk (approximately 19 square metres gross floor area), an ESB sub-station (approximately 16 square metres gross floor area) and an administration building (approximately 85 square metres gross floor area), together with the partial removal of existing internal roads and partial removal/diversion of existing drainage infrastructure as appropriate to accommodate the development. Provision of two number biosolids storage buildings, each approximately 50 metres wide, 105 metres long and 15 metres in height, including solar panels on the roof of one building. These buildings have a combined capacity to store up to 48,000 cubic metres of biosolids waste at any one time. • Provision of four number odour control units, each with 18.2 metre-high discharge flues. • Mechanical and electrical control building (approximately 35 square metres gross floor area, four metres high). • Provision of a single storey site administration building for office, welfare	Due to the location of the scheme, ca. 1.9km south east of the Proposed Development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.

Refer Number	Project Applicant	Project Summary	Cumulative Impacts Assessment
		facilities and meeting rooms (approximately 130 square metres gross floor area) and associated staff car parking	
FW20A/0187	HPREF Dublin Office DevCo1 Limited (nr 1)	Permission of the construction of 8 no light industrial/warehouse (including wholesale use) / logistics units including ancillary office use and entrance/reception areas. The demolition of 2 no. existing agricultural sheds and the construction of a link road; implementation of a new internal road network with all access points, internal access roads and footpaths, service yards and access roads, cycle paths and landscaping; The construction of 2 no. new roundabouts on Estate Road No. 4, the construction of Estate Road No. 3 branching west and the extension of Estate Road No. 2 which currently serves Horizon Logistics Park; The development of 2 no. ESB substation buildings and switchrooms and associated facilities	Due to the location of the scheme, ca. 1km south east of the Proposed Development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.
FW22A/0079	HPREF Dublin Office DevCo1 Limited (nr 2)	Permission for two sites (C&E) Site C consists of the construction of 1no. light industrial/warehouse, 58no. car parking spaces & 14no. bicycle spaces and provision of an ESB Substation and switchroom with all associated construction works Site E consists of the construction of 2no. light industrial/warehouse, 239no. car parking spaces & 76no. bicycle spaces and provision of an ESB Substation and switchroom 2 no. sprinkler tanks and 2 no. pumprooms with all associated construction works	Due to the location of the scheme, ca. 1.2km east the Proposed Development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.
F19A/0149	IDA Ireland	Remediation by excavation and removal of circa 22,000 cubic metres of mixed waste material illegally deposited on lands at Belcamp. The project will involve site preparatory works, excavation and infill works, installation of a cut-off wall to the south and south west and restoration with grass and treeline where applicable.	Due to the location of the scheme, ca. 8km east of the Proposed Development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.
FW22A/0021	Dublin Port Authority	The development comprises a new solar photovoltaic solar farm at site bounded by Harristown Lane (L3151), St Margaret's Road (R122), and South Parallel Road (R108) in the townland of Sanganhill Td, Finglas ED, Co. Dublin. The development will consist of the installation of a ground mounted solar photovoltaic (PV) array with associated development and	Due to the location of the scheme, ca. 4.5km south east of the Proposed Development it is unlikely there will be significant cumulative effects during construction and/ or operation.

Refer Number	Project Applicant	Project Summary	Cumulative Impacts Assessment
		ancillary works including inverters, modules and transformers; site cabling; 2 no. substation building; a storage container on a concrete base; an internal access road and attendant surface water drainage; the formation of a new site entrance onto South Parallel Road (R108); security boundary fencing and landscaping; and a security controlled entry gate and lighting.	Therefore, no cumulative significant effects are likely to occur.
F18A/0436	Darragh Hall	The development includes completion of partially constructed part-two, part-three storey Core Aviation type office building as approved under Reg. Ref. F07A/1659 (subsequently extended under F07A/1659/E1). Permission is also sought for alterations and extensions to previously approved building to result in a four storey office building	Due to the location of the scheme, ca. 8km east of the Proposed Development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.
FW/20A/0126	IPUT	4 No. warehouses with marshalling offices, ancillary office space, staff facilities and associated development	Due to the location of the scheme, ca. 4km west of the Proposed Development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.
FW19A/0143	Rohan Holdings Ltd	The construction of 2 no. Single-Storey Units for industrial and/or Warehouse use with ancillary Two-Storey offices with a gross floor area 11,157.90 square meters	Due to the location, nature and scale of the scheme, ca. 2km west of the Proposed Development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.
FW21A/0240	Alan & Yvonne Fitzachary	Retention permission for as constructed agricultural dairy milk pasturing shed & permission to complete the development works	Due to the location, nature and scale of the scheme, ca. 1.4km north west of the Proposed Development it is unlikely there will be significant cumulative effects during construction and/ or operation. Therefore, no cumulative significant effects are likely to occur.

18.2.1. Population and Human Health

The proposed development will not have any significant negative effects on population and human health, and it is considered that the mitigation measures and monitoring requirements outlined in regard to the other environmental topics will ensure that the proposed development is unlikely to result in any significant cumulative effects in relation to population and human health.

18.2.2. Biodiversity

Given the inclusion of design, construction phase and operational phase mitigation measures, no significant effects will occur on sites designated for conservation value, protected habitats, protected species or features of high ecological value as a result of the construction and/or operation of the proposed development.

Other plans and projects within Dublin Airport Lands and also within the wider environs of the airport were reviewed in context with the proposed development and have been assessed for their potential to act in-combination with the proposed development to give rise to cumulative effects on local biodiversity. Refer to Chapter 18 for details of the other plans and projects which have been assessed.

No cumulative or in-combination effects on sites designated for conservation value, protected habitats, protected species or features of high ecological value will occur as a result of the proposed development.

18.2.3. Landscape and Visual

Chapter 17 and Chapter 18 of the Environmental Impact Assessment Report identifies cumulative effects intra project and with other proposed schemes.

The following development has been identified within the study area in consideration of cumulative landscape and visual effects with other projects.

- Ground mounted solar photovoltaic (PV) array

A ground mounted solar photovoltaic (PV) array (Fingal County Council Planning Reference number FW22A/0021) is currently under construction. The site is located west of the proposed development and visually separated from the proposed development by intervening vegetation. The proposed solar photovoltaic (PV) array development includes a 10m wide buffer of screen planting along the R108 Road. There would be no additional significant cumulative landscape and visual effects arising from the proposed development in combination with the ground mounted solar photovoltaic (PV) array.

There would be no additional cumulative landscape and visual effects arising from the proposed development and in combination with other development within the study area.

18.2.4. Air Quality

18.2.4.0. Construction Phase

According to the IAQM guidance (2024) should the construction phase of the proposed development coincide with the construction of any other permitted developments within 250m of the site then there is the potential for cumulative dust impacts to the nearby sensitive receptors. Should simultaneous construction phases occur, it would lead to cumulative dust soiling and dust-related impacts on human health, specifically localised to the works area associated with the proposed works.

A review of the planned and permitted projects within the vicinity of the site was undertaken. Those projects within 250m of the proposed development were identified, these include:

- F01A/0974 Monaer Limited
- FW23A/0097 Killick Aerospace Limited
- FW20A/0156 DHL Supply Chain Ireland Limited
- F18A/0730 DHL Supply Chain Ireland Ltd
- F08A/1248 Green REIT Horizon Ltd
- F14A/0181 Green Reit Horizon Ltd.
- FW19A/0095 Green Reit Horizon DAC
- FW19A/0033 Green Reit Horizon DAC
- FW20A/0034 Expeditors Ireland Ltd
- FW22A/0145 Fynes Logistics LTD

- FW20A/0025 Bunzl Ireland Ltd
- FW22A/0260 UPS SCS Ireland Limited
- FW23A/0259 UPS SCS Ireland Limited
- FW20A/0160 Transport Infrastructure Ireland
- FW22a/0036 Kuehne & Nagel Ireland Limited
- F99A/1519 Aer Rianta Cpt
- FW22A/0021 daa PLC
- SID/01/18 daa PLC
- SID/01/11 daa PLC
- F09A/0092 daa PLC
- F20A/0668 daa PLC
- F06A/0088 daa PLC
- F07A/0093 daa PLC
- F23A/0781 daa PLC
- FW21A/0180 HPREF Dublin Office DevCo 1 Limited
- FW22A/0079 HPREF Dublin Office DevCo 1 Limited
- FW20A/0187 HPREF Dublin Office DevCo 1 Limited
- FW23A/0067 HPREF Dublin Office DevCo 1 Limited
- FW23A/0250 HPREF Dublin Office DevCo 1 Limited

There is the potential for cumulative construction dust effects should the construction phases overlap with that of the proposed development. However, the dust mitigation measures outlined in Section 7.7.1 will be applied throughout the construction phase of the proposed development which will avoid significant cumulative effects on air quality. With appropriate mitigation measures in place, the predicted cumulative effect on air quality associated with the construction phase of the proposed development are deemed short-term, negative and imperceptible.

18.2.4.1. Operational Phase

Cumulative impacts have been incorporated into the traffic data supplied for the operational stage air modelling assessments where such information was available. The results of the modelling assessment (Section 7.5.1) show that there is a ***long-term, neutral*** and ***imperceptible*** impact to air quality during the operational stage.

18.2.5. Climate

With respect to the requirement for a cumulative assessment PE-ENV-01104 (TII, 2022a) states that “for GHG Assessment is the global climate and impacts on the receptor from a project are not geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable.”

However, by presenting the GHG impact of a proposed development in the context of its alignment to Ireland’s trajectory of net zero and any sectoral carbon budgets, this assessment will demonstrate the potential for the proposed development to affect Ireland’s ability to meet its national carbon reduction target. Therefore, the assessment approach is considered to be inherently cumulative.

18.2.6. Noise and Vibration

In terms of construction noise, In the scenario whereby construction on multiple developments is ongoing simultaneously there is potential for significant noise impact at nearby NSL’s.

There is a potential for cumulative impacts associated with construction noise traffic if another development is constructed in vicinity concurrently, with an increase of +3 Db representing the worst case scenario of a doubling of construction traffic when compared to either site operating in isolation.

There is a potential for cumulative impacts associated with construction if another development is constructed in vicinity concurrently. An increase of +3 Db represents the worst case scenario whereby construction noise incident on noise sensitive receptors from two sites is matched in level.

At operational stage, cumulative noise impacts associated with the proposed development and other developments in the area are most likely to be associated with increase noise associated with traffic.

An increase +3 Db represents a worst case scenario of a doubling in volume of traffic, representing a perceptible change with moderate impact, moderate significance and long-term.

18.2.7. Traffic

The proposed development will occur in a phased manner over a period of approximately 9 months. Due to the relatively small scale of the project, no cumulative effects during construction phase are anticipated. For operational phase, no nearby developments were considered for this assessment. As a result, no cumulative effects are anticipated during operational phase.

18.2.8. Land, Soils and Geology

Provided the mitigation measures outlined in Chapter 11 – Land, Soils and Geology are in place for the duration of the construction phase, cumulative effects are not likely to be significant. There will be no significant effects with regards to land (including land take), soils or geology during the operational phase.

Therefore no significant cumulative effects are likely.

18.2.9. Water

Provided the mitigation measures listed above are in place for the duration of the construction phase, anticipated effects on surface water or groundwater will be temporary and slight adverse during the Construction Phase. Taking account of proposed mitigation measures, effects on surface water or groundwater will be temporary and slight adverse during the Operational Phase of the proposed development.

Therefore, no significant cumulative effects are likely.

18.2.10. Cultural Heritage

A review of the approved and proposed developments detailed in Tables 17.3, 18.1 and 18.2 was carried out as part of the assessment of potential cumulative effects on the cultural heritage resource arising from the proposed development. This included reviews of any available relevant cultural heritage assessment reports, as well as relevant planning conditions, published on the Fingal County Council planning enquiry system, the An Bord Pleanála website and the Database of Irish Excavation Reports.

This review revealed a number of developments that were subject to advance archaeological investigations which revealed the presence of previously unrecorded features of archaeological potential. The grants of planning for these developments included conditions requiring the archaeological excavation of these features in advance of construction and they are detailed hereafter. A review of the planning files for the Keelings UC warehouse development (FW21A/0187[52]) revealed that a previously unrecorded prehistoric burnt spread was identified within that site during advance archaeological test trenching investigations. The grant of planning for that development included a condition requiring that the identified archaeological remains be excavated in advance of development. A review of the planning files for the HPREF Dublin Office development (FW20A/0187[53]) revealed that the grant of planning for that development included a condition requiring the excavation of identified archaeological areas within that site in advance of construction. The planning files for a Dublin Port Authority solar photovoltaic solar farm (FW22A/0021[54]) revealed that the grant of planning included a condition requiring an appropriate buffer zone around a recorded archaeological monument within that site and archaeological monitoring of the construction phase, The condition also stipulates that in the event that any archaeological remains are identified during monitoring and cannot be avoided that they be subject to archaeological excavation.

There are no recorded archaeological monuments located in the proposed development site or within 200m of its boundary. There are four recorded archaeological sites located within 500m of the proposed development and all of these comprise levelled sites that retain no surface remains. There are no Protected Structures or NIAH-listed structures located in the proposed development site or within the surrounding 500m study area and it is not located within an Architectural Conservation Area. The proposed development is not predicted to result in any significant direct/indirect (construction or operation phase) adverse effects on the cultural heritage resource. Given this cultural heritage context of the proposed development site and its surrounding lands, in combination with the absence of developments within its environs that have been predicted to result in significant cultural

[52] https://planning.agileapplications.ie/fingal/application-details/95811

[53] https://planning.agileapplications.ie/fingal/application-details/88188#documents

[54] https://planning.agileapplications.ie/fingal/application-details/91588

heritage effects or will include the implementation of appropriate archaeological mitigation measures to comply with planning conditions, it is concluded that the proposed development will not have the potential to act in combination with other developments to result in any likely significant cumulative effects on the cultural heritage resource.

18.2.11. Material Assets

Based on the scale and nature of the proposed development and given that an RWMP will be prepared by the contractor and implemented for the construction phase, no cumulative effects are anticipated during the construction or operational phases of the proposed development associated with waste generation. There will be no likely significant effects associated with waste management and / or generation.

Due to the nature and scale of the proposed development, no cumulative impacts are anticipated during the construction or operational phases of the proposed development associated with built services. There will be no likely significant effects regarding built services due to cumulative effects. Therefore no significant cumulative effects are likely.

18.3. Summary

No likely significant effects have been identified as a result of potential cumulative effects between effects identified in the technical chapters of the EIAR and other committed developments.

Furthermore, in most cases such interactions are unlikely to occur.

No significant cumulative effects are likely to arise from the proposed development.

19. References

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