September 2018

Environmental Impact Assessment Report

Quickpark Car Park
Turnapin Great
Swords Road (Old Airport Road)
Santry
Co. Dublin

Applicant: Mr. Gerard Gannon

downey PLANNING

Non-Technical Summary

Description of Project

Mr. Gerard Gannon is applying to An Bord Pleanála for planning permission for the continuation of use on a permanent basis of the existing Quickpark car park at Old Airport Road, Turnapin Great, Swords. The lands extend to c.16.9 hectares and are located to the south of Dublin Airport.

Under the Planning and Development Strategic Infrastructure Act 2006, the Seventh Schedule sets out development for the purposes of an airport (with not less than 2 million instances of passenger use per annum) or any runway, taxiway, pier, car park, terminal or other facility or installation related to it (whether as regards passenger traffic or cargo traffic) is considered a strategic development. Therefore, the applicant engaged in pre-application consultations with An Bord Pleanála under Section 37B of the Planning And Development (Strategic Infrastructure) Act 2006 to determine if the proposed development constituted strategic infrastructure. The Board determined in a letter dated 12th September 2018 that the proposed development constitutes Strategic Infrastructure Development.

It should be noted that this EIAR has been prepared due to the fact that the existing car park is a Strategic Infrastructure Development rather than there being any particular concerns regarding potential significant environmental impacts as the proposed development would, under a normal planning application, be considered sub-threshold for an EIAR.

The proposed development is described in full in Chapter 2.0 of this Environmental Impact Assessment Report but in summary consists of the following:

> *"Mr. Gerard Gannon intends to apply to An Bord Pleanála under the Planning and Development (Strategic Infrastructure) Act 2006 for planning permission for the permanent continuation of use of the existing long-term car park known as Quickpark which serves the long term car parking needs of Dublin Airport on lands at Quickpark Car Park, Turnapin Great, Swords Road (Old Airport Road), Santry, Co. Dublin. The existing car park was previously approved with a temporary planning permission under ABP Ref. 06F.PA0023. Planning permission is now also sought for the construction of a new part three storey entrance building comprising office space with associated revised entrance layout resulting in 6,122 long term car parking spaces (reduced from the permitted 6,240 spaces to accommodate a new entrance building). There are no changes proposed to the majority of the existing car park with internal roads, bus shelters, car space layouts etc as per the previous permission. There are minor layout changes proposed at the entrance to accommodate the proposed new building which results in the provision of 6,122 long term car parking spaces."*

Permanent planning permission is being sought noting the history of the site, the nature of the permissions on site which over time essentially would equate to a permanent permission and that the granting of a temporary permission would require a subsequent application in 7 years time and would result in nearly 30 years of temporary permissions for Strategic Infrastructural Development serving Dublin Airport. The reasons and justification for permanent permission are as follows:

- Quickpark Car Park provides necessary and key supporting infrastructure to Dublin Airport and has done so for nearly 20 years. Dublin Airport is of strategic long term economic importance and requires safeguarding. The existing Quickpark car park provides additional supporting uses to the airport itself.

- Passenger numbers at Dublin Airport have risen year on year, and over the coming years, Dublin Airport is expected to expand its operational capacity with the construction of an additional runway (capacity of 32million passengers). This will create a need for additional long term car parking facilities. The Quickpark facility currently provides c.6,240 long term car parking spaces to this requirement.

- Whilst the preferred access mode to Dublin Airport is bus as set out in the Airports Mobility Management Update 2017, the current 3 no. long term car parks facilitate access for 1 in 3 passengers, particularly during early morning periods where public transport is limited or unavailable.

- Whilst Dublin Airport has maintained a strong public transport modal share, it remains that outside the Greater Dublin Area, public transport options are limited or unavailable and noting the national catchment of the Airport, car parking remains an essential component of surface infrastructure. The requirement for car parking will not change when the planned delivery of metro north/bus connects is implemented and the requirement for long term car parking will remain.

- Quickpark car park and the Holiday BluE and Express Red car parks operated by the Dublin Airport Authority (DAA) are the only authorised long term car parks serving Dublin Airport. The three long term car parks combined do not exceed the 26,800 car parking spaces requirement for the Airport as set out in Condition 23 of the Terminal 2 permission (Ref. PL06F.220670/ F06A/1248).

- The Quickpark car park is fully in accordance with the GE Land Use Zoning and the ‘CP’ Car Park objective applicable to the land as set out in the Fingal County Development Plan in recognition of its long established-use as part of critical airport surface infrastructure.

- The Quickpark lands are within the Inner and Outer Public Safety Zone (PSZ) at Dublin Airport. These safety zones place restrictions on the type of

development permitted in the vicinity of the airport. Car parking is the most appropriate land use for the optimum use of the lands.

- The Fingal Development Plan supports the use of the lands for a long term car park by means of the local objective and does not include any policies or objectives that would disallow the current car park from operating on a permanent basis.
- Fingal County Council have no objection to the principle of permanent planning permission for the existing car park.
- Permanent planning permission is appropriate having regard to the established nature of the car park which is fully constructed and in situ and its location proximate to Dublin Airport.

Alternatives Considered

A number of alternatives were considered including cessation of use, various locations for the development, surface/multi-story car park options and boundary treatments. These alternatives are described as part of Chapter 2.0 of this EIAR.

Baseline Scenario

The baseline scenario including a description of the current receiving environment has been considered as part of this EIAR through the collection and collation of data through tests, site visits, desktop reviews etc. including analytical data for traffic, noise levels, surface water quality testing etc. A description of the existing environment is presented in each relevant section for the various environmental chapters.

An overview of the baseline scenario for the proposed development is that the lands subject to this EIAR comprise an existing at-grade long term car park that has been in operation in parts since 1999. The existing car park comprises c. 6,240 car parking spaces arranged in a predominantly grid layout and blocks that are largely defined by the lighting columns and kerbing. The entrance, staff area and circulation road is surfaced with tarmacadam. There is currently a single storey structure, a former bungalow, which has been converted to office use for the management of the facility located at the entrance to Quickpark car park. The Quickpark facility is bounded by palisade fencing and strong hedgerow planting and there are ditches and watercourses that run through and bound the site.

There is an existing entrance canopy with automatic barriers that serves as the entrance to the Quickpark. Access is via an existing signal-controlled junction from the R132. The site currently comprises internal circulation road, hardstanding, public lighting, ticket machines, boundary fencing, CCTV cameras, bus shelters, signage etc. The site is served by existing infrastructure facilities including connections to mains for water and foul sewer with existing surface water attenuation measures on site.

Land Use Planning Impacts

Quickpark car park is an existing car park that has a long established history for providing long term car parking for Dublin Airport. Its importance as a piece of national infrastructure is recognised at both national, regional and local planning policy. The National Planning Framework recognises the importance of Dublin Airport and protecting its infrastructure. The NPF recognises that due to Dublin's status as the primary commercial and administrative centre on the island of Ireland, Dublin Airport is a crucial factor in providing connectivity to both national and international markets. The NPF also seeks to improve access to Dublin Airport not only through improved public transport but also through improved connections from the road network from the west and north with National Strategic Outcome 4' of the NPF seeking '*Careful land-use management of land-side areas to focus on the current and future needs of the airports'.* Thus, the NPF recognises that the Airport is accessed by a variety of modes of transport including by cars and public transport and all modes of transport require investment and improvement to support Irelands competitiveness.

Under the Fingal County Development Plan 2017-2023, the subject lands are zoned 'GE' - General Employment with a specific objective for a car park ('CP'). Part of the subject site is also located within an 'Inner Public Safety Zone' whilst the remainder of the site is within the Outer Public Safety Zone. The objective for 'GE' zoning seeks to:

> *"Provide opportunities for general enterprise and employment".*

The stated vision for 'GE' zoned lands is as follows:

> *"The purpose of the General Employment (GE) zoning is to facilitate opportunities for general employment uses and compatible forms of industry, logistics and warehousing. The GE zoning is the largest economic development zoning in Fingal with over 1,850 ha of GE zoned lands located principally in Blanchardstown and Balbriggan, with notable zonings in locations such as Dardistown, Cloghran, and Baldoyle".*

Car Park is neither a permitted nor not permitted land use, but the site is indicated as a 'Specific Objective' in Development Plan as a Car Park (CP). It is therefore submitted that the proposed use is considered a primary objective as part of a 'Specific Objective'.

The 'GE' zoning identifies 'Office Ancillary to Permitted Use' as a permitted in principle land use under the zoning objective. It is submitted that the inclusion of the office and ancillary services pertaining to the development proposal is an appropriate land use under the provisions of the Fingal Development Plan 2017-2023.

This application does not seek to increase long stay car parking or increase the modal share. It is an existing car park and the modal share for public transport to Dublin Airport is increasing. However, there remains a requirement for long term car parking spaces. The 6,122 long term car parking spaces provided for in this application (reduced from the permitted 6,240 spaces to accommodate the new entrance building) are an integral part of the long stay cap of 26,800 spaces that was set by An Bord Pleanála under condition 23 of PL 06F 220670. The continuation of the proposed development that is currently part of the overall long-term car parking facilities at the airport will ensure that there are adequate facilities to meet the airport's current and projected passenger forecasts.

Population and Human Health

The subject site was examined in terms of its impact on the human environment in the general area. It was found that because of the nature of the development there would be no effect on population levels. The development would have a minor positive effect on employment during the construction phase. The continuation of use of the car park will maintain commercial activity associated with the car park at current levels.

The construction phase of the proposed development should not have any direct impact on the population of the area or the subject lands noting the minor nature of the proposed works. It is expected that the work force will generally commute to the site rather than take up residence in the immediate vicinity. However, the construction of any project has potential to give rise to an impact on health and safety of human beings if construction activities are not managed appropriately. Measures to address such health and safety considerations will be addressed in the Construction Management Plan for the development.

Biodiversity, Flora & Fauna

A review of the biodiversity of the site was carried out by OPENFIELD Ecological Services and this included a study of existing information from the area and a site survey. A site survey was carried out in May 2018. May is within the optimal season for general habitat survey and so a full classification of all habitats was possible. It is also within the season for breeding birds, bats and amphibians. It is outside the optimal season for mammal survey as tall vegetation can obscure field signs. It was possible to classify all habitats on the site to Fossitt level 3.

The body of the site is entirely composed of buildings and artificial surfaces – BL3 and these range from smooth tarmac, service buildings near the car park entrance, and loose stones on the parking bays. Some ruderal species of plants have become established here but they are small in number of the level of vegetation cover is negligible. External boundaries are native hedgerows – WL1 associated with the original agricultural field layout. These are mostly made up of Hawthorn Crataegus monogyna with Brambles Rubus fruticosus agg., Elder Sambucus nigra and occasional Ash Fraxinus excelsior and Alder Alnus glutinosa. Nearly all of these

hedges are accompanied by a drainage ditch – FW4. The bulk of these boundary hedgerows can be assessed as 'higher significance'. Nearer the entrance, to the east of the site, there is a 'lower significance' hedgerow which is dominated by poorly structured Hawthorn, while there is also a 'lower significance' treeline – WL2 made up of Leyland Cypress Cuprocyparis leylandii, Elder, Cherry Prunus sp. and a planted line of well-spaced, mid-aged Ash and Dogwood Cornus sanguineus.

The site survey included incidental sightings or proxy signs (prints, scats etc.) of faunal activity, while the presence of certain species can be concluded where there is suitable habitat within the known range of that species. Irish Hare was noted using the car park and this is a common phenomenon across similar areas near Dublin Airport (as well as the airport itself). There was no evidence of Badgers using the site.

It has been seen that the application site is not within, or adjacent to, any area that has been designated for nature conservation at a national or international level. The River Mayne flows to the south of the site and this leads to the Baldoyle Bay SAC and SPA. There are no examples of habitats listed on Annex I of the Habitats Directive or records of rare or protected plants. There is a stand of Three-cornered Garlic and this is an alien invasive species listed in legislation. There are some high locally valuable hedgerows as well as populations of common breeding birds and Irish Hare.

The Biodiversity Chapter proposed mitigation measures including that the drainage ditch to the north of the construction zone should be protected for the duration of works but the erection of a suitable barrier which will prevent the ingress of silt or other pollutants. Only silt-free run-off should enter the ditch and a suitably designed silt-trap should be employed to achieve this. Under no circumstances should unattenuated water be pumped directly to the ditch. The barrier will prevent diffuse silt run-off as well as disturbance effects to the associated hedgerow.

No negative effects to biodiversity are predicted to occur due to the continuation of use of these lands. This application will result in no changes to the scale or nature of built development on these lands. Therefore, it cannot act in a cumulative manner to result in significant effects to biodiversity. No negative impacts are predicted, and so no further monitoring is recommended.

Land, Soils & Geology

This section of the Environmental Impact Assessment Report (EIAR) has been prepared by Waterman Moylan and provides an assessment of the impact the Quickpark Car Park at Turnapin Great, Swords Road will have on the surrounding soil and geology within the vicinity of the site. It also sets out mitigation and remedial measures and methods of monitoring after the development is operational.

The land is currently utilised by an existing car park over 16.9 hectares. The proposed development seeks to continue the use of the existing car park and

therefore there will be no additional land take as a result of the proposed development. The infrastructure is in situ (i.e. road network, drainage, surface water etc.). The proposed development provides for the demolition of the existing entrance structures and the provision of a new entrance building only on 1.721 hectares of the overall site of 16.9 hectares. However, this will be conducted within the existing site boundary and there will be no additional land take required to facilitate the construction of the building. The land use during the operation of the development will therefore remain as per that existing on the lands.

The site is generally composed of a thin layer of crushed stone overlying stiff sandy gravelly clays of glacial origin, which are relatively incompressible and considered impermeable. This impermeability was confirmed by the percolation testing carried out on site in July 1999. In the unlikely event of a vehicle spillage/leakage of fuel or oil, any soil impacts would therefore be highly localised, with low potential for vertical migration.

Potential impact to the underlying geology and aquifers has been offset in recent years via the introduction of 4 no. petrol interceptors. Appropriate measures, including extensive monitoring, have taken place during previous excavation and construction works to prevent any impact on soils and geology in the area. The risk of oils and fuels from parked cars to underlying soils and geology have been minimised by the use of stone filter materials and with Class 1 light liquid separators on each surface water system. Proposed works will similarly undertake these appropriate measures to ensure that there is no negative impact to the site soils and geology.

The measures to reduce the impact the development will have on the soil and groundwater during construction and operational phase of the development include reducing the quantity of soil to be removed, measure to prevent contamination, storage of fuels within a dedicated bunded area, cleaning of adjoining road network. As a result of these remedial measures there are no significant adverse impacts envisaged on the surrounding soil environment resulting from the proposed development.

Water

This section of the Environmental Impact Assessment Report (EIAR) has been prepared by Waterman Moylan and provides an assessment of the impact of the Quickpark Long Stay Car Park at Turnapin Great, Swords Road on existing water supply, wastewater and surface water environment within the proposed development and surrounding environment. The potential impacts of the proposed development are assessed and the mitigation measures to minimise the impact of the development on the water supply, wastewater and surface water environment are proposed in addition to methods of monitoring while the development is operational.

The proposal intends to retain the existing watermain supply network as constructed and propose an extension to supply to the new proposed entrance building as shown on drawings enclosed with the planning application pack. As there are no additional watermain works proposed to the existing water supply network, there is no potential

impact envisaged. The extension works proposed will be conducted within the site with no impact envisaged to the existing infrastructure including the existing 150mm diameter trunk watermain which runs along the R132 Swords Road. There is no predicted impact to the water supply network envisaged as a result of this proposal.

As the car park is in existence, the necessary infrastructure for foul drainage is in place, including a foul water system serving the car park control building near the entrance of the car park. The foul water system will be extended from the existing control building to the location of the new control building as indicated on drawing 15-194-P021 which is enclosed with the planning application pack. The existing 900mm diameter pipe running along the Swords Road receives an additional 1.0 m3/day of untreated effluent with a peak flow of 0.072 l/s (6 DWF) as a result of the development. This additional flow is negligible in terms of the pipe's capacity. There is no additional impact from the proposed development.

The necessary infrastructure for surface water is also in place noting the car park is in existence. The surface water proposal recommends retention of much of the existing car park and surface water system, with modifications at the entrance to the car park. The modifications include the introduction of swales and filter drains along the proposed new entrance road. The previous upgrade works of additional Class 1 light Liquid Separators along with the proposed swales and filter drains improves the surface water from the site by removing hydrocarbons and silt from the run-off. The current and cumulative impact on the surrounding surface water environment remains low as a result of the mitigating factors outlined in Chapter 7.

There are no predicted negative impacts as a result of the proposed potable water and foul water works due to occur as a part of these development works. As a result of the design and remedial measures proposed there are no significant adverse impacts envisaged on the surrounding water environment resulting from the proposed development.

Air Quality

The existing air quality in the area of the proposed development is good with all levels below the statutory limits for the protection of human health. Road traffic is the key source of pollution in the area.

Construction activities are likely to generate some dust emissions and the potential quantity of dust emissions will depend on the type of construction activity being carried out, the weather conditions and the proximity to sensitive receptors.

The existing Carlton Hotel to the south and east of the site is located close to the proposed construction works. Construction related dust at this premises is likely to result in a 'Temporary Slight Adverse' impact. Where dust related impacts are anticipated, avoidance and mitigation measures will be put in place to reduce the impact level.

The local impact significance of traffic related pollutants on air quality at the sensitive receptors with continued use of the scheme are addressed in Chapter 8. Employing the NRA significance criteria results in a “negligible” impact on air quality in terms of local impact as a result of cumulative traffic. No monitoring is deemed necessary due to the negligible impact of the development on air quality.

Noise and Vibration

The baseline noise climate in the area of the development has been determined by means of a noise survey undertaken in the vicinity.

The potential sources of environmental noise during the construction phase of the proposed development will primarily arise from increased traffic on the surrounding road network (from construction workers and delivery of plant and materials) and actual on-site works where heavy plant and earth moving machinery may be required.

During the construction phase of a development, certain aspects of the site work may result in increased levels of vibration in the vicinity of the site. There will be no additional vibrations during the operation of the car park.

The potential noise impacts from this development during its operational phase will primarily be as a result of increased traffic flows along the new and existing routes within and surrounding the development. A number of noise sensitive locations were identified during the baseline survey and site visit including two schools to the north of the development. Based on the predictions relating to operational traffic noise, the changes in noise levels can be categorised, as “Slight/Moderate change” at the worst-case locations. The increase in traffic associated with the proposed development scheme is therefore not expected to give rise to any significant noise nuisance in the area.

Climate

Chapter 10 of this Environmental Impact Assessment has been prepared by RPS and assesses the greenhouse gas emissions associated with the proposed continued use of the existing car park and the construction of a new part three storey entrance/office building.

The construction phase of the scheme has the potential to generate a number of greenhouse gas emissions in the short term. Emissions from construction activities will arise from embodied carbon in site materials as well as vehicles delivering this material to the construction site. Climate impacts cannot be predicted without specific details on the quantities of construction materials to be used on the subject site. As a mitigation measure it is proposed that a carbon foot-printing exercise is carried out during construction to assist in the identification of low carbon products from local sources to minimise emissions of greenhouse gases. The construction of the

proposed development is considered to pose a permanent slight adverse impact for climate.

Greenhouse gas emissions from the operational phase of the scheme will most likely arise as a result of increased traffic volumes associated with the subject site in addition to space heating and energy use. Transport emissions, including greenhouse gases, from light and heavy duty vehicles are continually being reduced through EU and national initiatives. As such, transport mitigation of GHG emissions are primarily delivered by EU legislation to ensure an ongoing reduction in emissions per car. Other national initiatives to reduce emissions include fiscal measures to promote the use of electric vehicles and the biofuels obligation scheme. No monitoring is deemed necessary due to the insignificant impact of the development on climate.

Landscape and Visual Impact

The Landscape And Visual Impact Chapter was prepared by The Big Space Landscape Architects. A series of Photomontages (7no.) were prepared by Modelworks Media in order to illustrate the physical and visual nature of the existing and proposed development which are included as Appendix 11.1 Photomontage no. 01 illustrates the view from Swords Road westwards and represents typical views of pedestrians and vehicles. The proposed developments effect on visual change was assessed as a negligible improvement seven years after assessment. The impact will be slight, neutral, cumulative and short term.

The subject lands are characterised as having 'low lying agricultural type' with low sensitivity to development, and the EIAR considers that the proposed development has limited potential for significant landscape and visual impact. Chapter 11 indicates that the construction phase of the proposed development will have little or no impact on the local landscape character. No significant, negative visual impacts will arise.

During the operational phase, it is considered that the proposed development will generally be viewed in the landscape as being in-keeping with the trend and style of existing and future employment development in the area. There will be an imperceptible impact in the medium term on the local landscape.

Therefore, the significance of the landscape and visual impact of the proposed development will be positive as the landscape and environs matures over time.

Transportation

This section of the Environmental Impact Assessment Report (EIAR) has been prepared by Waterman Moylan and provides an assessment of the requirement for the continued use of the Quickpark long term airport car park and its transportation impact.

Quickpark is one of three authorised long term airport car parks that provide a total of 24,425 parking spaces, all of which have been previously approved under the Strategic Infrastructure Development procedure. The DAA currently operates approximately 19,180 long term car parking spaces. The continuation of use of the proposed 6,122 (reduced from 6,240) spaces at the Quickpark Car Park forms part of this plan.

The existing 25,420 authorised long term parking spaces falls below the Terminal 2 permission Reg. Ref. F06A/1248 and An Bord Pleanala Reference PL06F220670 which set a maximum of 26,800 parking spaces. Demand for long term parking has not diminished in the period since the previous temporary permission for Quickpark. Passenger levels are now at a comparable level to those predicted when the Terminal 2 permission was granted (32 million/yr), therefore the 26,800 spaces deemed necessary as part of this permission remains relevant.

Dublin Airport's Mobility Management Update (MMU) 2017 acknowledges that while there is a good modal split, with 34% of passengers arriving to the airport by bus, and that there have been 2 million more passengers using the bus to Dublin Airport in 2016 than in 2014, there is still a requirement for the long-stay car parks. Their MMU confirms that 33% of passengers arrive by car. With over 50% of passengers arriving from outside of Dublin and 10% of departing flights taking off before 8am, the bus service is not available resulting in the long term car park's necessity to ensure the efficient use of Dublin Airport.

This car park is specifically for airport long-term parking, where the average duration of stay per vehicle is several days as opposed to several hours. As a result, the traffic generation from this development is far less significant than that of short stay car parks of the same size.

Road access is provided from the R132 Swords Road. This road is linked to the N1 & M1 at the Airport interchange. Access to the M50 can also be achieved via the Ballymun interchange.

The signal controlled junction operates satisfactorily at the site entrance. The R132 Swords Road has a high road capacity and provides a high level of service as indicated by the spare capacity calculated through traffic modelling. The turning movements associated with the existing car park are a small percentage of the total traffic on the R132 at the existing car park access and therefore can be accommodated without impacting on the level of service by 2028.

By continuing the use of this existing car park, no additional significant construction is necessary as the entire transport infrastructure for the car park has been built. The traffic impacts and the level of traffic generated at the R132 Junction by the use of the car park have been calculated and are considered relatively low. As a result, it is deemed that no mitigation measures are required.

Material Assets, Cultural, Archaeological and Architectural Heritage

Chapter 13 assesses the impact of the proposed development on features of architectural heritage, archaeological and cultural heritage merit and proposes measures to safeguard these features. This assessment was based on a desk study and site inspection of the application area.

Archaeological Heritage
The proposed development site is located in the townland of Turnapin Great, in the barony of Coolock and civil parish of Santry.

There are no RMP / SMR sites within the proposed development and no stray finds are recorded in the National Museum of Ireland for this area.

Cultural Heritage
Townlands are land divisions that form a unique feature in the Irish landscape. The northern site boundary of the car park development runs along the townland boundary between Turnapin Great and Collinstown, while its western boundary forms the boundary between Ballystruan and Turnapin Great. The development site boundaries run parallel to these boundaries and do not impact them.

Architectural Heritage
The study area forms part of the northern urban fringe of the city. It is a landscape that is, in places, still somewhat rural in character (as for example the fields immediately west of the existing car park and surrounding the airport runways). Land use varies extensively from arable cultivation, residential, industrial and existing airport development. These processes have created a modern agricultural, residential and industrial landscape

The nearest protected structure (RPS site) listed in the Fingal County Development Plan 2017-2023 is a single-storey thatched cottage off the Swords Road in Dardistown and Collinstown (RPS 604, Figure 13.1). It is located on the west side of the road, c. 75m northeast of the proposed development site.

No remedial or reductive measures, either prior to or during construction, will be required, as no significant impacts on archaeology, architectural and cultural heritage are predicted. No predicted impacts on archaeological, architectural or cultural heritage are envisaged within the development footprint. The disturbance on site has significantly reduced or negated the archaeological potential within the development footprint and as such no archaeological monitoring will be required.

Interaction of Impacts

The interaction of impacts, as considered in the EIAR, and their relationship to the information requirements outlined in the European Communities (Environmental Impacts Assessment) Regulations, are summarised as the following:

- Human Beings / Human Beings

- Human Beings/Soil
- Human Beings/Air
- Human Beings/Noise
- Human Beings/Landscape and Visual Amenity
- Human Beings/Transport
- Flora and Fauna/Soils
- Flora and Fauna/Water
- Flora and Fauna/Landscape and Visual Amenity
- Land, Soil & Geology/Water
- Air/Transport
- Air/Climate
- Noise/Human Beings
- Noise/Transport
- Climate/Flora and Fauna
- Transport/Flora and Fauna
- Transport/Climate

Overall Impact on the Environment

The Environmental Impact Assessment Report has assessed the characteristics of the proposal for significant environmental impacts. Each topic was examined and the resultant environmental impact, if any, noted and mitigation or reductive measures have been put in place. Accordingly, the proposed development will result in no significant negative impacts on the environment.

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Chapter 1 – Introduction

1.1 Purpose of this Report

This Environmental Impact Assessment Report (EIAR) has been prepared in parallel with the preparation and formulation of a Strategic Infrastructure Development Application for the existing Quickpark Car Park at Turnapin Great, Swords Road (Old Airport Road), Santry, Co. Dublin.

Mr. Gerard Gannon is applying to An Bord Pleanála under the Planning and Development (Strategic Infrastructure) Act 2006 for planning permission for the permanent continuation of use of the existing long-term car park known as Quickpark which serves the long term car parking needs of Dublin Airport. The existing car park was previously approved with a temporary planning permission under ABP Ref. 06F.PA0023.

Planning permission is now also sought for the construction of a new part three storey entrance building comprising office space with associated revised entrance layout resulting in 6,122 long term car parking spaces (reduced from the permitted 6,240 spaces to accommodate a new entrance building). There are no changes proposed to the majority of the existing car park with internal roads, bus shelters, car space layouts etc. as per the previous permission. There are minor layout changes proposed at the entrance to accommodate the proposed new building which results in the provision of 6,122 long term car parking spaces.

The new part three storey carpark barrier and entrance building is 10.330 metres in height comprising an overall floor area of 1,043 sq.m. The proposed use of the building is for office ancillary to the existing car park and will provide for the daily operation of Quickpark including administration, financial staff in addition to bus drivers, maintenance staff etc. The building is envisaged as ‘pavilion’ in nature due to its freestanding site context and its ‘use’ relationship to the adjacent and expansive carpark facility. Landscaping is also proposed to enhance the appearance of the car park and provide a high quality entrance to the development.

Passenger numbers at Dublin Airport have risen year on year with a record 29.6 million passengers travelling through the airport in 2017. Quickpark is an essential component of the surface access infrastructure serving Dublin Airport. Notwithstanding Dublin Airport’s success in encouraging public transport share of access to the Airport, public transport for those outside of the Greater Dublin Area is not always an option as a mode of transport particularly in early morning/late night where public transport is limited but where flight departures remain high. This will continue to be the case even with the implementation of Metro North and Bus Connects. The demand for long-term car parking at Dublin Airport has not reduced in the intervening period since the last temporary planning permission. Indeed, passenger numbers have significantly increased to nearly 30 million passengers per annum and with the construction of the second runway imminent, it is anticipated that this passenger number will significantly increase. It has already been established in the assessment of the Terminal 2 permission that 32 million passengers per year

requires 26,800 car parking spaces. Quickpark currently forms 6,240 spaces of this overall provision, with the DAA's red and blue car parks comprising the remaining spaces. The three existing car parks combined do not exceed the 26,800 car parking spaces, there are no alternative sites designated within the Development Plan for long term car parking and 53.4% of cars accessing the airport originate from outside Dublin where public transport options are limited or unavailable.

The proposal to seek permanent planning permission is to ensure that an existing and established car parking resource is available to the Airport in order to ensure the efficient operation of both terminals and indeed the global success of Ireland's economic competitiveness by supporting strategic infrastructure serving Dublin Airport. Dublin Airport is a pivotal piece of national and international infrastructure and its operational infrastructure requires safeguarding. The proposed development is in accordance with National, Regional and Local Planning Policy and accordingly permanent permission is being sought.

This EIAR has been prepared to comply with the requirements of the 2014 Directive 2014/52/EU. This Environmental Impact Assessment Report has been formulated within an overall design process. The purpose of this EIAR is to assist and inform An Bord Pleanála, as the competent authority, in undertaking an environmental assessment of this project.

1.2 Nature and Extent of Proposed Development

Mr. Gerard Gannon is applying to An Bord Pleanála for planning permission for the following development:

> *"Planning permission for the permanent continuation of use of the existing long term car park known as Quickpark on lands at Quickpark Car Park, Turnapin Great, Swords Road (Old Airport Road), Santry, Co. Dublin that is currently used for the same purpose under and in accordance with temporary planning permission ABP Ref. 06F.PA0023. Planning permission is also sought for the construction of a new entrance building with associated revised entrance layout resulting in 6,122 long term car parking spaces (reduced from the permitted 6,240 spaces to accommodate a new entrance building). The proposed development of 6,122 long term car parking spaces is provided for under condition no. 23 of the Terminal 2 planning permission Reg. Ref. PL06F.220670 (F06A/1248). The proposed development includes the demolition of the existing single storey office and control building; demolition of existing canopy entrance structure, the relocation of the existing maintenance shed and the construction of a new part three storey entrance building comprising office space with new car park barriers and ticket machines together with premium car parking offer, elevational signage, green roof, landscaping and associated revisions to the entrance layout to accommodate the new building. Permission is also sought for the continued use of existing ancillary infrastructure and facilities including: existing internal circulation road; hard-standing; lighting; boundary fencing; bus shelters; CCTV cameras; signage; existing drainage network including existing surface water attenuation areas, foul water connection, water supply, associated landscaping and all ancillary works necessary to facilitate the development erected under and in accordance with ABP Ref. 06F.PA0023 and Reg. Ref.s F99A/0376/PL06F.112955, F02A/1110,*

F05A/1464 and F06A/1746. The development also includes new ancillary infrastructure and facilities/drainage improvement works including additional filter drains at the new building and swales along new entrance layout. Access to the car park is from the previously permitted signal-controlled junction on the Swords Road (Old Airport Road) with turning lanes and directional signs. Planning permission is also sought to retain existing hard standing surface area associated with the premium valet offer of the car park. This application is accompanied by an Environmental Impact Assessment Report and a Natura Impact Statement."

The proposed development is discussed in detail in Chapter Two of this Environmental Impact Assessment Report.

1.3 Legislative Requirement

Section 37A of the Planning and Development Act 2000 (as amended) states that –

"(1) "an application for permission for any development specified in the Seventh Schedule (inserted by the Planning and Development (Strategic Infrastructure) Act 2006) shall, if the following condition is satisfied, be made to the Board under section 37E and not to a planning authority"

The Seventh Schedule sets out the infrastructure developments for the purposes of Sections 37A and 37B of the Act and states the following in relation to Transport Infrastructure:

"Development comprising or for the purposes of any of the following:

—An airport (with not less than 2 million instances of passenger use per annum) or any runway, taxiway, pier, ***car park,*** *terminal or other facility or installation related to it (whether as regards passenger traffic or cargo traffic)."*

Therefore, the Planning and Development Strategic Infrastructure Act 2006 identifies car parks serving an airport with more than two million passengers per annum as being strategic development. Dublin Airport accommodated 29.6 million passengers in 2017, with a permitted capacity for 32 million passengers per year, and thus, is one of the most important and significant pieces of infrastructure in Ireland. In this regard, the continued use of Quickpark which currently comprises 6,240 existing long term car parking spaces falls within the Seventh Schedule and it is development for the purposes of an airport within the meaning of Section 37 (a) (2) of the Planning and Development Strategic Infrastructure Act 2006.

Noting the provisions of the Act, and indeed the previous Strategic Infrastructure Decision pertaining to Quickpark, the applicant engaged in pre-application consultations with An Bord Pleanála under Section 37B of the Planning And Development (Strategic Infrastructure) Act 2006 to determine if the proposed development constituted Strategic Infrastructure. The design team engaged with An

Bord Pleanála on 5th April 2018 and 4th July 2018 under Ref. ABP-300624-18. The Board determined in a letter dated 12th September 2018 that the proposed development constitutes Strategic Infrastructure Development. Accordingly, permission is now being sought under Section 37E of the Planning and Development Act 2000 (as amended).

1.4 The Need for an Environmental Impact Assessment Report

Under Section 37E (1) of the Planning and Development Act 2000 (as amended) and the Planning and Development Strategic Infrastructure Act 2006, the Act states:

> *"An Application for permission for development in respect of which a notice has been served under Section 37B (4)(a) shall be made to the Board and shall be accompanied by an Environmental Impact Statement".*

Therefore, in accordance with the above, this Environmental Impact Assessment Report (EIAR) has been prepared. It should be noted, that this EIAR has been prepared due to the fact that the existing car park is a Strategic Infrastructure Development rather than there being any particular concerns regarding potential significant environmental impacts as the proposed development would, under a normal planning application, be considered sub-threshold for an EIAR.

This EIAR has been prepared in accordance with the requirements of the following statutory documents:

- The European Community Directive on Environmental Impact Assessment (No 85/337/EEC);
- The European Community Directive (97/11/EC) amending Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment;
- The Planning and Development Act, 2000 (as amended) and the Planning and Development Regulations 2000-2015;
- European Commission, Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (May 1999);
- European Commission, Guidance on EIA Screening (June 2001);
- European Commission, Guidance on EIA Scoping (June 2001);
- Environmental Protection Agency (EPA), Guidelines on the information to be contained in Environmental Impact Statements (March 2002);
- EPA, Advice Notes on Current Practice (in the preparation of Environmental Impact Statements) (September 2003);
- EPA, Guidelines on the Information to be contained in Environmental Impact Assessment Reports (August 2017);
- EPA, Advice notes for preparing Environmental Impact Statements Draft (September 2015);
- European Commission, Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (April 2013)
- Circular Letter Pl 1/2017: Implementation of Directive 2014/52/EU on the effects of certain public and private projects on the environment (EIA Directive)
- The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018)

- The Guidelines for Planning Authorities and An Bord Pleanála on Carrying Out Environmental Impact Assessment

The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018) transpose the requirements of the 2014 EIA Directive into Irish Planning Law. On 1st September 2018, the provisions of the Regulations came into effect. This EIAR has been prepared in light of these new EIAR Regulations and has also had regard to the recently published '*Guidelines for Planning Authorities and An Bord Pleanála on Carrying Out Environmental Impact Assessment'* which were published in August 2018.

1.5 Scope of Environmental Impact Assessment Report

The scope of this EIAR has had regard to the following:

- Guidelines on the recommended information to be contained in EIAR, which have been published by the EPA;
- The requirements of Part X of the Planning and Development Act, 2000 (as amended) and also Part 10 of the Planning and Development Regulations, 2001-2015;
- The requirements of the Fingal County Development Plan 2017-2023 and the Dardistown Local Area Plan 2013-2019;
- The location, scale and nature of the proposed development;
- The receiving environment and any vulnerable or sensitive local features and current uses;
- Previous planning applications that have been submitted on adjoining lands;
- The likely and significant impacts of the proposed development on the environment; and,
- Available mitigation measures for reducing or eliminating any potential undesirable impacts.

1.6 Structure of Environmental Impact Assessment Report

An EIA is a process of examining and assessing the environment in tandem with a proposed development in a series of loops and flow systems to ensure that all potential environmental impacts are documented and taken into the consideration of the overall formulation of the proposed development inter alia through the design process.

This process allows for the creation of a series of steps in the assessment of potential impacts on various elements of the environment.

The overall structuring of this EIAR has regard to the information requirements of the Directives and Irish Statutory Regulations. In accordance with the statutory regulations, a Non-Technical Summary has been prepared and is included as part of this EIAR. The structure use in this report is a grouped format structure in the form of chapters which examine the broadened scope of environmental considered introduced by the 2014 Directive.

The structure of this EIAR is based on the requirement to provide a detailed and systematic analysis of the environment at the subject lands at Quickpark Car Park, Turnapin Great, Santry, Co. Dublin; potential impacts of the development; proposed mitigation measures and future monitoring of environmental indicators.

1.7 The EIAR study team

This EIAR has been prepared by a team of consultants led by Downey Planning. The table below provides information on the members of the EIAR study team and their respective inputs:

Name	Role
Downey Planning (John Downey, Planning Consultant, BA (Hons), MRUP, MBA, MIPI, MRTPI & Anne McElligott, Planning Consultant BA (Hons), MPLAN, MIPI)	EIAR Project Managers, Planning Consultants Preparation of following EIAR chapter: • Introduction • Description of Development • Planning and Development Context • Population & Human Health • Interactions
Wilson Architects (Marcus Reid, Senior Architect MRIAI)	Architects and Masterplanners Preparation of following EIAR chapters: • Description of Development
Waterman Moylan Consulting Engineers (Mark Duignan, Associate Engineer, (MA BAI CEng MIEI)	Preparation of following EIAR chapters: • Transport • Water • Land, Soil & Geology
The Big Space Landscape Architects (Dan Egan BA Land Arch | Dip Env. Mgt. | MSc Spatial Planning)	Preparation of following EIAR chapter: • Landscape
Courtney Deery Heritage Consultancy Ltd. (Dr Clare Crowley Cultural Heritage Consultant)	Preparation of following EIAR chapter: • Material Assets, Cultural, Archaeological and Architectural Heritage
Openfield Ecological Services (Padraic Fogarty , Ecologist, MSc in EcIA)	Preparation of following EIAR chapter: • Biodiversity, Flora and Fauna
RPS Group (Dara Chadwick, Environmental Scientist)	Preparation of following EIAR chapter's: • Air • Noise • Climate

1.8 Impartiality

This EIAR has been prepared in reference to a standardised methodology that is accepted and acknowledged universally. Competently qualified and experienced specialists have been used throughout the EIA process in order to ensure that this document is robust, subjective and impartial.

1.9 Statement of Difficulties Encountered

No exceptional difficulties were experienced in compiling this EIAR. However, where difficulties may have been encountered by the study team, this shall be stated within the relevant section of the EIAR.

1.10 Errors

Every effort has been made to ensure that the EIAR is error free and accurate. However, there may be instances within the document where typographical errors or minor errors may occur. Any such cases are unlikely to have any material impact on the overall and final findings contained in the EIAR.

1.11 References

A reference list detailing the sources used for the descriptions and assessment has been included with each chapter, where necessary.

Chapter 2 – Description of Proposed Development and Alternatives Considered

2.1 Site Location

The subject lands are located at Turnapin Great, approximately 1km south of Dublin Airport on the western side of the R132, Swords Road (Old Airport Road), Santry, Co. Dublin. The M50 is located further to the south of the subject site. The surrounding area along the Swords Road is primarily comprised of warehouse type buildings and car related uses such as car rental businesses, garages and petrol stations. The Carlton Hotel Dublin Airport is located to the east of the Quickpark Car Park. The hotel backs onto the car parking area. The car parking area is generally surrounded by agricultural land to the north, west, south with sports grounds to the east.

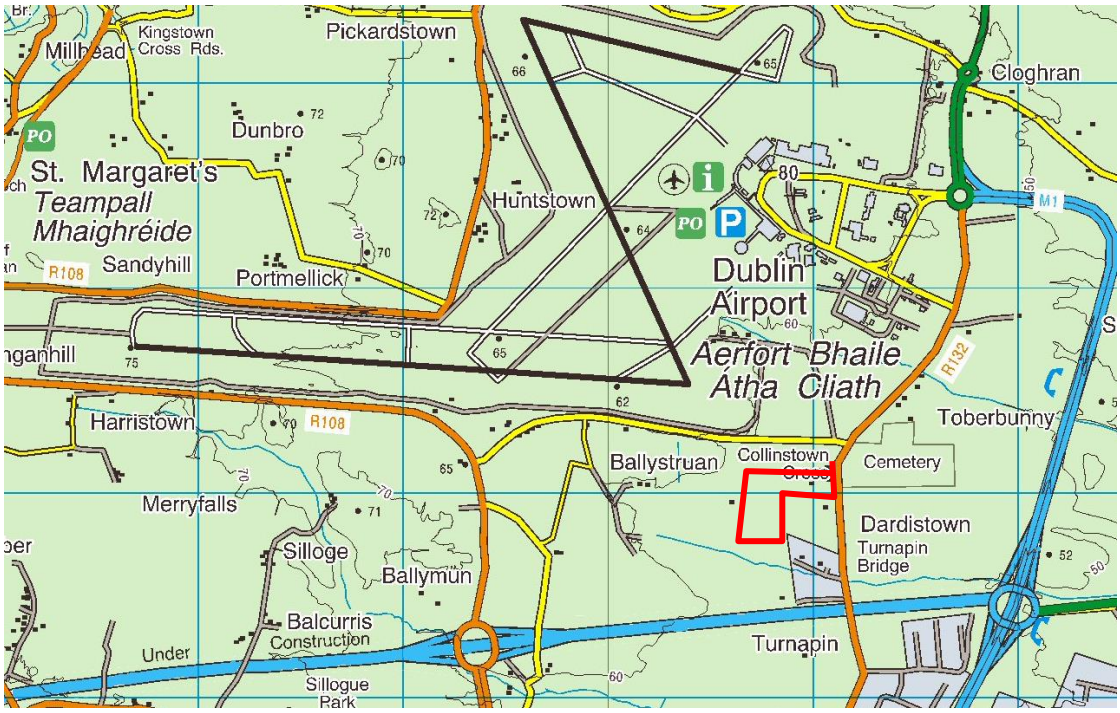


Figure 2.1: Site Location Map (subject site outlined in red)

2.2 Site Description

The existing car park comprises c. 6,240 car parking spaces on a site of c.16.9 ha. The car park areas are arranged in a predominantly grid layout and blocks are largely defined by the lighting columns and kerbing. The entrance, staff area and circulation road is surfaced with tarmacadam. There is currently a single storey structure, a former bungalow, which has been converted to office use for the management of the facility located at the entrance to Quickpark car park. The Quickpark facility is bounded by palisade fencing and strong hedgerow planting and there are ditches and watercourses that run through and bound the site.

There is an existing entrance canopy with automatic barriers that serves as the entrance to Quickpark. Access is via an existing signal-controlled junction from the R132. The site currently comprises internal circulation road, hardstanding, public lighting, ticket machines, boundary fencing, CCTV cameras, bus shelters, signage etc. The site is served by existing infrastructure facilities including connections to mains for water and foul sewer with existing surface water attenuation measures on site.

The car park was originally constructed in two phases with phase 1 (3,500 spaces) having been in operation for approximately 17 years and phase 2 (an additional 2,740 spaces) having been in operation for almost 12 years. The overall car park now has the benefit of an extant planning permission for 6,420 car parking spaces approved under the Strategic Infrastructure Development process for a temporary period of 7 no. years and will expire on 4th October 2018 (or 6th December 2018 including the 63 days for the Christmas period over the seven years) under Reg. Ref. 06F.PA0023.

Figure 2.2: Aerial Photograph showing subject site in context with surrounding uses

Figure 2.3: Photograph of existing car parking

Figure 2.4: Photograph of existing car parking

Figure 2.5: Photograph of existing entrance canopy and barriers

Figure 2.6: Photograph of existing office building to be demolished

2.3 Site Context

The proximity of the airport to the subject site and the development of the M1 and M50 motorways have resulted in the expansion of light industrial and warehouse activities along the Swords Road in the vicinity of the subject site. A number of substantial buildings have been constructed along the Swords Road. These define the area and some have become visual landmarks including the Carlton Hotel development located to the east of the subject site. There has also been a further 100 bed hotel granted to the south of the existing Carlton Hotel and to the north of the RCSI Sports grounds. There are existing residential dwellings further to the east of the lands across Swords Road with petrol stations and motor vehicle sales/repairs to both the north and south of the entrance to Quickpark.

Quickpark is easily accessible as the car park is located off the R132 Swords Road which provides access directly to Dublin Airport. The lands are also in close proximity to the M50 and M1 Motorways which are high quality infrastructural networks providing access into and around Dublin City Centre whilst also providing high quality connections to Belfast etc. The lands are well serviced by public transport with Dublin Bus route nos. 16, 27b, 33, 41, 41b and 41c operating from bus stops 1628 and 1629 in close proximity to the lands. The R132 also comprises cycle lanes, bus lanes and footpaths thus rendering the lands easily accessible to both public and private transport users.

Figure 2.7: Photograph of existing Carlton Hotel

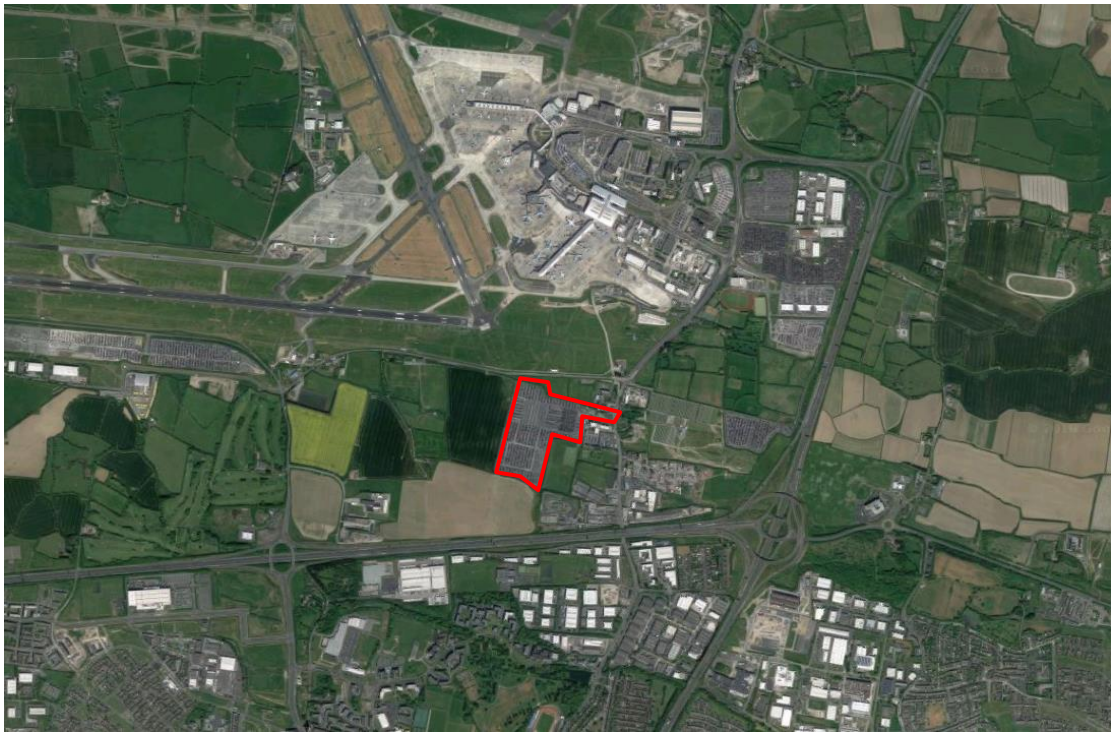


Figure 2.8: Aerial photo depicting subject site with Dublin Airport to the north and employment uses to the south of the subject site

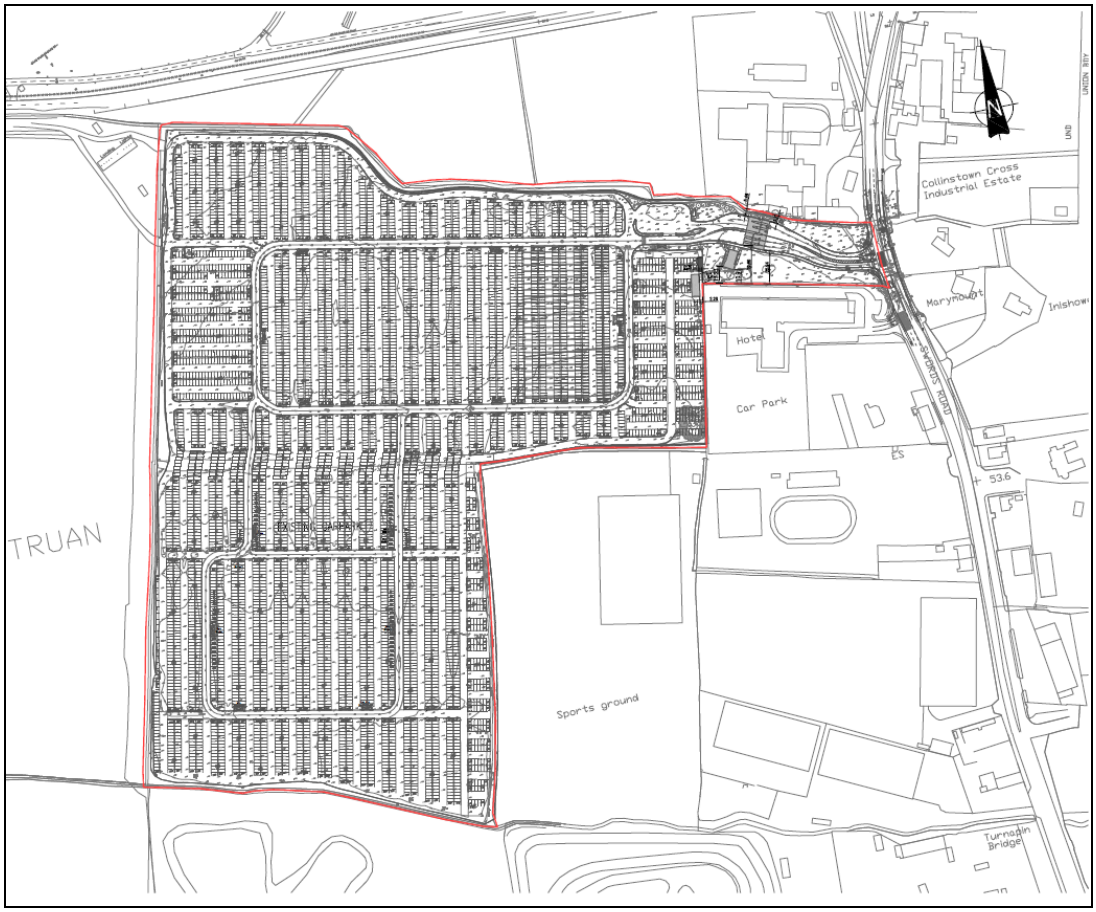


Figure 2.9: Existing Site Layout Plan

2.4 Description of Design

The proposed development has been designed in line with existing uses, site constraints, the design parameters as set out within the Fingal County Development Plan 2017-2023, the zoning objectives for the lands including a specific objective to provide for a Car Park, and the needs and safety requirements of the Airport with regards to the Public Safety Zones and the red approach areas as set out in the Development Plan.

Mr. Gerard Gannon is now seeking planning permission for the following development:

> *"Planning permission for the permanent continuation of use of the existing long term car park known as Quickpark on lands at Quickpark Car Park, Turnapin Great, Swords Road (Old Airport Road), Santry, Co. Dublin that is currently used for the same purpose under and in accordance with temporary planning permission ABP Ref. 06F.PA0023. Planning permission is also sought for the construction of a new entrance building with associated revised entrance layout resulting in 6,122 long term car parking spaces (reduced from the permitted 6,240 spaces to accommodate a new entrance building). The proposed development of 6,122 long term car parking spaces is provided for under condition no. 23 of the Terminal 2 planning permission Reg. Ref. PL06F.220670 (F06A/1248). The proposed development includes the demolition of the existing single storey office and control building; demolition of existing canopy entrance structure, the relocation of the existing maintenance shed and the construction of a new part three storey entrance building comprising office space with new car park barriers and ticket machines together with premium car parking offer, elevational signage, green roof, landscaping and associated revisions to the entrance layout to accommodate the new building. Permission is also sought for the continued use of existing ancillary infrastructure and facilities including: existing internal circulation road; hard-standing; lighting; boundary fencing; bus shelters; CCTV cameras; signage; existing drainage network including existing surface water attenuation areas, foul water connection, water supply, associated landscaping and all ancillary works necessary to facilitate the development erected under and in accordance with ABP Ref. 06F.PA0023 and Reg. Ref.s F99A/0376/PL06F.112955, F02A/1110, F05A/1464 and F06A/1746. The development also includes new ancillary infrastructure and facilities/drainage improvement works including additional filter drains at the new building and swales along new entrance layout. Access to the car park is from the previously permitted signal-controlled junction on the Swords Road (Old Airport Road) with turning lanes and directional signs. Planning permission is also sought to retain existing hard standing surface area associated with the premium valet offer of the car park. This application is accompanied by an Environmental Impact Assessment Report and a Natura Impact Statement."*

Permission is being sought for the permanent continuation of use of the car park and for a new entrance building to serve the car park. The development will result in the removal of approximately 118 no. spaces to facilitate the proposed new entrance

building such that Quickpark will comprise 6,122 long term car parking spaces along with a new entrance office building. The new entrance building has been designed by Wilson Architects and provides for a high-quality building which will be utilised as office space by Quickpark whilst also marking the entrance to Quickpark with an aesthetically pleasing development.

The Quickpark car park operates on a year round basis and at peak travel times is at near capacity. All infrastructure works are currently in place and Quickpark provides significant employment opportunities to the local area. Vehicles approach an existing entrance canopy with automatic barriers that serves as the entrance to the Quickpark carpark grounds with an existing single storey structure, a former bungalow, which has been converted to office use for the management of the facility located alongside the canopy barrier structure.

The carpark operates with a barrier system at the entrance whereby tickets are issued on entry and must be inserted on exiting the facility. Kiosk pay stations are located internally within the site. Alternatively a pre-book online system is available allowing patrons to pre-book car parking spaces. A 24 hour shuttle bus system is operated by Quickpark with buses departing every 5 minutes. The car park is staffed 24 hours a day and comprises CCTV to ensure safety of parked vehicles.

2.4.1 Proposed New Entrance Building

It is proposed to demolish the outdated and run-down existing single storey office and control building and to replace same with the proposed part three storey entrance building with new car park barriers and ticket machines together with premium car parking, elevational signage to new entrance building, green roof and associated revisions to the layout to accommodate the new building.

The total area of demolition comprises 470 sq.m. The existing maintenance shed which comprises 100sq.m. is to be relocated to facilitate the new building. The proposed changes relate to 1.721 ha of the overall car park which comprises 16.9 hectares. There are therefore no changes proposed to the majority of the car park. There are no changes proposed to the layout of the existing car park apart from those set out below to accommodate the new building. The existing site layout plan, existing road network, parking bays, bus shelters, public lighting etc., that is on site will remain. Whilst there may be minor relocations to existing public lighting poles to accommodate the new building, the height, illumination etc., will be as per existing public lighting which has been agreed.

The proposal for a new entrance building arises from a site requirement to both continue the carpark vehicular access and introduce a separate route for the airport terminal shuttle bus service including emergency and larger vehicles if required. The building has been positioned approximately 65 metres further into the site from the existing canopy location.

This site strategy allows for the existing road junction with the R132 to be retained and include for a high-quality landscape space at the entrance to the development along the existing road frontage. The landscape extends from the road junction and creates a setting for the new barrier car access through a new 3 storey 'Pavilion' Building, including the provision of appropriate pedestrian access, extensive planting, set down car spaces and a parking drop-off zone for the premium carparking service, while also allowing those waiting for shuttle bus to avail of an indoor reception area.

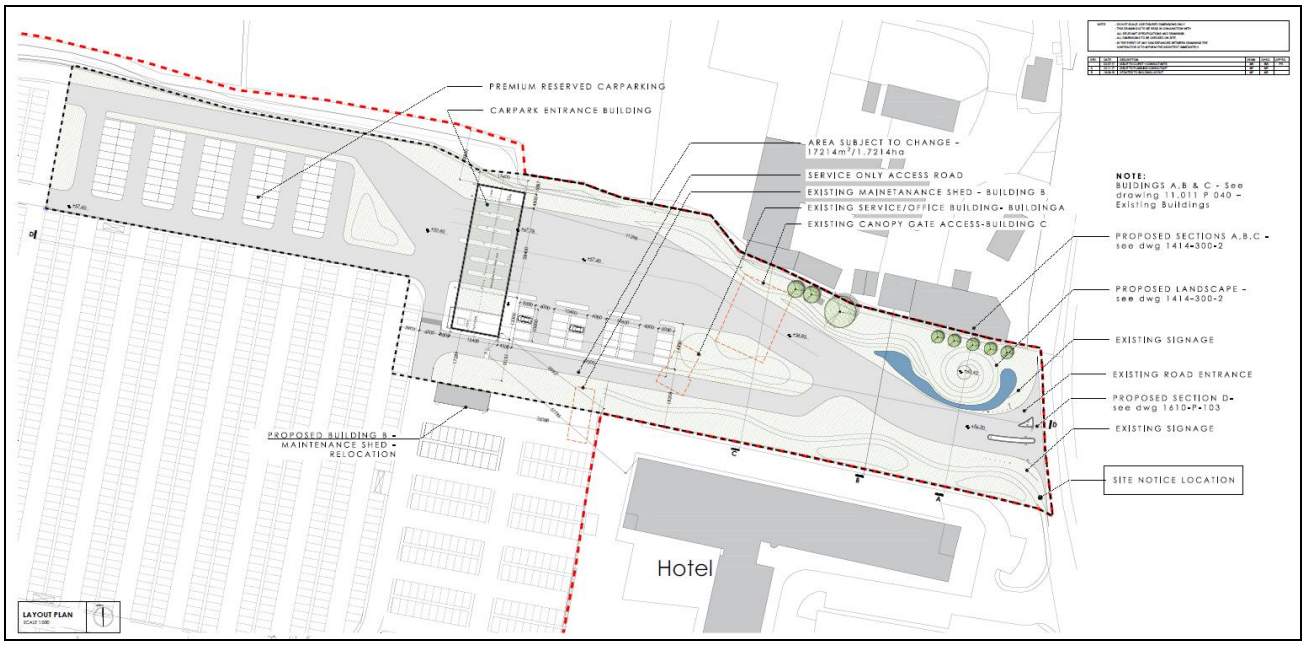


Figure 2.10: Site Layout Plan with new Entrance Building

The entrance building will provide a quality entrance to the existing carparking facility and proposes the removal of the existing temporary aspects of the current carpark entrance and approach. The resultant design is for a barrier car access through a new 3 storey 'Pavilion' Building to the car park with ancillary staff facilities and offices for Quickpark operations.

The new 3 storey carpark barrier and entrance building is 10.330 metres in height with a building footprint of 46.2 x 5.4 metres with an overall floor area of 1,043m2. The building is envisaged as 'pavilion' in nature due to its freestanding site context and its 'use' relationship to the adjacent and expansive carpark facility.

It is intended as a steel frame structure, allowing for mobile crane frame erection, clad in panelised cement-fibre cladding system along the ground floor perimeter with full height glazing onto reception area. Above ground floor level, the building façade is to be clad in translucent polycarbonate panels, allowing a translucent layered quality to the main elevation which can achieve impactful light diffusion and strong thermal performance. The façade is combined with aluminium glazing window system running along the length of the second floor office level.

The facilities and offices are ancillary to the car park with ground staff, bus drivers etc utilising the building with office operations of Quickpark (i.e. administration, finance, marketing etc.) utilising the office space. The proposed building has been designed to be accessible, sustainable and to comply with all statutory requirements. A green roof is proposed at 75% of roof area. Remaining roof is allocated for roof level plant requirements.

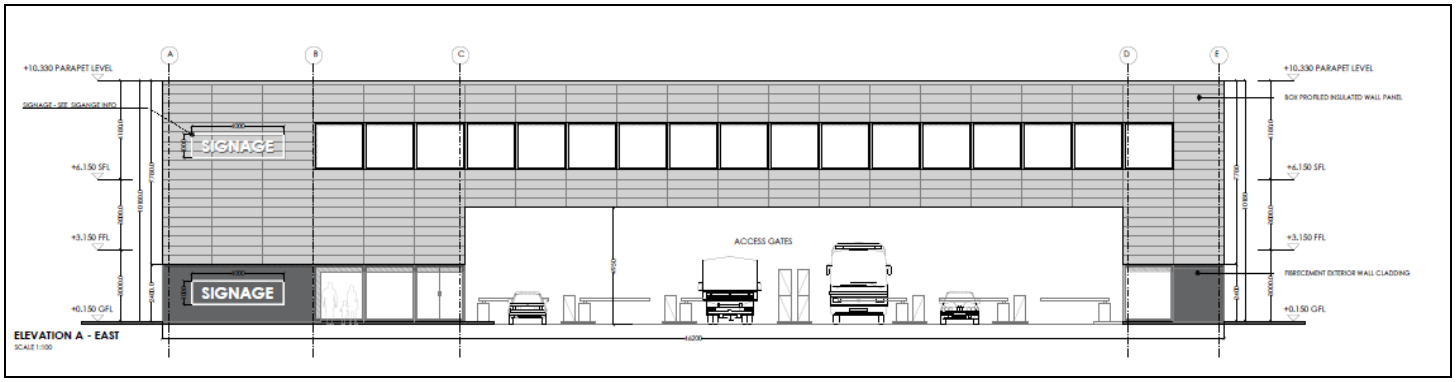


Figure 2.11: Proposed Elevation of new entrance building

Figure 2.12: Photomontage of proposed entrance building

Careful consideration has been given to the design of the proposed development and the selection of materials. The translucent panels will allow a controlled level of light transmission allowing for impactful light diffusion across the building during its 24hr operational cycle. The material cladding on the building is non- reflective.

Downey Planning on behalf of the applicant engaged with the Planning Department of Fingal County Council (Ref. 24062 applies) on 17th April 2018 who confirmed that the design of the entrance building was acceptable. During the pre-planning consultations with An Bord Pleanála, it was noted that the exact use of the offices should be clearly detailed. In this regard, it is noted that the use of the offices will be for use by Quickpark for office administration.

The ground floor of the building will support accommodation for a Premium parking facility linked into a premium parking double height reception and seating area for those availing of the premium service, having dropped off their car and are awaiting the bus departure to the airport terminal. Customer service provision to include small self-service beverage and snacks and toilet facilities. At first floor level, there is provision for meeting rooms and staff room facilities linked to the second-floor office level accommodation.

In addition to the ground floor Reception area and Public/Carpark user facilities, it is proposed to use the second floor 'canopy level' of the proposed new entrance building for office use.

The current operator of the Long Stay Carpark and the associated transport shuttle bus link to airport requires headquarter office accommodation for both the administration and operation elements of the business. There is also a requirement to expand the Premium Parking offer within the business and the associated additional staff requirements. The staff number provision is calculated at 40 persons.

The proposed office area will provide for the following departments within the organisation;

- Administration
- Financial Control
- Human Resources & Staff Management
- IT Department & Online support

In addition to the office floor requirements, the building proposal includes for a number of meeting rooms, staff training rooms and staff facilities.

The personnel on the ground managing and supervising the carpark can number up to 20-30 persons on rotation over the 24hr operational period. They are provided with kitchen/dining facilities including changing/shower rooms at the first floor levels of the building.

2.4.2 Permanent Planning Permission

Permanent permission is sought in light of the planning history pertaining to the site (i.e. the nature of temporary permissions on the site which over time essentially equates to a permanent planning permission) and indeed noting that a temporary permission would result in nearly 30 years of temporary permissions for Strategic Infrastructural Development serving Dublin Airport. Permanent planning permission is

appropriate having regard to the established nature of the subject site as a fully constructed car park in situ and the location of the subject lands proximate to Dublin Airport. Dublin Airport is a vital component of national infrastructure and is pivotal to Ireland's economic international competitiveness and economic development.

Dublin Airport is the principle gateway to Ireland and the most significant economic entity and largest provider of employment in the County and the region. It is of major national, regional and local importance because of its employment base, passenger throughput and airfreight services. In 2017, it accommodated nearly 30 million passengers.

The continued expansion and operation of Dublin Airport and the safeguarding of the important contribution it makes to the local, regional and national economy is a key objective of Fingal County Council. A central component of the successful operation of the airport is the safe and efficient transfer to and from the airport by various transport modes including the private car. Thus, adequate car parking spaces are required for meeting the needs of the airport. Accordingly, the designation of the lands at Cloghran for the Quickpark car park is of national strategic importance as the under supply of car parking will restrict movement to and from the airport with the resultant impact of movements through the airport and indeed impacts on the national economy. The existing car park has operated successfully for a significant period of time and is easily accommodated on the surrounding road network.

All of the transport and land use policies and plans, from the national to local level, advocate the development of Dublin Airport and it's supporting infrastructural requirements in terms of access, car parking, terminals, etc. There is a demonstrated need to maintain the existing level of car parking at Dublin Airport and accordingly permanent planning permission is now sought.

Downey Planning on behalf of the applicant engaged with the Planning Department of Fingal County Council (Ref. 24062 applies) on 17th April 2018. The Planning Department confirmed that the principle of the continued use of the car park is acceptable and that they were happy with the principle of permanent planning permission for Quickpark car park.

2.4.3 Access

Access to the proposed car park is from a signal-controlled junction complete with a right turning lane for southbound traffic on the Swords Road (Old Airport Road)/R132, which links Dublin Airport with Dublin City Centre via Santry. This road, where it fronts the subject site, is a two lane carriageway approximately 12m wide.

The signal-controlled junction will operate satisfactorily at the site entrance. This is because the turning movements associated with the existing car park are a small percentage of the total traffic on the R132 and therefore can be accommodated without further works (please see Chapter 11.0 – Transportation for detailed analysis in this regard). The utilisation of the existing entrance was confirmed in the granting

of the previous application on the site under Reg. Ref. 06F.PA0023 by An Bord Pleanála. As part of the pre-planning consultations that were undertaken by the design team, the Transportation Department of Fingal County Council confirmed that there was no objection in principle to the continued use of the car park.

2.4.4 Engineering Works

The existing infrastructure works were permitted under the parent temporary permission. Existing infrastructure includes the foul water system that currently serves the car park control building (i.e. connection to mains on the R132). It is now proposed to connect the new entrance building to the existing 375mm diameter private foul water which connects to an existing 900mm diameter sewer in the Swords Road. The existing and proposed foul water network and car park layout is shown on drawing 15-194.P060 prepared by Waterman Moylan Consulting Engineers.

The proposed development intends to retain the existing watermain supply network as constructed and extend to supply to the new proposed entrance building as shown on drawing 15-194.P030.

Existing surface water drainage has been installed in accordance with relevant guidelines at the times of construction. The gravel material of the car park filters pollutants and has sufficient capacity to retain the first flush, therefore having a positive impact on water quality. Silt traps and petrol interceptors have been installed, ensuring SuDS requirements as set out in GDSGS have been met. Proposed works include swales and filter drains which will similarly have a positive impact on surface water before draining back into the surface water network. Recent water quality testing results have highlighted some anomaly results that will require further testing. However, proposed works will improve the surface water runoff from the site by removing the hydrocarbons and silt from the runoff.

2.4.5 Form

The existing car park consists entirely of surface car parking spaces. In considering an appropriate form of development, three options were considered as follows:

- Underground;
- Multi storey; and
- Surface

It is considered that surface car parking is the most appropriate in this instance. The capital cost is lowest for the surface option, and given the development restrictions for the lands associated with the public safety zones, surface car parking is the most appropriate and viable development on the lands. This is detailed further in Section 2.9.

2.4.6 Design of car park

The key considerations in the design of the car park are:

- Layout;
- Finish; and
- Boundary Treatment

There are three main considerations in the design of the car park: size, user accessibility and access. One of the key considerations of the design was that all areas of the car park be readily accessibly by cars, buses and pedestrians. The car park consists of a number of sectors with internal roadways between each sector. It is considered that the proposed layout is the most effective and efficient in terms of the number of car parking spaces accommodated on the site, and in terms of the movement patterns generated by the development.

A number of alternatives were considered with regard to proposed finishes, including concrete, tarmacadam and hard core. It was decided to use hardcore for the parking areas as this allows a minimal approach to surface water attenuation. The circulation roads are proposed to be paved in tarmacadam which is a more durable and hard wearing surface suitable for this purpose. In line with user requirements, an area of tarmacadam parking is also provided on site for premium car parking.

The existing boundary treatments were implemented in light of the previous planning permission which considered two key criteria: (i) security and (ii) visual impact. There are no additional works proposed to these boundary treatments as part of this application.

The proposed development provides for a high-quality landscape space at the entrance to the development in conjunction with a new high-quality entrance building. This landscaped open space has been designed by The Big Space and increases the aesthetic appearance of the entrance to the car park when viewed from the R132. The high quality landscaping and the proposed new entrance building will significantly improve the visual amenity of the area.

2.5 Description of Baseline Scenario

The baseline scenario including a description of the current receiving environment has been considered as part of this EIAR through the collection and collation of data through tests, site visits, desktop reviews etc. including analytical data for traffic, noise levels, surface water quality testing etc. A description of the existing environment is presented in each relevant section for the various environmental chapters. The predicted change in the baseline scenario that could arise as a result of the proposed development in conjunction with developments in the vicinity has also been addressed and is set out within this EIAR.

2.6 Existing Car Parking at Dublin Airport

2.6.1 Existing Short Term Car Parking

There are two short term multi storey car parks associated with Dublin Airport. One in Terminal 1 and the other in Terminal 2 providing for an overall total of 3,395 short term car parking spaces at Dublin Airport.

2.6.2 Existing Long Term Car Parking

With regard to existing long term car parking, the Dublin Airport Authority (DAA) operates 19,180 long term car parking spaces at the airport and 6,240 spaces are privately owned by Quickpark on the R132.

The following table and figures set out the existing approved planning permissions which are all temporary for long term car parking facilities at Dublin Airport.

Authorised Long Term Car Parking Spaces at Dublin Airport	
Quickpark	6,240
Holiday Blue	8,840
Red Express	10,340
Total Long-Term Parking Spaces	**25,420**
Permitted Car Parking Spaces – Terminal 2 Application Condition No. 23 – Ref. PL06F.220670 (F06A/1248)	**26,800**

Table 2.1 Existing Car Parking Servicing Dublin Airport

The existing long term parking spaces are in accordance with Condition 23 of the terminal 2 planning permission (Reg. Ref. PL06.220670/F06A/1248) which set out that there was a requirement for 26,800 long term car parking spaces to serve Dublin Airport.

All of the aforementioned long term car parks are subject to temporary planning permissions set to expire in 2018. The Dublin Airport Authority have lodged a Strategic Infrastructure Development Application for permanent planning permission for the Holiday Blue and Express Red Car Parks under Ref. PL06F.301458 and this application is also seeking permanent planning permission for the Quickpark Car park.

The location of these long term car parks are set out in figure 2.13 below.

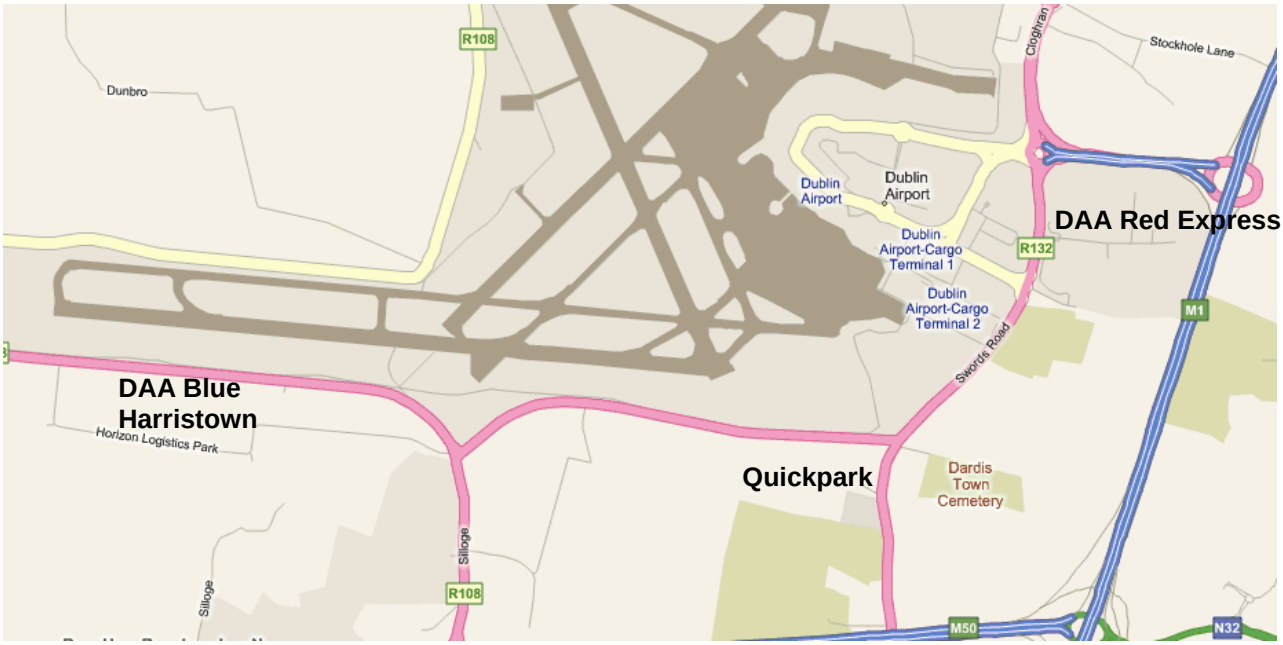


Figure 2.13 Location of Existing Car Parking Servicing Dublin Airport

2.7 Construction & Phasing

As the Quickpark car park is an existing and operational facility, there are only minor amendments works proposed to the existing at-grade car park in this application. It is proposed to demolish the existing substandard office/maintenance control building along with the existing canopy and entrance barriers, and to construct a new entrance building with associated entrance barriers along with infrastructural works to accommodate the new building. It is proposed to carry out these works in single phase over a period of c.12 months from commencement of development following receipt of planning permission. As the car park is in situ, there are no major construction works proposed to the majority of the site.

2.8 Emissions & Waste

Please refer to Chapter 7.0, 8.0 and Chapter 10.0 of this Environmental Impact Assessment Report for a full assessment of the impact of the proposed development on emissions and waste arising in relation to air and water quality, and climate. All spoil and waste material will be removed to an approved location and storage of construction materials in public areas will be minimised. Excavated material may be temporarily stored onsite, with excess material to be removed off-site. All oil/diesel stored on site will be in suitable containers which will be located in a purpose built bunded area, which will provide containment in the event of accidental spills. Such waste will be handled and/or off appropriately in line with Waste Legislation.

2.9 Description of Alternative Designs

This section of the EIAR focuses on alternatives that were considered during the preparation of this EIAR and planning application. This application is for permanent

planning permission for continuation of use of an existing development currently comprising 6240 no. long-term surface car parking spaces at the Quickpark Car Park, Swords Road (Old Airport Road), Santry, Co. Dublin.

A number of alternatives to the proposed development were considered during the course of the preparation of this EIAR.

2.9.1 "Do nothing" scenario

One such alternative is to do nothing, and to allow the current temporary permission to expire and the car park use to be discontinued.

Notwithstanding proposed public transport provisions, and the Airport's commitment to maintaining strong public transport modal share, the reality is that a substantial proportion of passengers are, and will continue to be, reliant on private transport to reach the Airport. This means that the demand for long-stay parking will continue in the long term. This will continue to be the case even with the provision of bus services in the general area of the Airport, and ongoing initiatives that are incorporated into the Dublin Airport Authority Mobility Management Plan. It is essential that the Airport remains accessible and that the Airport facilitates access by multiple forms of transport including by private car. The airport has experienced significant growth in the last number of years and the demand for long term car parking has grown. Given that the catchment of the Airport is nationwide, it is essential that surface access facilities such as long term parking is provided as passengers will require long term parking to access the airport and this will continue to be the case even with the provision of Metrolink, bus services and indeed the measures and transport initiative as set out in the Airport's Mobility Management Plan.

Not all passengers can avail of public transport and therefore, long term car parking is required to serve the airport. Long term car parking is a quintessential component of the continued success and operation of the airport noting that those who avail of long term parking cannot simply return on an alternative day or cannot park long term in Dublin City Centre and travel to the airport on public transport.

In the absence of the Quickpark long-term car park, and having to return the site to its previous agricultural use, demand would have to be met elsewhere, either by extending other long-term car parks in the area, or through the intensification and/or expansion of other long term parking providers in the vicinity of the Airport or indeed providing for a new car park. A lack of long term car parking could lead to issues within Dublin Airport including haphazard parking along the roads in close proximity to the Airport. This is contrary to the proper planning and sustainable development of the area.

The return of the subject site to agricultural use would provide for the inefficient use of serviced and zoned lands within close proximity to Dublin Airport. The lands are subject to specific development constraints particularly the location of the lands

within the Outer Public Safety Zone and part of the lands within the Inner Public Safety Zone. The purpose of Public Safety Zones (PSZ's) is to protect the public on the ground from the small but real possibility that an aircraft might crash in a populated area. Essentially, a PSZ is used to prevent inappropriate use of land where the risks to the public is greatest. Within the Inner Public Safety Zones, new development is prohibited with the only exceptions relating to developments where persons are not expected to be present and long stay car parks (i.e. greater than 24 hours), provided that persons are normally expected to park their car and then immediately leave the car park development. Buildings associated with car parks are subjected to the guidance given in Table 6 (ERM Public Safety Report Section 6.2.2).

The remaining lands within the Outer Public Safety Zones are also subject to restricted development. Therefore, it is clear that the development of the subject lands are limited and restricted in terms of height and density. The existing car park represents the most appropriate use for the lands and this is confirmed by Fingal County Council in the specific Car Park local objective pertaining to the lands which represents the most appropriate land use pattern for the lands.

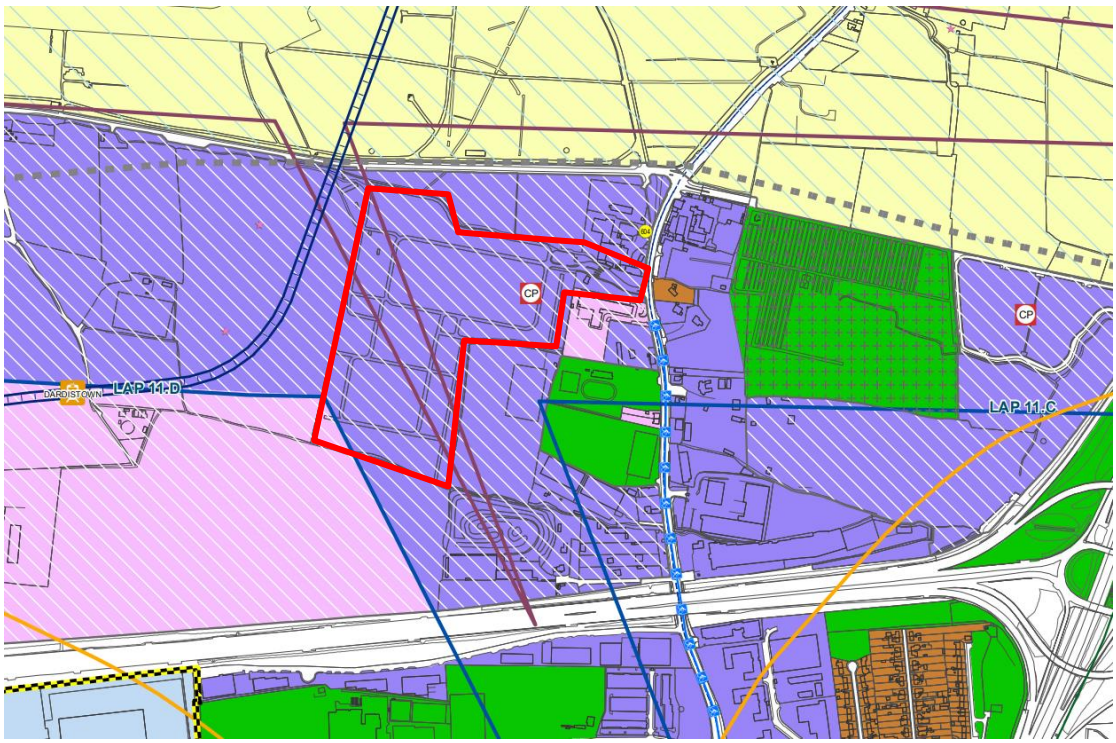


Figure 2.14: Fingal County Development Zoning Map indicating inner public safety zone marked in purple and outer public safety zone marked in blue

The 'Do Nothing' scenario is therefore not a suitable alternative option for the subject lands as it would result in serviced lands becoming redundant whilst at the same time would result in the significant reduction in long term car parking spaces which could jeopardise the daily operation of the Airport with potential for ad-hoc hazardous parking on routes surrounding the airport.

2.9.2 Multi Storey Provision

A further option for the provision of long term parking to serve the Airport would be to provide multi-storey long-term car parking at the subject site or at the DAA long stay car parks. While this would reduce the area of land assigned to car parking, it is considered that this is an economically unviable option, and would only be economically viable with an associated level of commercial development, as is the case with the short-term multi-storey car park and hotel complex at Dublin Airport. As previously noted, commercial development on the subject lands is limited in the short term noting the restrictions applied to the Inner Public Safety Zone where no such development would be permitted and the Outer Public Safety Zone where commercial development is limited and would not justify multi-storey car parking.

The high operational and start up costs associated with multi-storey car parks is such that the car parks must generate significant revenue to justify this model of car parking. The multi-storey must have consistently high occupancy rates across the year and must comprise a high price point in order to justify costs. Multi-storey car parks are normally located within City Centres and Business Districts where there is a daily high turnover of cars and parking and where customers are willing to pay premium for the convenience of parking in proximity to shops etc. This is not conducive to long term car parking at Dublin Airport which is typically characterised by at grade car parking adjoining motorway networks, in peripheral locations which are served by shuttle buses to main airport terminals. This is a model utilised across all major international airports including Dublin Airport and is a viable and feasible option for serving the operational needs of the airport. At Quickpark, cars are typically parked for one to two weeks and there is not the high daily turnover of car parking that is required for multi-storey car park to financially stack up.

Significant investment in multi-storey car parks on the subject site is therefore not justified. The cost of such a car park is considerably more than a surface car park and there is no business case to support the provision of this type of car parking. There is no specific requirement within National, Regional or Local Planning Policy for long term car parking to be provided on the subject lands and it is submitted that the current at-grade car park which is a national strategic piece of infrastructure for the airport is the most viable option for the subject lands. The continued use of the Quickpark car park is of strategic importance to the ongoing daily operation of the airport. Furthermore. Multi-storey car parking would have a greater impact on the environment than the existing at-grade car park specifically in relation to the receiving environment and the visual environment.

2.9.3 Greenfield Lands

Another option is to develop unused greenfield lands within the Airport complex or in the vicinity of the airport. However, the Fingal County Development Plan 2017-2023 only identifies 3 sites for the provision of long term car parking – all 3 long term car parks are existing and are located at Quickpark, the Holiday Blue and Holiday Red car parks operated by the DAA. These car parks are therefore plan led and are

located in the most appropriate locations at the Airport. All of the infrastructure associated with long term car parking is in place on the subject site including hardstanding internal access roads, bus shelters, infrastructure works including surface water treatment, foul drainage etc. All of the car parks have been previously assessed and approved under the SID procedure. The development of new car parking on a greenfield site would require new infrastructure including underground drainage etc., new roads and associated surface treatments, bus shelters, service buildings etc which would be contrary to the proper planning and sustainable development of the area noting that Quickpark is an existing serviced car park. In addition, the development of new car parking on an alternative greenfield site could have adverse environmental impacts on biodiversity, soils, water, air, human health, visual impacts, traffic, cultural heritage during both the operational and indeed construction stage of the development.

Therefore, the option of at grade car parking presented in this application is the only suitable option available in the vicinity of the Airport. The use of Quickpark Car Park is environmentally sound having regard to the impact that would be generated by the development of a new long-term car park at an alternative location.

2.9.4 Temporary Planning Permission

There is a potential option to grant a further temporary permission for the car park. However, long term car parks provide essential surface access services to Dublin Airport and allow for the continued successful operation of the airport.

There are no other Strategic Infrastructure Development applications that are subject to temporary permissions. There are significant costs associated with such large infrastructure applications with associated administrative requirements and indeed uncertainty. Quickpark has been in existence for c. 17 years and as a strategic infrastructure development, it is not feasible to be subject to rolling temporary permissions noting that the car park forms an integral part of accessibility options necessary for the airport. The demand for long-term car parking at Dublin Airport has not reduced in the intervening period since the last temporary planning permission. Indeed, passenger numbers have significantly increased to nearly 30 million passengers per annum and with the construction of the second runway imminent, it is anticipated that this passenger number will significantly increase. It has already been established in the assessment of the Terminal 2 permission that 32million passengers per year require 26,800 car parking spaces. Quickpark forms 6,240 spaces of this overall provision, with the DAA's red and blue car parks comprising the remaining spaces. The three existing car parks combined do not exceed the 26,800 car parking spaces, there are no alternative sites designated within the Development Plan for long term car parking and 53.4% of cars accessing the airport originate from outside Dublin where public transport options are limited or unavailable.

The proposal to seek permanent planning permission is to ensure that an existing and established car parking resource is available to the Airport in order to ensure the efficient operation of both terminals and indeed the global success of Ireland's

economic competitiveness by supporting strategic infrastructure serving Dublin Airport.

As noted above the Quickpark long-term car park has been in existence as a permitted use since 1999. All the infrastructure is in place, including the junction off the R132 to support the continuation of the car park use. The site is located close to the airport terminal and accords with the preferred location for long-term car parks which is on the periphery of the Airport, with good access from the external road network and frequent shuttle connections to the terminal buildings. It is also easily accessed from the M50 motorway via the Ballymun interchange which is a main access route for airport traffic.

In this regard, it is logical and appropriate to accommodate current parking demand at the established car park location. The continuation of this existing use on a site that is already developed is that most appropriate option that is in the interests of the proper planning and sustainable development of the airport lands.

2.9.5 Preferred Option – Permanent Planning Permission

The preferred option presented within this SID application provides for permanent planning permission for the continued use of 6,122 long term surface car parking spaces at Quickpark (reduced from the previously permitted 6,240 spaces to accommodate the new proposed entrance building). The justification for the granting of permanent planning permission includes:

- The Quickpark Car Park provides necessary and key supporting infrastructure to Dublin Airport and has done so for nearly 20 years. Dublin Airport is of strategic long-term economic importance and requires safeguarding. The existing Quickpark car park provides additional supporting uses to the airport itself.

- Passenger numbers at Dublin Airport have risen year on year, and over the coming years, Dublin Airport is expected to expand its operational capacity with the construction of an additional runway (capacity of 32million passengers). This will create a need for additional long term car parking facilities. The Quick-Park facility currently provides c.6,240 long term car parking spaces to this requirement. Quickpark will provide essential long term car parking spaces to the Airport which ensures the Airport can operate efficiently.

- Quickparks forms part of the 26,800 car parking spaces which has been assessed in the Terminal 2 application as being required to serve Dublin Airport. This is acknowledged within the DAA's concurrent application for permanent planning permissions for the Holiday Blue and Express Red Car parks. The car parks combined are under the 26,800 car parking spaces benchmark for long term parking to serve the airport. There are no additional authorised long term car park facilities at Dublin Airport.

- The Quickpark car park is fully in accordance with the GE Land Use Zoning and the 'CP' Car Park objective applicable to the land as set out in the Fingal County Development Plan 2017 – 2023 in recognition of its long established-use as part of critical airport surface infrastructure.

- The Quickpark lands are within both the Inner and Outer Public Safety Zone (PSZ) at Dublin Airport. These safety zones place restrictions on the type of development permitted in the vicinity of the airport. Car parking is the most appropriate land use for the optimum use of the lands.

- The Fingal Development Plan supports the use of the lands for a long term car park by means of the local objective and does not include any policies or objectives that would disallow the current car park from operating on a permanent basis.

- Permanent planning permission is appropriate having regard to the established nature of the car park which is fully constructed and in situ and its location proximate to Dublin Airport.

- Whilst the preferred access mode to Dublin Airport is bus as set out in the Airports Mobility Management Update 2017, the long term car parks facilitate access for 1 in 3 passengers, particularly during early morning periods where public transport is limited or unavailable. 53.4% of journeys to the airport by car originate from outside the Greater Dublin Area where transport options are limited.

- The Quickpark car park which comprises c. 6,240 spaces, in conjunction with the DAA long term car parks (Blue and Red) which comprises 19,180 spaces, does not exceed the Cap of 26,800 car parking spaces serving Dublin Airport as set out under Condition 23 of Ref. PL06F.220670/F06A/1248. Therefore, the quantum of car parking is in line with previous assessments for the Airport.

- It is more appropriate particularly in terms of protecting the environment noting the potential impacts associated with constructing a new car park on greenfield lands.

- The granting of permanent planning permission will put an end to the costly reoccurrence and administrative burden of repeat applications for a Strategic Infrastructure Development.

- The granting of permanent permission does not preclude the lands from any future applications for alternative developments.

- A permanent planning permission will ensure that an existing and established car parking resource is available to the airport to safeguard its efficient

operation and will have regard to the national importance of the airport noting that public transport to the airport is not feasible from all counties.

2.10 Consultations

As part of the planning application process, including the preparation of the EIAR, a number of consultation meetings were undertaken to identify key issues to be addressed as part of the application. The applicant engaged in pre-planning consultations with An Bord Pleanála on 5th April 2018 and 4th July 2018.Pre-planning consultations were also undertaken with the Planning Department, Transportation Department and the Water Services Department of Fingal County Council as well as consultations with the Irish Aviation Authority and the Dublin Airport Authority. There was no objection in principle to a permanent planning permission for Quickpark noting its established use, location proximate to the airport and the existing infrastructure in place which serves the existing car park. The key points of the consultations are as follows:

Fingal County Council - Planning Department

Anne McElligott of Downey Planning engaged with the Planning Department (Paul O'Brien) on 17th April 2018 via telephone correspondence – Ref. 24602 applies. This telephone conversation followed a previous meeting in December 2017. The following was discussed –

- There has been no major change to the drawings that were previously tabled in December except for minor updates to the new building elevations and floor plans.
- The existing entrance building will be demolished and the proposed new entrance building will be set back further into the site.
- Downey Planning confirmed that there will be no further changes to the car park other than the layout at the entrance to accommodate the new entrance building.
- Fingal County Council confirmed that the design of the entrance building is acceptable (the design of which Downey Planning confirmed will be in accordance with IAA requirements for glare/reflection etc).
- Compliance with ERM Public Safety report will be required along with justification for the office space proposed – who will be utilising the office space and where the users of this office space are currently located to be set out clearly within the application.
- Details of signage to be included in application.
- Fingal County Council confirmed that the principle of continued use of the Car Park is acceptable – no issue with principle if permanent permission is sought.
- It was confirmed that Downey Planning are engaging with the IAA and the DAA and that another meeting with ABP will be required.

- A further meeting at this stage is not required but can be held if required following further consultations with the IAA and DAA.

Fingal County Council - Water Services Department

Waterman Moylan Consulting Engineers engaged with the Water Services Department on 23rd May 2018 in Fingal's Swords Offices and subsequently engaged with the Water Services Department via email. The following was discussed –

- The proposed new control building with public and staff welfare facilities will have filter drains installed around the perimeter which will accommodate downpipes as requested by FCC.
- The filter drains will discharge into a swale running along the length of the revised access. Openings in the kerb every 10m along the length of northern access route, will result in direct drainage from the new blacktop surface to the swale. The existing gullies and drains along the northern side of the access route will in turn be decommissioned. The swale shall discharge into the existing surface water drainage network upstream of the existing hydrobrake manhole.
- The southern section of the revised carpark entrance will be drained by a filter drain, originating from the proposed relocated control building and running the full length of the southern side of the revised access route. The existing gullies along the southern kerb line shall be relocated to match the proposed southern kerb line and drain directly to a new filter drain located south of the footpath.
- The proposed filter drain running the southern length of the proposed revised access route shall discharge into the existing surface water drainage network on the southern side of the revised car park access, upstream of the existing hydrobrake manhole.
- FCC confirmed via email on 27th June 2018 that they have no objections to the SuDS measures proposed and no objections to the existing culvert running east-west across the site remaining.

Fingal County Council Transportation Department

Waterman Moylan Consulting Engineers engaged with the Transportation Department on 22nd May 2018 via email. The following was discussed –

- The issues were dealt with in the original application and similar considerations apply to the DAA's car parks nearby.
- Any issue(s) can be dealt with by email - a meeting may not be necessary.
- Clarification was sought on new entrance proposals.
- Moylans confirmed that proposal is for the continuation of use of the existing long stay car park along with a new associated exit / entry control facilities and approach layout to the exit / entry facility. It is also proposed to provide a new facility building at this location. In order to facilitate the upgrade works at

the existing entrance, the total car parking spaces shall be reduced from 6,240 to 6,122 spaces.
- FCC indicated that at a later stage, it would be useful as background information to know what the traffic flows are, the diurnal and seasonal profiles, and the number booking in advance.
- The Transportation Planning Section has no objection in principle to the proposed development.

Dublin Airport Authority (DAA)

Downey Planning engaged with the Dublin Airport Authority on 24th May 2018 via telephone correspondence. The following was discussed –

- The DAA have lodged their application to the Board under the SID process.
- The DAA have no objection to Quickpark applying for permanent planning permission for a long term car park.
- The DAA SID application includes the Quickpark Car Park as part of the long term parking quantum's for Dublin Airport.

Irish Aviation Authority (IAA)

Downey Planning engaged with the Irish Aviation Authority on 28th May 2018 via telephone correspondence. The following was discussed –

- The IAA have indicated that they have no issues with the proposed Quickpark car park
- The proposed building appears to be outside of the approach surface 1634. Clarification on the ground level of the building is required but would appear to have no issue with same.
- Clarification on the method of construction as part of the application – i.e. mobile crane and 30 days notification of commencement of construction of building.
- Confirmation of materials as part of the application indicating no glare.
- Public lighting to face downwards. Downey Planning confirmed this will be as per the existing public lighting on site.
- The IAA have no objection to Quickpark applying for planning permission for a long term car park.

An Bord Pleanála

The applicant also engaged in pre-planning consultations with An Bord Pleanála on 5th April 2018 and 4th July 2018. The key points discussed at the meeting include:

- The general consensus was that the application was likely to be deemed Strategic Infrastructure Development noting the planning history pertaining to the site where the previous temporary permission was deemed to be SID. It

was stated that the Board will make the decision on whether the proposal constitutes a strategic infrastructure development.

- It was noted that the planning permission was temporary and set to expire on 4th October 2018 and the design team requested that the tight timeframe be kept in mind during the assessment of the pre-planning consultations.

- A general discussion on issues regarding airport car parking, the number of car parking spaces proposed, the cap on car parking as set out in conditions attached to Terminal 2 permission and what existing car parks are in the wider area serving Dublin Airport (including Hotel offering car parking) that are operating was discussed. It was confirmed that there are no other long term car parks approved to serve Dublin Airport other than Quickpark and the two DAA long term car parks.

- The use of the proposed entrance building was discussed. The Board noted that the use of the office space was to be clearly detailed as part of the planning application. It was confirmed that the office space was for use by Quickpark car park on site staff including bus drivers (i.e ancillary to the car park), as well as Quickpark car parks administrative staff (eg. Accounts, administration, marketing etc).

- It was agreed that a green roof would be incorporated into the design of the entrance building.

- The Board noted that the applicant was to engage with the Water Services Department regarding the closure of the riparian strip. Waterman Moylans subsequently engaged with Water Services who confirmed that they are happy with this and the additional SuDS measures proposed by the applicant.

- Temporary vs. permanent planning permission was discussed. It was noted that the car park has been operating for nearly 20 years and is in essence a permanent car park. Confirmation that permanent planning permission was being sought was confirmed at the second pre-planning meeting with the Board.

- It was discussed at the second pre-planning meeting that a strong case would have to be made to justify the volume of car parking by reference to compliance to the cap in the Terminal 2 permission whilst having regard to further developments at the airport, whether the level of car parking proposed is reasonable based on parking including that outside of the control of the DAA and Quickpark, current and future public transport provisions, infrastructure, mobility management, traffic capacity and the need for the airport to operate efficiently.

The issues that arose throughout the consultations are addressed within the planning application and this EIAR.

2.11 Consideration of Cumulative Effects with Other Projects

The Fingal County Development Plan 2017-2023 and indeed Fingal County Council supports the permanent continued use of Quickpark on the subject lands. This is evidenced in the specific objective for a car park pertaining to the lands. The Development Plan was recently assessed and reviewed and thus the position of a long-term car park at Quickpark was reaffirmed as an appropriate location approximate to the Airport for long term airport car parking.

In the immediate vicinity of Quickpark, there have only been a small number of planning permissions granted as follows:

- F16A/0587 – Planning permission was granted by Fingal County Council on 15th January 2018 for the construction of a 100 bedroom five storey over basement level hotel on lands adjacent to the existing Carlton Dublin Airport Hotel, Old Airport Road, Cloghran.

- F18A/0235 – Planning permission was granted by Fingal County Council for the demolition of existing petrol station and construction of a new petrol station at Santry Service Stations, Swords Road, Santry.

- F17A/0732 – Planning permission was granted by Fingal County Council for an extension to the existing materials recycling and transfer facility at Advance Business Park, Old Airport Road, Cloghran.

- F14A/0147 – Planning permission was granted by Fingal County Council for the change of use of an existing industrial storage unit to a materials recycling and transfer facility.

Other planning applications in the immediate vicinity of the subject site relate to minor extensions to buildings, internal modifications, signage etc. These permitted developments have been reviewed as part of this EIAR.

In the wider vicinity of Dublin Airport, there have been a number of hotels, hotel extensions and business park revisions permitted. Each of these permissions has a specific condition attached to the permission that the car parking spaces is for hotel use only and is not for long term airport related car parking. Such permissions include:

- F14A/0465 (ABP Ref. PL06F. 245362) – Planning permission was granted by Fingal County Council for 367 new bedrooms over two blocks on five to seven floors at Bewleys Hotel Dublin Airport. Condition No. 4 states that car parking is solely for hotel related uses and shall not be used as 'Park and Fly' parking

(that is parking which is not directly ancillary to the use of accommodation in the hotel by the drivers/occupants of such cars).

- F16A/0587 – Planning permission was granted by Fingal County Council for the construction of a 100 bedroom five storey over basement level hotel on lands adjacent to the existing Carlton Dublin Airport Hotel, Old Airport Road, Cloghran. Condition No. 11 attached to the permission states that the proposed car parking shown within the area outlined in red and all existing car parking shall only be used for hotel related uses and not for long term airport related use 'including park and fly facilities.

- F17A/0255 – Planning permission was granted by Fingal County Council for the extension to the Holiday Inn Express, Santry for a total of 214 no. bedrooms. Condition No. 4 states that all car parking spaces shall only be used for hotel related parking and shall not be used for airport related parking.

- F16A/0479 - Planning permission was granted by Fingal County Council for the extension to the Premier Inn Hotel, Airside Retail Park for a total of 213 no. bedrooms. Condition No. 4 states that all car parking spaces shall only be used for hotel related parking and shall not be used for airport related parking.

- F16A/0446 and F16A/0447 - Planning permission was granted by Fingal County Council extensions to the Radisson Blu Dublin Airport hotels. Condition no. 3 attached to both permissions state that Car parking at the hotel is only for hotel related parking and shall not be used for airport-related parking.

- F16A/0437 – Planning permission was granted by Fingal County Council for extensions to the Clayton Hotel Dublin Airport to provide for a total of 141 bedrooms. Condition No. 5 (b) attached to the permission states that car parking at hotel is only for hotel related parking and shall not be used for airport-related parking.

- ABP Ref. PL06F.PA0008 – An Bord Pleanála granted planning permission to the DAA for a new 4 star hotel, 11 storey, 400 bed hotel building, with a concourse connection to Terminal 2 and multi-storey car park with a total of 2,562 no. spaces. This site is located to the immediate north of Terminal 2 and extends to c. 2.7 hectares.

- Reg. Ref. SID/01/08/E1 – Fingal County Council granted an Extension of Duration to this permission until 24/03/2019 for a multi-storey car park over seven levels, an eleven storey terminal linked hotel, a concourse area, and new link roads. This etension of permission expires on 24th March 2019.

- F17A/0044 – Planning permission was granted by Fingal County Council for a new car maintenance facility at Santry Business Park. Condition No. 2 of the

permission states that the car storage facility (Car Hire) is not to be used as a commercial car park or as a park and ride facility.

- F17A/0308 – Planning permission was granted by Fingal County Council for the construction of 4 no. warehouse units. Condition No. 2 attached to the permission states that car parking is to be ancillary to office use and shall not be sold or leased separately of the relevant unit.

- F06A/0968 – Planning permission was granted by Fingal County Council for a development now known as the Wrights Venue comprising c. 273 car parking spaces at Airside Retail Park, Swords. Condition 7 of the permission states that the underground car parking shall be used to solely serve the proposed development and shall not be sub let, sold or otherwise.

Additional planning applications in the wider vicinity of the airport include revisions and alterations to existing warehouse buildings or proposals that did not propose any additional car parking for Dublin Airport. Such applications have no material consideration to the proposed development noting the minor nature of same. The aforementioned applications have been taken into consideration as part of this EIAR.

2.12 Risk of Major Accidents and/or Disasters

The Quickpark Car Park is located within both the Inner Public Safety Zone and the Outer Public Safety Zone (PSZ) of Dublin Airport. The ERM Public Safety Report 2005 states that the principal purpose of the outer PSZ is to minimise the possibility of a multiple fatality accident. The purpose of PSZ is to protect the public on the ground from the small but real possibility that an aircraft might crash in a populated area. Essentially, a PSZ is used to prevent inappropriate use of land where the risks to the public is greatest. The lands in the context of the inner and outer safety zones are identified in Figure 2.14.

According to the report from ERM (2005), the likelihood of an accident in the outer safety zones is less than in the inner zones, and future development will be permitted, subject to a number of restrictions. The car park is located within both the inner and outer public safety zones whilst the proposed new entrance building is located in the outer safety zone only. The ERM report seeks to prevent further development within inner PSZs, but allow existing developments to remain. Section 6.2.2 of the ERM report also notes that exceptions for permitted development in the Inner PSZ including long stay car parks (i.e. greater than 24 hours), provided that persons are normally expected to park their car and then immediately leave the car park development. Buildings associated with car parks are subjected to the guidance given in Table 6.1. In this regard Table 6.1 indicates that a working premises in the outer Public Safety Zone is permitted at a density of less than 11 persons per half hectare. In this regard the proposed development provides for 40 persons within the entrance building and thus is in accordance with the provisions of the ERM Public

Safety Report. A car park is permitted as persons are normally expected to park their car and then leave the car park development.

In terms of major accidents and disasters, there is potential such an incident could occur within Quickpark given the location of the lands adjoining Dublin Airport. However, these car parks are not significantly populated noting that the nature of the car park is that patrons park their car and then leave. Therefore, the vulnerability of the project to the risk of a major accident and disaster is considered to be low. This is reinforced by the ERM guidelines which note that car parks are permitted in both the Inner and Outer Safety Zones and that the entrance building with c. 40 workers is in accordance with permitted developments. The potential for a major accident is considered extremely unlikely with a risk rating of 1 in one million per year applying to the Outer Public Safety zone.

Therefore, the potential risk posed by a major accident and or disaster have been considered based on a low vulnerability of such a risk and the overall risk is considered to be low.

Chapter 3 – Planning and Development Context

3.1 Introduction

The subject site is located within the administrative area of Fingal County Council for which the statutory Development Plan is the Fingal Development Plan 2017-2023.

The subject lands are subject to national, regional and local objectives and planning policies. This chapter outlines the planning and development context for the proposed development with reference to the following principal planning policy documents:

- The National Planning Framework: Ireland 2040 Our Plan
- National Aviation Policy for Ireland 2015
- Smarter Travel A Sustainable Transport Future
- Regional Planning Guidelines for the Greater Dublin Area 2010-2022
- Transport Strategy for the Greater Dublin Area
- Fingal Development Plan 2017-2023
- Dardistown Local Area Plan (Extended to 2022)

This chapter also sets out the development context and the planning history within which the proposed development should be considered and provides the policies, principles and objectives within which the proposed development should be assessed.

3.1.1 Development Constraints

The existing Quickpark Car Park is not subject to any development constraints noting the car park is constructed, existing and has been in operation for nearly 20 years. There are constraints pertaining to the lands for alternative developments. Such constraints arise from the Public Safety Zones associated with the Airport and this is detailed further in Section 3.3.1.5 below.

3.1.2 Proposed Development

The applicant is seeking planning permission for the permanent continued use of the Quickpark Car Park comprising c. 6,122 long term car parking spaces serving Dublin Airport (reduced from previously permitted 6,240 spaces to accommodate a new entrance building). Planning permission is also sought for the demolition of existing buildings and the construction of a new part three storey entrance building along with associated revisions to the layout to accommodate the new building. There are minor layout changes proposed at the entrance to accommodate the proposed new building which results in the provision of 6,122 long term car parking spaces. Permission is sought for the continued use of existing ancillary infrastructure including internal road network, bus shelters etc. with the proposed development to be accessed from the permitted controlled junction from Swords Road. The development is described in detail in Chapter 2 of the EIAR.

The development will take place on a site area of approximately 16.9 hectares. The subject site is located 1km south of Dublin Airport on the west side of the R132 Swords Road (Old Airport Road). The M50 runs to the south of the site.

The existing car park has been in operation under temporary permissions since 1999 and permission is now sought for permanent planning permission. The existing car park is zoned for GE 'General Employment Uses' and is designated with a specific local objective 'CP – Car Park' under the current Fingal County Development Plan 2017-2023 which reflects the strategic location of the lands for providing surface access infrastructure for Dublin Airport and indeed the pivotal role of Quickpark in providing long term car parking for Dublin Airport.

The proposed development is discussed in detail in Chapter Two of this Environmental Impact Assessment Report.

Figure 3.1 Proposed Development Site i.e. (existing Quickpark Car Park) outlined in red

3.1.3 Development Context

Dublin Airport and its surrounding lands is of strategic importance for the long-term economic stability of Dublin and indeed the country. It is vitally important that the economic future of the airport is safeguarded noting the strategic importance of the Airport as a key driver for economic development in Ireland, and is essential in the interests of underpinning Ireland's future international competitiveness.

Dublin Airport is the primary national and international airport for Ireland and is mandated for growth in accordance with National Aviation Policy for Ireland.

A central component of the successful operation of the airport is the safe and efficient transfer to and from the airport by various transport modes including the private car. Long term car parking is integral to the continued operation of the Airport and this is confirmed within the Planning and Development Regulations which defines an airport as an "area of land comprising an aerodrome and any buildings, roads and car parks connected to the aerodrome and used by the airport authority in connection with the operation thereof."

Car parks serving Dublin Airport also constitute Strategic Infrastructure Development as set out in the Planning And Development (Strategic Infrastructure) Act 2006, Seventh Schedule. Thus, it is clear that long term car parks is a key component of transport infrastructure pivotal to the successful operation of the Airport. This is also confirmed in previous case decisions by An Bord Pleanála where the existing Quickpark Car Park was deemed Strategic Infrastructure under Ref. 06F. PC011.

As stated throughout this application and EIAR, Dublin Airport is one of the fastest growing airports with 29.6million passengers passing through the airport in 2017. With the construction of the second runway, passenger numbers will increase further and an associated increase in services will also be required.

Dublin Airport serves a national catchment and passengers nationally must be accommodated. Not all patrons can utilise public transport to access the airport particularly in rural country areas where public transport is not easily available. However, the DAA are committed to delivering a choice of public transport to the airport and they have and continue to deliver on sustainable transport targets as set out in the Mobility Management Plan for Dublin Airport. Indeed, the DAA note in their SID application that 34% of persons access the airport by bus and this increases to 56% when bus and taxis are combined. This compares favourably with other European Airports who also require that the private car be facilitated in accessing airports.

Since the granting of temporary planning permission, there has been a significant increase in passengers accessing the airport. Dublin Airport processed almost 87% of its permitted passenger capacity in 2017.

Quickpark as well as the DAA's long Holiday Red and Express Blue car parks have a specific car park designation on the lands which represents a plan led approach to long term car parking serving Dublin Airport.

The existing long-term airport car parks, are below the threshold for the long-term parking requirement of 26,800 car parking spaces as permitted under Condition 23 attached to the Terminal 2 permission PL06F.220670 (F06A/1248). Quickpark provides for 6,240 car parking spaces whilst the DAA's car parks combined provides for 10,880 spaces. This provides for an overall total of 25,425 long term car parking spaces which is below the 26,800 spaces set out under the T2 permission. This supply of parking spaces has remained consistent and constant since the Terminal 2 permission notwithstanding strong passenger growth and an increase in use of public transport from 24% to 26%.

As previously noted within this EIAR, there are no other permitted long-term car parks to serve Dublin Airport and both Fingal County Council and An Bord Pleanála have applied conditions to permissions within the vicinity of the airport stating that car parking is not for airport related uses. Therefore, the permitted quantum of long term car parking spaces at Quickpark, Express Red and Holiday Blue car parks remains in accordance with the Terminal 2 permission.

Authorised Long Term Car Parking Spaces	
Quickpark	6,240
Holiday Blue	8,840
Red Express	10,340
Total Long-Term Parking Spaces	**25,420**
Permitted Car Parking Spaces – Terminal 2 Application Condition No. 23 – Ref. PL06F.220670 (F06A/1248)	**26,800**

Table 3.1 Long Term Parking Spaces at Dublin Airport

3.2 National Planning Context

3.2.1 National Planning Framework: Ireland 2040 Our Plan

The National Planning Framework is "the Governments high-level strategic plan for shaping the future growth and development of our country out to the year 2040". It is a Framework to guide public and private investment, to create and promote opportunities for our people, and to protect and enhance our environment- from our villages to our cities and everything in between. It replaces the previous National Spatial Strategy (NSS) as the primary national policy framework. Announced in 2018, the NPF is designed to improve the effectiveness of public investment in infrastructure and other relevant services around the county, including the enhancement of regional and international connectivity.

Due to Dublin's status as the primary commercial and administrative centre on the island of Ireland, Dublin Airport is a crucial factor in providing connectivity to both national and international markets. The NPF recognises the importance of the airport to the country and the Dublin Region in particular. The 'Shared Goals – Our National Strategic Outcome' of the NPF states that investment in airports is to be prioritised in order to maintain Ireland's international competitiveness:

> *"This is crucial for overall international competitiveness and addressing opportunities and challenges from Brexit through investment in our ports and airports in line with sectoral priorities already defined through National Ports Policy and National Aviation Policy and signature projects such as the second runway for Dublin Airport and the Port of Cork - Ringaskiddy Redevelopment."*

The NPF also seeks to improve access to Dublin airport not only through improved public transport but also through improved connections from the road network from the west and north. Thus, the NPF recognises that the Airport is accessed by a

variety of modes of transport including by cars and public transport and all modes of transport require investment and improvement to support Irelands competitiveness.

Under the 'National Strategic Outcome 4' of the NPF, it is the objective to implement the following:

> *"Careful land-use management of land-side areas to focus on the current and future needs of the airports."*

It is submitted that the requirement for long-term car parking is an essential component in sustaining the operational capacity of Dublin Airport, where car parking is needed to facilitate for current demand and the long-term projected growth. The new north runway will be a fundamental factor for Dublin Airport's continued growth with the car park acting as an important ancillary use to the airport's expansion plans. High quality international connectivity is a strategic objective of National Policy and the supporting land side services such as car parking is a key component in ensuring the growth, survival and competitiveness of Ireland.

3.2.2 National Development Plan 2018-2027 (Project Ireland 2040)

The National Development Plan 2018-2027 (NDP) is an integrated policy document as part of the National Planning Framework (NPF). The NPF outlines the national strategic objectives to be achieved with the NDP illustrating the committed investment in implementing the NPF's objectives. Dublin Airport is identified as a key strategic investment area as part of the NDP funding. This relates to the second runway and visual control tower, all of which aim to encourage in developing the airport as a key international hub. All supporting services in achieving this goal is to be facilitated and encouraged.

3.2.3 National Aviation Policy for Ireland 2015

The National Aviation Policy is a specific policy document that that aims to enhance Ireland's connectivity by ensuring aviation access is achieved in a safe and responsive manner in order to meet the requirements of business and tourism related demand. It is the primary goal of the National Aviation Policy to:

> *"enhance Ireland's connectivity by ensuring safe, secure and competitive access responsive to the needs of business, tourism and consumers*."

The importance of supporting the continued growth of Dublin Airport is highlighted within National Aviation Policy with principal goals of the policy seeking to *enhance Ireland's connectivity by ensuring safe, secure and competitive access responsive to the needs of business, tourism and consumers* and to *maximise the contribution of the aviation sector to Ireland's economic growth and development.* The National Aviation Policy aims to expand and develop Dublin Airport into a 'Secondary Hub' competing with the UK and other European airports and where increased connections is a key priority in order to facilitate increase passenger growth and maximise air access for the Irish Economy.

Furthermore, the NAP states 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."*

The NAP also states that surface access is critical for arriving and departing passengers (section 4.5, pg 49). Long term car parking is an integral part of Dublin Airport's surface access strategy and Quickpark, as one of three designated long term car parks for Dublin Airport, provides a critical piece of infrastructure to serve the Airport.

National Aviation Policy supports the requirement for long-term car parking as an essential component in sustaining the operational capacity of Dublin Airport, where car parking is to facilitate for current demand and the long-term projected growth. With the airport projecting increased passenger growth and a key objective to develop as a secondary hub, facilities for long term car parking will need to be maintained in order to achieve this objective.

3.2.4 Climate Change and Sustainable Transport

Dublin Airport is committed to increasing use of more sustainable transportation modes and this is recognised in the increase of public transport to a combined 56% between buses and taxis. The airport is therefore accessed primarily by Public Transport in line with the aims of the Smarter Travel – A Sustainable Transport Future and in line with Government Policy on achieving the transition to an environmentally sustainable economy. The continued use of the Quickpark car park on a permanent basis will not affect this use of public transport. However, it is necessary and vital that a variety of transportation modes are provided to the Airport including by private car given the national catchment of the airport and the public transport is not readily available to all persons across Ireland.

3.3 Regional Planning Context

3.3.1 Regional Planning Guidelines for the Greater Dublin Area 2010-2022

The Regional Planning Guidelines for the Greater Dublin Area 2010-2022 is the statutory regional policy document applicable to the application site. The document states that Dublin Airport is the primary international air access point for the State. Under Strategic Recommendation ER7 it is the objective to achieve the following;

> *"Strategic Recommendation ER7 – Promote and support the role of Dublin Airport as the primary gateway to Ireland and the GDA and as an important employment hub and business location in the region through land use planning which facilitates future airport capacity needs and by improved transport linkages to the city and region."*

The Greater Dublin Area (GDA) Regional Planning Guidelines (RPGs) state that the Greater Dublin Area, through its ports and airport connections will continue to be the most important entry/exit point for the country as a whole, and as a Gateway between the European Union and the rest of the World. Access to, and through, the GDA will continue to be a matter of national importance. The RPGs also state that:

> *'An efficiently functioning, well connected airport is a key competitiveness factor for Dublin, the wider region and the state.'*

In relation to transport, the RPGs states that the airport's connections to the city and the region requires further consideration, and in this regard, the throughput of passengers from the airport to their final destinations in the city, region and country via local and national transport networks is an area of key consideration for future development.

The airport is intended as one of the principal stops on the proposed MetroLink (Revised from Metro North Project), which connects Swords and Dublin Airport to Sandyford via the City Centre. This service would provide a high capacity, high speed connection from the airport to the city centre, feeding local, regional and national public transport hubs, improving the connectivity and operation of the airport.

The guidelines indicate that in order to deliver the GDA as an attractive international destination for business, the 'critical mass' concept should be a core objective, supported by density levels which support competitiveness, sustainability and create opportunities for economies of scale to justify first class and strategic infrastructure provisions and to take full advantage of international transport hubs such as Dublin Airport and Dublin Port.

In this regard, policy objective ER7 seeks to promote and support the role of Dublin Airport as the primary gateway to Ireland and the GDA and as an important employment hub and business location in the region through land use planning which facilitates future airport capacity needs and by improved transport linkages to the city and region.

In order to ensure the continued viability of Dublin Airport as an international transport hub it is important that:

-A high capacity public transport system between the city area and the airport is developed.

-Protection is given to linkages to the high quality and high capacity road network surrounding the Airport Area.

-That lands are reserved to cater for possible long-term future passenger/cargo growth and airport expansion.
-The Inner and Outer Airport Noise and Public Safety Zones and Approach Zones are suitably protected through Development Plan and Local Area Plans policies and zoning.

In addition, Policy Objective PIR7 states that the relevant Local Authorities should include provisions and zoning policies which support the delivery of high quality transport links to Dublin Airport; ensure that suitable lands are appropriately zoned to allow future expansion and restrict inappropriate development. It is submitted that the proposed QuickPark Car Park will adhere to Regional Planning Guidelines where it will support existing airport demand, future airport expansion proposals and projected passenger growth. Quickpark is a long established existing surface access infrastructure serving Dublin Airport and its continued use on a permanent basis is in accordance with the aims and objectives of the Regional Planning Guidelines for the Greater Dublin Area.

3.3.2 Transport Strategy for the Greater Dublin Area 2010-2022

This National Transport Authority Strategy provides a framework for the planning and delivery of transport infrastructure and services in the Greater Dublin Area up to 2035. The Strategy presents the transport requirements for the GDA based on principles of effective, efficient and sustainable travel.

The Strategy states that protecting and enhancing access to the ports and Dublin Airport is a strategic priority where its strategic location along the motorway network allows improved access to the Region and State. The strategy focuses on improving public transport connections to Dublin Airport while protecting existing services to the Airport.

Dublin Airports Mobility Management Plan Update 2017 confirms that the airport is accessed by public transport (bus and taxis combined comprise 56% of trips) more so than the private car. This is above the 12% public transport mode share for all trips in Corridor A of the GDA Transport Strategy and it is clear that Dublin Airport will continue to support Public Transport as a means of accessing the airport. However, a variety of modes of transport need to be supported including the private car. It is submitted that the proposed Quickpark car park is fundamental to the operation of Dublin Airport and will provide for a key long-term car park to facilitate current passenger demand and future airport passenger growth.

3.3 County Planning Context

3.3.1 Fingal County Development Plan 2017-2023

3.3.1.1 Introduction

The subject site is located within the administrative area of Fingal County Council, and thus the statutory Development Plan is the Fingal Development Plan 2017-2023. The Development Plan's policies and objectives provide the direction for the future development of the County and have been taken into consideration in the preparation of this application. The Development Plan seeks to secure the development and improvement in a sustainable manner of the economic, environmental, cultural and social assets of the County.

3.3.1.2 Development Plan Strategy

One of the key aims of the Development Plan is to plan for and support the sustainable development of Fingal as an integrated network of vibrant socially and economically successful settlements, strategic green belts and open countryside, supporting and contributing to the economic development of the County and of the Dublin City Region. The Development Plan recognises the significant contribution of Dublin Airport to both the national economy and indeed to Fingal.

3.3.1.3 Dublin Airport

The Fingal Development Plan 2017-2023 identifies Dublin Airport as a main 'Strategic Policy' as part of Development Plan policy. It states that:

> *"Strategic Policy No. 9 – Safeguard the current and future operational, safety, and technical requirements of Dublin Airport and provide for its ongoing development within a sustainable development framework of a Local Area Plan. The plan shall take account of any potential impact on local communities and shall have regard to any wider environmental issues*."

Following on from the Strategic Policy outlined above, the Fingal Development Plan 2017-2023 contains a number of primary objectives where proposals supporting the protection, maintaining and enhancing of Dublin Airport and ancillary and support services is encouraged.

> *Objective DA01 – Facilitate the operation and future development of Dublin Airport, in line with Government policy, recognising its role in the provision of air transport, both passenger and freight.*
>
> *Objective DA03 – Safeguard the current and future operational, safety, technical and developmental requirements of Dublin Airport and provide for its ongoing development within a sustainable development framework, having regard to both the environmental impact on local communities and the economic impact on businesses within the area.*
>
> *Objective ED31 – Ensure that the required infrastructure and facilities are provided at Dublin Airport so that the aviation sector can develop further and operate to its maximum sustainable potential, whilst taking into account the impact on local residential areas, and any negative impact such proposed developments may have on the sustainability of similar existing developments in the surrounding area, and the impact on the environment, including the climate.*
>
> *Objective ED32 – Ensure an appropriate balance is achieved between developing the unique potential of Dublin Airport as an economic generator and major employer in the County and protecting its core operational function as the Country's main international airport.*

Objective DA22 – Control the supply of car parking at the Airport so as to maximize as far as is practical the use of public transport by workers and passengers and to secure the efficient use of land.

Objective DA24 – Protect and enhance the transportation capacity required to provide for the surface access needs of the Airport.

Objective DA25 – Maintain and protect accessibility to the Airport as a priority.

Objective MT35 – Promote and support the provision of Park and Ride facilities at suitable locations near high capacity public transport stations/stops.

Objective ED30 – Engage and collaborate with key stakeholders, relevant agencies and sectoral representatives to ensure that Dublin Airport is developed and promoted as a secondary hub to capitalise on the associated wider economic benefits for Fingal and the wider region.

The proposed development will not conflict with Fingal Development Plan's main 'Strategic Policy' and the primary policy objectives. The use is complementary to the operation of Dublin Airport and will support in achieving the primary aims and objectives of the Development Plan.

With regards to Policy DA22 which seeks to control the supply of car parking, it is important to note that the proposed continued use of Quickpark on a permanent basis does not seek to increase the supply of car parking and only seeks to change the terms of the existing permission from temporary to permanent.

Condition 23 of the Terminal 2 permission states that 26,800 car parking spaces is an appropriate quantum of long term car parking to serve an airport accommodating 32 million passengers per annum. This was assessed in line with the mode share targets set out within the Dublin Airport Mobility Management Plan. The existing Quickpark and DAA car parks provide for 25,425 spaces and are included within the figure of 26,800 car parking spaces.

The proposed development does not increase the supply of long term car parking at Dublin Airport. Modal split targets for public transport is being maintained with nearly 56% of passengers utilising bus or taxis and only one in three passengers arriving by private car. Dublin Airport is mandated to grow and the current proposal for 6,420 car spaces is within the quantum as determined under the Terminal 2 permission. No new supply is proposed.

The DAA have committed to maximising the use of public transport as far as practical and this is confirmed within the DAA's application for the Holiday Blue and Express Red car parks (Ref. PL06F.301458). The DAA have also confirmed the following:

- Passenger mode share at Dublin Airport including Taxis is 56%.
- At the time of the Terminal 2 application in 2006, bus mode share was 24% which was equivalent to 5.6 million passengers. Bus mode stood at 34% or 9.5 million passengers in 2016 (as set out in Table 3.2 below which is an extract from the DAA's EIAR Report pg 31 prepared by Atkins).

Dublin Airport: Passenger Mode Share (%)						
Transport Mode	**2006**	**2011**	**2012**	**2014**	**2016**	**2016 NTA†**
Car – Private	44.0%	40.0%	34.0%	33.3%	33.4%	31.0%
Car – Rental	5.0%	-	4.0%	4.5%	4.7%	7.2%
Bus/Coach	24.0%	33.0%	34.5%	34.3%	34.0%	37.0%
Taxi	26.0%	24.0%	26.5%	21.7%	21.5%	22.8%
Train/Bicycle/Motorbike/Other	1.0%	3.0%	1.0%	1.4%	1.2%	2.0%
Non-Applicable (Transfer Pax)	0.0%	0.0%	0.0%	4.8%	5.3%	n/a
Total Passengers on a typical 'Busy Day' (Note: Figures do not represent 'busiest day')	80,376	69,556	69,371	76,857	97,472	97,472

Source: daa Passenger Surveys. †NTA Airports Survey, 2016 (Note: variations in results arises from NTA survey period not being over 24 hours (capturing times at which Public Transport is not available.)

Table 3.2 Dublin Airport Passenger Mode Share as extracted from EIAR prepared by Atkins for DAA Express Red and Holiday Blue SID Application.

3.3.1.4 Land-Use Zoning

Under the Fingal County Development Plan 2017-2023 the subject lands are zoned 'GE' - General Employment with a specific objective for a car park ('CP'). Part of the subject site is also located within an 'Inner Public Safety Zone' whilst the remainder of the site is within the Outer Public Safety Zone. The objective for 'GE' zoning seeks to:

> *"Provide opportunities for general enterprise and employment".*

The stated vision for 'GE' zoned lands is as follows:

> *"The purpose of the General Employment (GE) zoning is to facilitate opportunities for general employment uses and compatible forms of industry, logistics and warehousing. The GE zoning is the largest economic development zoning in Fingal with over 1,850 ha of GE zoned lands located principally in Blanchardstown and Balbriggan, with notable zonings in locations such as Dardistown, Cloghran, and Baldoyle".*

Car Park is neither a permitted nor not permitted land use, but the site is indicated as a 'Specific Objective' in Development Plan as a Car Park (CP). It is therefore

submitted that the proposed use is considered a primary objective as part of a 'Specific Objective'.

The 'GE' zoning identifies 'Office Ancillary to Permitted Use' as a permitted in principle land use under the zoning objective. It is submitted that the inclusion of the office and ancillary services pertaining to the development proposal is an appropriate land use under the provisions of the Fingal Development Plan 2017-2023.

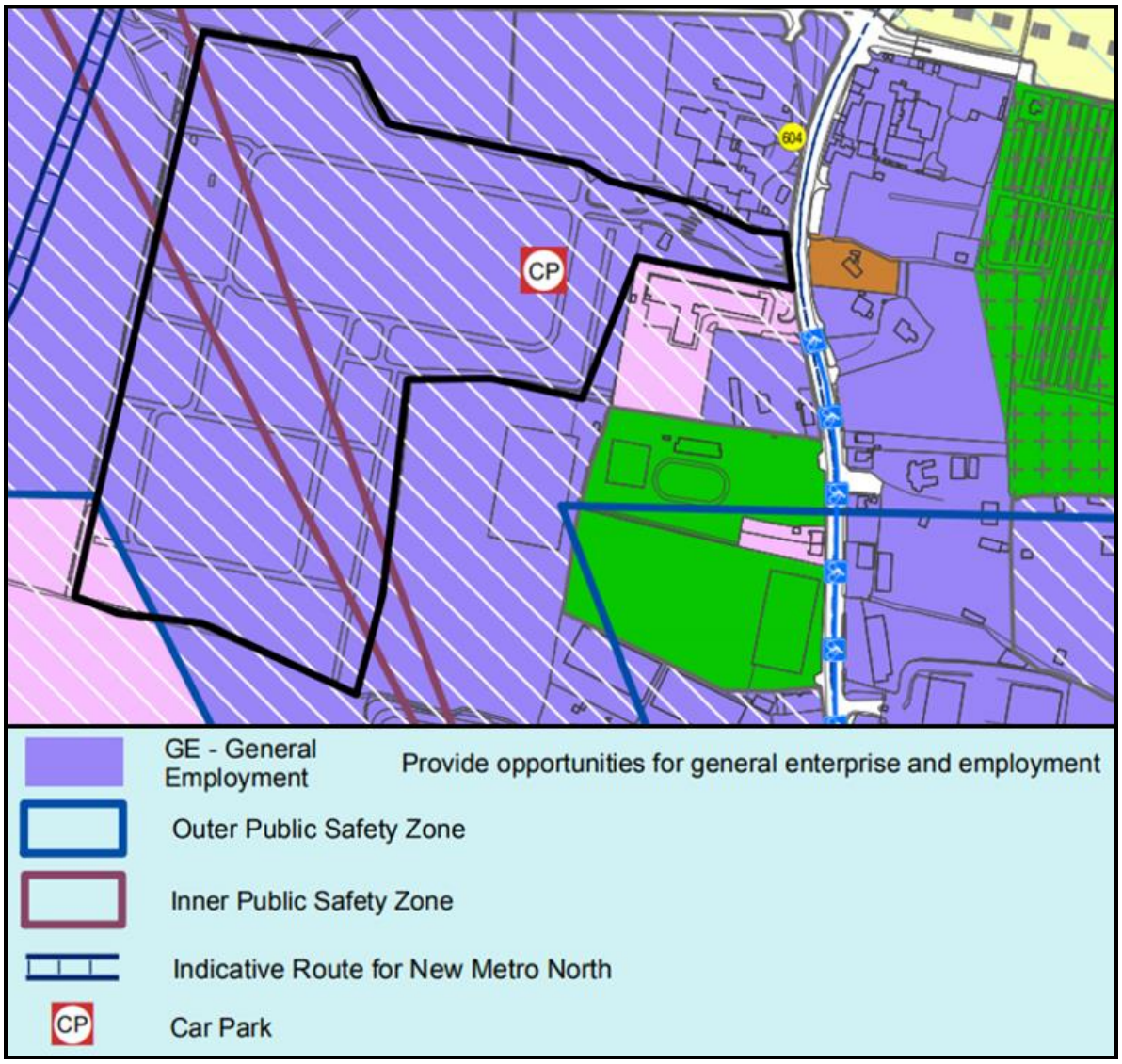


Figure 3.2: Extract from Fingal Development Plan 2017-2023, (Sheet No. 11) with Quickpark Lands outlined in black

3.3.1.5 Other Development Plan Designations

The subject lands are situated within a number of designated public safety and noise zones associated with Dublin Airport, including an airport runway approach area. Public Safety Zones (PSZ's), and Noise Zones were drawn up in 2003 by ERM for

the Department of Environment, Heritage and Local Government and the Department of Transport to protect the general public from aviation accidents.

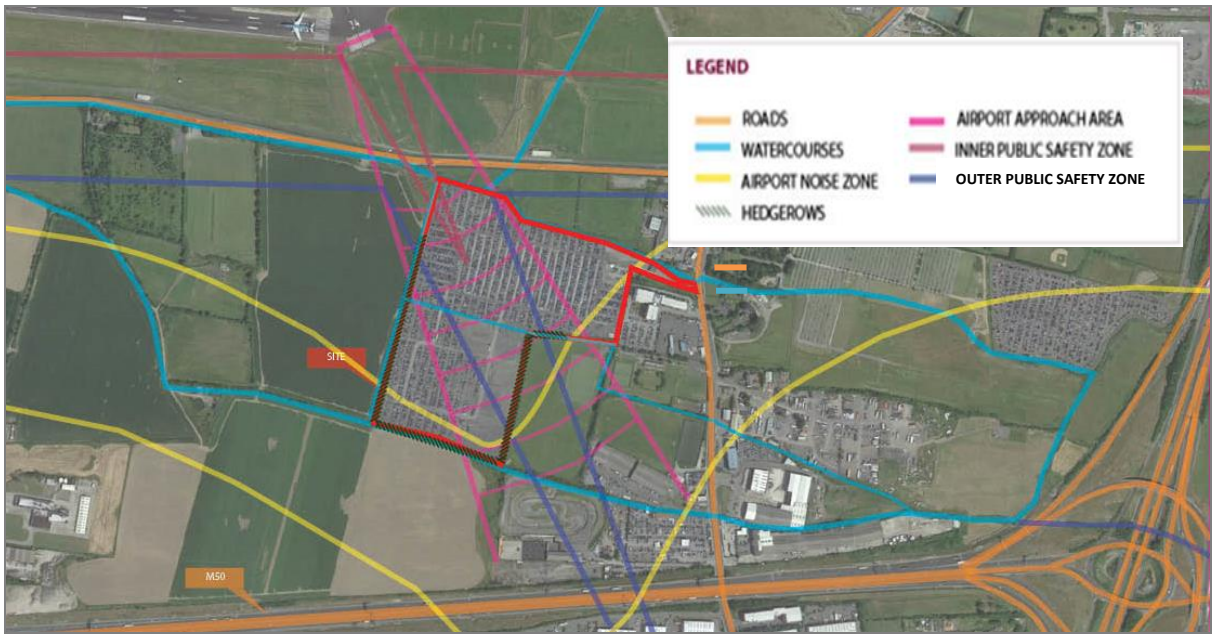


Figure 3.3: Map showing airport safety and noise zones (Subject lands outlined in red)

There are a number of development management restrictions associated with the various Public Safety Zones (PSZ's), surrounding Dublin Airport. The purpose of PSZ is to protect the public on the ground from the small but real possibility that an aircraft might crash in a populated area. Essentially, a PSZ is used to prevent inappropriate use of land where the risks to the public is greatest.

According to the report from ERM (2005), the likelihood of an accident in the outer safety zones is less than in the inner zones, and future development will be permitted, subject to a number of restrictions. High density housing development and the building of schools, hospitals and facilities attracting large numbers of people will not be permitted. Car parks are permitted in the Outer PSZ. A car park is permitted as persons are normally expected to park their car and then leave the car park development. Furthermore, car parks are also permitted within the Inner Public Safety Zone with the Erm Public Safety Report specifically stating that:

"The only exceptions for permitted developments in the inner PSZ are:

- *developments where persons are not expected to be present;*
- ***long stay car parks (i.e. greater than 24 hours), provided that persons are normally expected to park their car and then immediately leave the car park development. Buildings associated with car parks are subjected to the guidance given in Table 6.1;*** *and*
- *roads and railways where vehicles and passenger trains/trams are not expected to be stationary. For example, road vehicles can be expected to be stationary at major road intersections, junctions and traffic lights. Therefore,*

major road intersections, junctions, traffic lights and similar should not be permitted in the inner PSZ."

The information contained in Table 3.3 below is taken from Table 6.1 of the Environmental Resources Management (ERM) report of 2003, which pertains to the Outer Public Safety Zone permitted developments.

Permitted Developments	Outer Public Safety Zone (PSZ)
Housing	≤ 60 persons/half hectare
Holiday Accommodation	≤ 100 beds per development
Retail/Leisure Facilities	≤ 85 persons/half hectare
Working Premises	≤ 110 persons/half hectare
Institutional Accommodation	No further development
Sports Stadia	No further development
Limited Use	≤ 220 persons/half hectare

Table 3.3 Development restrictions within Outer Public Safety Zone. (ERM 2003)

The proposed entrance office building is located within the Outer Public Safety Zone and is therefore permitted subject to a population of 110 persons per half hectare. In this regard, the applicant wishes to confirm that the population of the proposed entrance building will be c. 40 persons and does not exceed the 110 persons per half hectare. The proposed development is therefore in accordance with the Inner and Outer Public Safety zone policies.

Fingal County Council sees the Dublin Airport area as a -

- Gateway to Dublin, Fingal and Ireland; South Fingal is a focus for national transport infrastructure with the Airport as the key, and the M50 and M1 as two of the nation's most important road links.
- A hub of the regional economy with the dynamic presence of the Airport, but also astride the Dublin-Belfast Economic Corridor, and close to vital development land around Blanchardstown and Swords.
- Fingal County Council recognises that the Airport is of international and national importance and represents the most significant single economic entity in Fingal and that of the region.

3.3.2 Dardistown Local Area Plan 2013-2019

The lands at the Quickpark, Cloghran are situated within the Dardistown Local Area Plan. The Dardistown Local Area Plan 2013-2019 identifies a number of policies and objectives in relation to development within the inner and outer Public Safety Zones and Noise Zones around Dublin Airport. Furthermore, the Dardistown Local Area Plan applies a specific car park objective to the Quickpark lands and acknowledges Quickpark as an airport related car park facility.

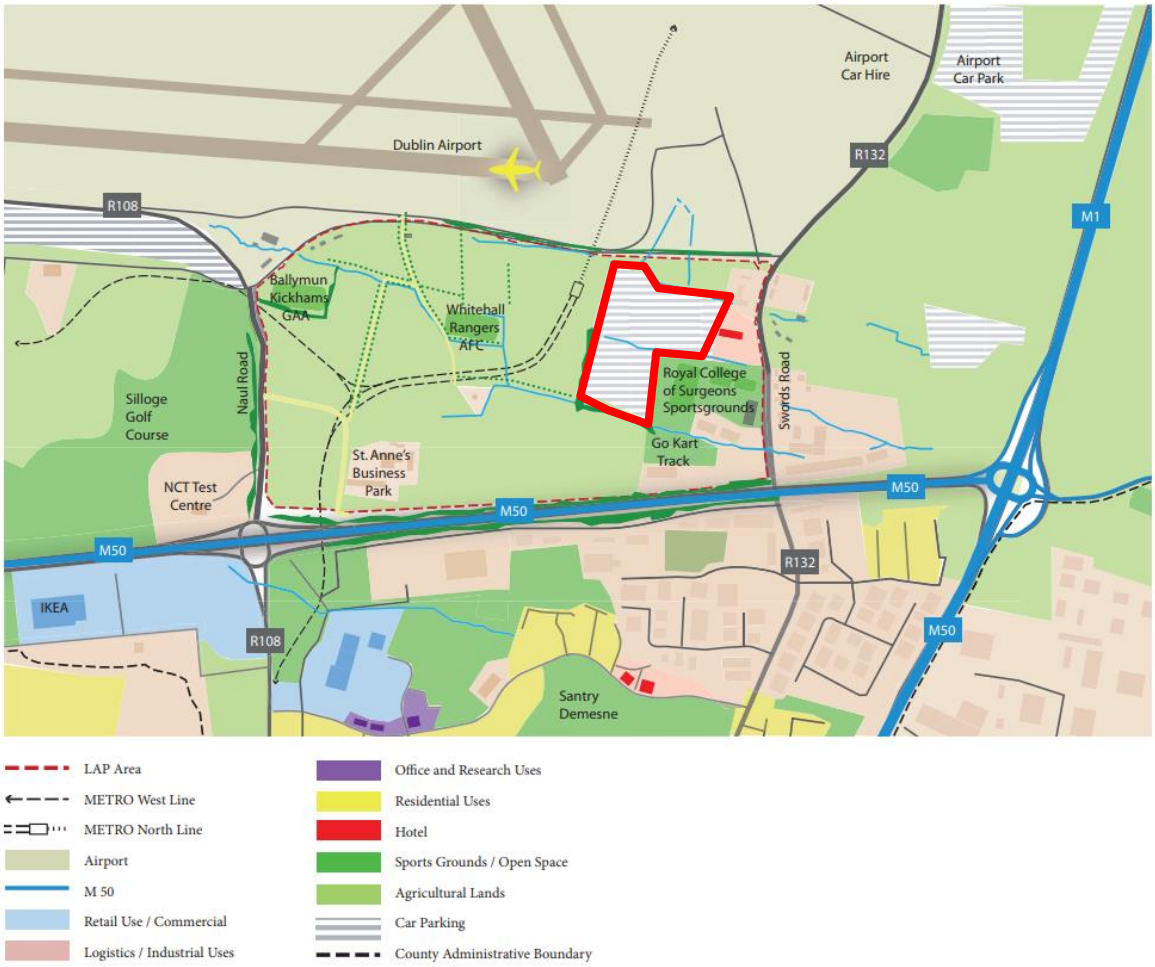


Figure 3.4: Map Extract from Dardistown LAP indicating Quickpark as an existing Car Park

The LAP states that the GE zoned lands will primarily be used for the Depot, Warehousing & Distribution, Airport Car Parking and Park and Ride. The car parking elements are there to promote mode transfer to bus and Metro and therefore are regarded differently. These allow for the transfer of the driver on-to public transport modes to be transported to the airport and city centre. While they generate traffic locally they help reduce traffic at more sensitive locations and help underpin sustainable travel modes. Therefore, this element of traffic generation should be regarded as supportive of Smarter Travel solutions and not as a traffic impact.

It must be noted that there are a significant number of relevant policies and objectives pertaining to car parking and development around the airport outlined in each of the Local Area Plans and Draft Airport Masterplan. The importance of providing adequate car parking facilities for the expanding and growing airport is highlighted throughout the relevant planning documents. The statutory documents seek to ensure that the infrastructural capacity of the airport increases in line with the growth of air services and that the safe and efficient transfer of passengers to and from the airport by transportation modes including the private car is a central component of the operation of Dublin Airport.

3.3.3 Dublin Airport Local Area Plan

Fingal County Council is in the process of reviewing the existing Dublin Airport Local Area Plan (LAP) 2006-2015 under Section 20 of the Planning and Development Act 2000 (as amended). The review of the Local Area Plan is in the early stages of public consultation (I.e. Pre-Draft Stage) with a Strategic Issues Paper for the Dublin Airport Local Area Plan published.

The Strategic Issues Paper sets out the Strategic Significant of Dublin Airport stating that the importance of the Airport in a national context has grown significantly over the past 12 years and is currently the 11th largest airport in the European Union and the fastest growing of Europe's largest 20 airports.

The paper notes that the pivotal role of the airport in the transport network is clear due to its location at the nexus of the M1, M2, M3 and M50 motorways and the presence of major public transport corridors (bus, metro link and prospectively heavy rail).

The paper states that future consideration for the operation of Dublin Airport include aircraft stand and terminal processing capacity and the need to enhance surface access links.

It is important to note, that the Quickpark lands form part of the Dardistown Local Area Plan and not the Dublin Airport Local Area Plan and it is submitted that the proposed development can proceed in the absence of an adopted local area plan for Dublin Airport noting that the LAP is guided by the Fingal County Development Plan 2017-2023 and the Development Plan takes precedent over the Local Area Plan. Quickpark is zoned for a car park under the Development Plan and thus is consistent with the proper planning and sustainable development of the area.

3.3.4 South Fingal Transport Study

Fingal County Council have engaged consultants to prepare a Transport Study in accordance with objective MT07 of the Development Plan. This objective seeks to:

> *"Carry out a comprehensive feasibility study of the South Fingal area to produce a strategic 'vision' and overall strategy for the proper planning and sustainable development of the study area, based on a sustainable transport and smarter travel approach, planning for all transport modes and needs, whilst also being reflective of road network capacity and modal split assumptions. ……..*

This study is anticipated to be finalised end of October 2018. However, the proposed development can proceed in advance of the publication of this report noting that-

- Quickpark is an existing car park and is an established surface access infrastructure serving Dublin Airport.

- Traffic utilising the car park already form part of the baseline traffic data and is accounted for in the traffic surveys conducted as part of this EIAR.

- The baseline assessment for the South Fingal Transport Study includes the Terminal 2 permission (F06A/1248/PL06F.220670) which in accordance with Condition 23 requires 26,800 long term car parking spaces to serve Dublin Airport of which Quickpark forms part of.

- The existing road infrastructure along the R132 already comprises bus lanes, footpaths and cycle lanes and in this regard little change is anticipated in terms of road infrastructure and any physical works is already in place.

- The lands are designated as airport related car parking in the Dardistown Local Area Plan and has a specific objective for a 'Car Park' in the Fingal County Development Plan 2017-2023.

The continued use of Quickpark on a permanent basis is in accordance with national, regional and local planning policy and thus is in accordance with the proper planning and sustainable development of the area.

3.4 Planning History Context

Downey Planning have carried out a detailed online assessment of the planning history pertaining to the subject site. Quickpark has been the subject of an extensive planning history with the first phase of the car park in existence since 1999. Throughout the planning history, planning permissions have been afforded temporary permissions only and accordingly require repeat applications. The most recent planning application was deemed by the Board to be Strategic Infrastructure and therefore of national importance. Temporary permissions for strategic infrastructure is not ideal and with the significant cost and administration required for SID developments, a permanent planning permission is being sought.

There are a number of planning applications pertaining to the subject site and these are outlined below:

- ABP Ref. No. 06F.PA0023 – An Bord Pleanála granted permission for a Strategic Infrastructure Development application dated 6th April 2011, for the continued operation of the Quickpark Long Stay Carpark at Turnapin Great, Swords Road (Old Airport Road), Santry, Co. Dublin. Permission was granted for a temporary period of 7 no. years until 4th October 2018 (or 6th December including 63 days for Christmas period) for: 6,240 no. long term car parking spaces; ancillary infrastructure and facilities including circulation road, hard standing, maintenance shed, control building, bus shelters, CCTV, landscaping, new ancillary infrastructure and existing entrance;

- Reg. Ref. F06A/1277 – On 25th October 2006, the decision WITHDRAW APPLICATION was made by Fingal County Council for the construction of an at-grade Car Park with 2745 spaces together with associated internal roads and bus shelters on lands adjoining an existing approved car park (permitted under planning permission F05A/1464). Access to the proposed Car Park is through the existing approved Car Park which is accessed from an existing

signal-controlled junction on the Swords Road (Old Airport Road). The proposal includes the removal of 5 spaces in the existing approved Car Park to provide access to the proposed Car Park.

- Reg, Ref. F06A/1746 (ABP Ref. PL06F.225225) – On 30th July 2007, Fingal County Council granted permission for the construction of an at-grade car park with associated internal roads and bus shelters on lands adjoining an existing approved car park (permitted under planning permission F05A/1464). Access to the proposed car park is through the existing approved car park which is accessed from an existing signal controlled junction on the Swords Road (Old Airport Road). The proposal includes the removal of 5 spaces in the existing car park to provide access to the proposed car park. An appeal was lodged on 27th August 2007 and a decision to Appeal Withdrawn was made by An Bord Pleanála on 24 September 2007.

- Reg. Ref. F05A/1464 – Permission for continuation of use of an at grade Car Park with 3500 Car Parking spaces together with associated entry/exit control facilities, bus shelters, hard-standing for service vehicles, biocycle waste water treatment control building with staff facilities, site access to Swords Road (Old Airport Road) via signalled control junction with turning lanes and directional signs permitted under planning permission (F02A/1110). Granted by Fingal County Council on 28th February 2006.

- Reg. Ref. F03A/1224 – Permission for the construction of a temporary surface car park. Fingal County Council refused permission on 11 November 2003. An appeal was lodges on 4th December 2003 and a decision to Application Withdraw was made by An Bord Pleanála on 14th January 2004 (ABP Ref.PL06F.205286).

- Reg. Ref. F02A/1110 – Permission for At-Grade car park with 3,500 car parking spaces, together with associated entry/exit control facilities, bus shelters, hardstanding for service vehicles, biocycle waste water treatment, demolition of one existing habitable dwelling and change of use of second habitable dwelling to use as a control building and for staff facilities. Access to the carpark is from the Swords Road (Old Airport Road) and includes a new signal controlled junction with turning lanes and new directional signs at Swords Road, Santry, Dublin 9. Fingal County Council granted permission on 18th October 2002.

- Reg. Ref. F99A/0376 – On 16th August 1999, planning permission was granted by Fingal County Council for an at grade car park with 3,500 car parking spaces together with associated entry/exit control facilities, bus shelters, hardstanding for service vehicles, biocycle waste water treatment, demolition of one existing habitable dwelling and change of use of second habitable dwelling to use as a control building and for staff facilities. Access to the Car Park is from the Swords Road (Old Airport Road) and includes a new signal controlled junction with turning lanes and new directional signs on

lands at Turnapin Great, Swords Road (Old Airport Road), Santry, Co. Dublin. An appeal was lodged on 13th September 1999 and the decision to grant permission was upheld by An Bord Pleanála on 9th March 2000 (ABP Ref.PL06F.112955).

Downey Planning understand that this represents the full extent of the planning history pertaining to the subject site and is evident that the subject site has an established planning precedent where it identifies the application site as being suitable for a car park development.

3.5 Demand for long term parking

The Fingal Development Plan 2017 – 2023 provides that Dublin Airport is of national and international importance and represents the most significant single economic entity in Fingal and the Region. The Airport is the principle gateway to Ireland and an important driver of economic development, generating employment both directly and indirectly. Fingal has a unique role in facilitating the sustainable development of the airport and its environs and safeguarding its potential as a national resource. Long term car parking is an integral and essential component of successful airport operations.

The current status and future need for car parking at Dublin Airport is examined in this section. Dublin Airport experienced strong growth over the last number of years to 2018 making it one of Europe's fastest growing airports. The Airport accommodated 29.6 million passengers in 2017 and this is projected to grow in line with the construction of the second runway. The demand for long term car parking has not ceased or reduced since the granting of the previous temporary planning permission for Quickpark. Indeed this demand has been increased and become more pronounced as passenger numbers have increased substantially in the intervening period.

The planning application for Terminal 2 that was granted planning permission by An Bord Pleanála under ref PL 06F.220670 caps the number of long term and short term car parking spaces at Dublin Airport under Condition No. 23 as follows:-

- Long-term car parking spaces shall not exceed 26,800;
- Short-term car parking spaces shall not exceed 4,000;
- No material increase in employee car parking spaces.

These car parking limits were assessed in line with a potential passenger thoroughfare of 32 million passengers per year. Therefore, it has been established that 26,800 car parking spaces are required for a capacity of 32 million passengers per year. The existing long term car parks at Quickpark and the Holiday Blue and Express Red DAA car parks, do not exceed this cap and provide essential surface access infrastructure in line with what was deemed as required in the assessment of the Terminal 2 permission.

Access to Dublin Airport by public transport has increased with some 56% of passengers travelling by bus or taxi. However, it remains that one in three passengers arrive by car and need to be accommodated. It must be noted that Dublin Airport has a national catchment and not all persons can access public transport to reach the Airport, particularly those outside of the Greater Dublin Area, where often public transport is not a readily available option. Indeed, a significant quantum of people access the airport in the early morning and late night where services are not frequent or unavailable.

Access by car therefore remains a necessary mode of transport for the national catchment and requires the necessary infrastructure to support same as a viable method for accessing the airport and the wider European and world markets. Given the overriding objectives of national, regional and local planning policy for safeguarding the current and future operational, safety and technical requirements of Dublin Airport, access needs to be facilitated by a range of means including public transport and the private car.

It remains that 53.4% of passengers originate from outside Dublin (Dublin Airport's Mobility Management Update 2017) which therefore requires a variety of transportation modes including long term car parking.

Please refer to Chapter 9 of this EIAR which demonstrates that the 6,240 car parking spaces at Quickpark is in accordance with Condition 23 of the Terminal 2 decision and that the basis and assessment of 26,800 long term car parking spaces to serve Dublin Airport is valid.

3.6 Additional Public Transport Measures

3.6.1 Metrolink

The Metrolink is anticipated to be delivered and operation by 2027 and is anticipated to accommodate 50 million passengers per year. The metrolink proposes a potential future stop at Dardistown to the south west of the subject lands at Quickpark. The metrolink will run from Estuary in Swords through Dublin City Centre and connect to Sandyford. The metrolink will run underground in a tunnel from Dardistown to Dublin Airport.

The metrolink is a government initiative and one of the identified national infrastructure projects and forms part of the National Strategic Outcome No. 4 of the National Development Plan 2018-2027. It is anticipated that there will be positive impacts as a result of metrolink particularly decreased traffic congestion.

However, it is important to note that the metrolink serves the Greater Dublin Area and for the significant quantum of patrons accessing the airport from outside Dublin, the Metrolink may still remain an unviable option for them as they will have to access other forms of public transport to get to the city centre. Indeed, public transport may not be available to them and thus such persons also need to be accommodated in accessing Dublin Airport. Therefore, private car and long-term car parking remains

an important piece of surface access infrastructure to safeguard the successful operation of the airport.

Figure 3.4: Current proposed Metrolink Route from Estuary Swords through to Sandyford

There is currently no metro within Dublin or serving Dublin Airport. A comparable study for modal shift to public transport before and after the construction of same would be Edinburgh Airport. Edinburgh Airport has only recently constructed a tram to serve the centre and the Airport. In 2012, prior to the construction of the tram, modal share of public transport was 29.2%. In 2016, the modal share of public transport to the airport (with the new tram line fully operational) was 30.2% (Edinburgh Airport Corporate Responsibility Report 2017) and are on target for meeting a modal split of 35% of those accessing the airport by public transport. Therefore, the provision of the Tram in Edinburgh to date has had no real meaningful impact on ensuring that modal shift to public transport has occurred.

The modal change from the provision of the tram did not remove the requirement for long term car parking at the airport. Similarly, the metrolink will not eradicate the need for long term parking at Dublin Airport particularly noting the increased growth in passenger numbers and the need to provide access to a national catchment. With regards to metrolink, not all persons live in proximity to a bus service that can access the metrolink. Access needs to be provided across a range of modes and not just public transport. Ease of access to the airport is a key consideration and persons from outside the greater Dublin Area who have to utilise multiple forms of transport (bus, metro etc.) with numerous luggage bags for long stay holidays have to also be considered and accommodated to ensure that persons continue to utilise Dublin Airport.

3.6.2 Bus Connects

Bus Connects provides for the redesign of the current bus network in Dublin. The proposal seeks to make the network better by increasing the overall amount of bus services, provide new and frequent orbital services connecting more outer parts of the city together, simplify the bus services on the key radial into "spines" where all buses will operate under a common letter system and buses will run very frequently and be more evenly spaced and seeks to increase the number of routes where buses will come every 15 minutes or less all day.

A key component of the Bus Connects is that interchanges will be required for some users of the system but it is considered that more frequent buses will negate against the inconvenience of changing buses.

Whilst Bus Connects seeks to increase the bus network, it remains that the proposals seek to increase services within the Greater Dublin Area but does not address public transport to the airport outside of Dublin. Therefore, it remains that access to the Airport by private car is required and that long term car parking as a vital surface access infrastructure is required.

3.7 Rationale for Permanent Planning Permission

The reasons and justification for permanent permission are as follows:

- The Quickpark Car Park provides necessary and key supporting infrastructure to Dublin Airport and has done so for nearly 20 years. Dublin Airport is of strategic long term economic importance and requires safeguarding. The existing quickpark car park provides additional supporting uses to the airport itself.
- Passenger numbers at Dublin Airport have risen year on year, and over the coming years, Dublin Airport is expected to expand its operational capacity with the construction of an additional runway (capacity of 32million passengers). This will create a need for additional long term car parking facilities. The Quick-Park facility currently provides c.6,240 long term car parking spaces to this requirement.
- The Quickpark car park is fully in accordance with the GE Land Use Zoning and the 'CP' Car Park objective applicable to the land as set out in the Fingal County Development Plan in recognition of its long established-use as part of critical airport surface infrastructure.
- The Quickpark lands are within the Inner and Outer Public Safety Zones (PSZ), at Dublin Airport. These safety zones place restrictions on the type of development permitted in the vicinity of the airport. Car parking is the most appropriate land use for the optimum use of the lands.
- The Fingal Development Plan supports the use of the lands for a long term car park by means of the local objective and does not include any policies or objectives that would disallow the current car park from operating on a permanent basis.
- Permanent planning permission is appropriate having regard to the established nature of the car park which is fully constructed and in situ for

nearly 20 years without significant negative impacts on the surrounding environment or amenities and indeed its location proximate to Dublin Airport.

- Whilst the preferred access mode to Dublin Airport is bus as set out in the Airports Mobility Management Update 2017, the long term car parks facilitate access for 1 in 3 passengers, particularly during early morning periods where public transport is limited or unavailable. Long term parking is also required for persons outside greater Dublin who wish to access the airport when public transport options are unavailable. A range of transportation modes are required to serve Dublin Airport including bus and private car.
- The Quickpark car park which comprises c. 6,240 spaces, in conjunction with the DAA long term car parks (Blue and Red) which comprises 19,180 spaces, does not exceed the cap of 26,800 car parking spaces serving Dublin Airport as set out under Condition 23 of Ref. PL06F.220670/F06A/1248.
- A permanent planning permission will ensure that an existing and established car parking resource is available to the airport to safeguard its efficient operation and will have regard to the national importance of the airport noting that public transport to the airport is not feasible from all counties.
- A permanent planning permission will omit the requirement to apply again for planning permission in seven years time. Quickpark and the DAA car parks are the only Strategic Infrastructure Development that have been subject to temporary permissions. There is significant financial and indeed administrative requirements for SID applications. Car parking is essential and is required on a permanent basis to support the overriding policy objectives to protect and support Dublin Airport.

The Planning and Development context for the land clearly indicates that at a national, regional and local level, there is unequivocal support for Dublin Airport as strategic piece of national infrastructure that supports the growth of Ireland in the global economy. It is also clear that Dublin Airport is growing year on year and with nearly 30 million passengers per year, the capacity of Dublin Airport is nearly at the level considered within the Terminal 2 permission which confirmed that 26,800 spaces were required to serve Dublin Airport. Nothing has changed in the intervening period that has reduced this requirement for car parking spaces and no additional car parks have permission for long term car parking for Dublin Airport other than the Holiday Red and Express Blue Car parks operated by the DAA. The basis of assessment of Condition 23 of Terminal 2 remains valid. The level of long term car parking provided within the three permitted car parks is below that set out as required and is reasonable based on the national catchment of the airport and the public transport provision provided, infrastructure, mobility management, traffic capacity and the need for the airport to operate effectively. Quickpark has been in situ for nearly 20 years and is an important piece of strategic surface access infrastructure.

Chapter 4 – Population and Human Health

This section of the Environmental Impact Assessment Report assesses the impact of the proposed development on the human environment in the general area of the subject site at Turnapin Great/Old Airport Road, Swords, Co. Dublin. Specific aspects that will be examined include population levels, human health, impact on employment, commercial activity, community infrastructure and social facilities.

4.1 Population

4.1.1 Introduction

This section of the EIAR assesses the impact of the proposed development on population and human health in the vicinity of the site. Insofar as possible, this assessment has also considered impacts on the future workers and visitors to the subject lands.

4.1.2 Research Methodology

The following assessment of the predicted impacts on population and human health was undertaken based on local population information from the Central Statistics Office's Census of Population reports, the Regional Planning Guidelines for the Greater Dublin Area 2010-2022, Fingal County Development Plan 2017-2023, and the Dardistown Local Area Plan.

4.1.3 Receiving Environment

The subject lands are located at Turnapin Great, approximately 1km south of Dublin Airport on the west side of the R132, Swords Road (Old Airport Road), Santry, Co. Dublin. The M50 is located further to the south of the subject site. The surrounding area along the Swords Road is primarily comprised of warehouse type buildings and car related uses such as car rental businesses, garages and petrol stations. The Carlton Hotel Dublin Airport is located to the east of the Quickpark Car Park. The subject lands comprise an existing car park that has been in operation for nearly 20 years.

Population

The population of the state experienced rapid growth in the period between 1996 and 2011. The latest Census results (i.e. 2016) show that Ireland's population stood at 4,761,865 in April 2016, an increase of 173,613 (3.8%) since April 2011.

This trend has been represented in the Leinster region, which has experienced a population increase of 5.2% in the last five years. In particular, the population growth of Fingal County has been strong with an 8% rise on 2011 levels, more than twice that of the state overall. The population growth in the County has been attributed to the availability of zoned and serviced land, strong inward investment and its strategic position in the Greater Dublin Area.

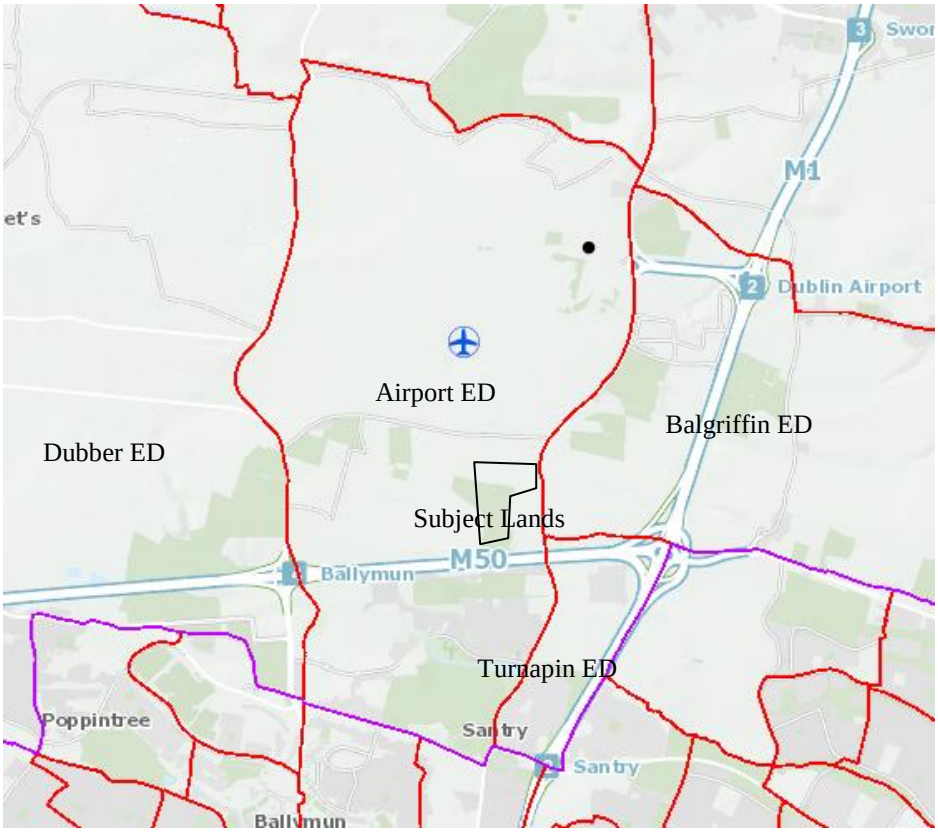


Figure 4.1: Site Location Map (subject site outlined in red)

Table 4.1 Population Trends 2006-2016

				Percentage Change%		
	2006	**2011**	**2016**	**2006-2011**	**2011-2016**	**2006-2016**
Airport ED	1,627	3,601	5,018	+121.32	+39.35	+208.42
Balgriffin ED	-	1,966	3,113	-	+58.34	-
Dubber ED	2,960	5,287	7,372	+78.6	+36.78	
Turnapin ED	1,739	1,683	1,700	-2.3	+1	-2.24
Total Catchment	-	12,537	17,203	-	-	+37.2%
Fingal County	239,992	273,051	296,020	+13.8	+8.4	+50.7
Dublin City	506,211	525,383	554,554	+3.8	+5.6	+11.9
Dun Laoghaire-Rathdown	194,038	206,995	218,018	+6.6	+5.3	+13.7
South Dublin	246,935	265,174	278,767	+7.3	+5.1	+16.7
Dublin	1,187,176	1,270,603	1,347,359	+7.0	+6.04	+20.0

Co. Kildare	186,335	209,995	222,504	+12.6	+6.0	+35.7
Co. Wicklow	126,194	136,448	142,425	+8.1	+4.4	+24.2
Co. Meath	162,831	184,034	195,044	+13.0	+6.0	+45.6
Leinster	2,295,123	2,501,208	2,633,311	+9.0	+5.3	+25.1
State	4,239,848	4,581,269	4,761,865	+8.1	+3.9	+21.6

On a regional level, aside from Fingal, the Dublin Local Authorities experienced a much slower rate of growth when compared with the other counties in the Greater Dublin Area. This mirrors an identifiable and inevitable trend that emerged during the last two intercensal periods (1996-2002 & 2002-2006) where population in some of Dublin's traditional residential areas declined, whereas areas in the hinterland of Dublin experienced exponential growth.

Table 4.1 also shows the population growth within the District Electoral Divisions (DEDs) within the catchment area. The majority of DEDs within the area have experienced significant growth over the past decade; however minor fluctuations are noted for the Turnapin ED with marginal increases and decreases in population recorded over intercensal periods since 2006. The subject lands are situated within the Airport ED, an area that has seen major growth over the past decade with an increase of 39.35% recorded in the period between 2011 and 2016. Only the Turnapin ED has experienced a decline in population. Table 4.1 indicates that population within the vicinity of the Airport is relatively low due to safety restrictions or residential development and indeed the nature and extent of the airport area.

While the population within the catchment area may have increased since the 2011 Census due to significant residential developments at Ballymun, Poppintree, Meakstown, Santry Demesne etc, the proposed development itself has no residential component and will not result in any increase in the permanent population of the area.

4.1.4 Characteristics of the Proposed Development

The proposed development consists of the continuation of use of an existing long term surface car park serving as a long-stay car park for Dublin Airport. A new entrance building comprising offices ancillary to Quickpark are also proposed to facilitate the ongoing operation of the car park. Minor works to the layout of the existing car park to accommodate the proposed new entrance buildings are also proposed. However, the car park itself predominantly remains as per that in existence on the subject lands.

4.1.5 Potential Impact of the Proposed Development

4.1.5.1 Construction Phase

The construction phase of the proposed development should not have any direct impact on the population of the area or the subject lands. It is expected that the work

force will generally commute to the site rather than take up residence in the immediate vicinity. However, the construction of any project has potential to give rise to an impact on health and safety of human beings if construction activities are not managed appropriately. Measures to address such health and safety considerations will be addressed in the Construction Management Plan for the development.

4.1.5.2 Operational Phase

The operational phase of the proposed development should not have any direct impact on the population of the area or the subject lands. While the proposed development will attract a significant number of visitors to the site, this population will only be of a temporary transient nature.

4.1.6 Remedial and Reductive Measures

The proposed development is not predicted to have any significant adverse impacts on population levels or structure. No remedial or reductive measures are proposed with reference to population.

4.1.7 Predicted Impact of the Proposed Development

4.1.7.1 Construction Phase

The construction phase of the development will have a negligible or neutral impact on population.

4.1.7.2 Operational Phase

The proposed development is not predicted to have any significant adverse impacts on population levels or structure. The proposed new entrance building will provide office use ancillary to the Quickpark Car park and will comprise c. 40 persons who will work from the building. However on the overall site, population on the subject lands is transient in nature and will have no impacts.

4.1.8 Monitoring

There is no requirement for population monitoring.

4.2 Employment

4.2.1 Introduction

This section of the EIAR assesses the impact of the proposed development on employment in the vicinity of the subject site.

4.2.2 Research Methodology

The employment context of the receiving environment is set out drawing principally on the most recently available statistics for the total number of persons at work, unemployment levels and employment categorised according to social group. Therefore, information on the economic performance of the area and the wider Fingal region is derived primarily from the 2016 Census results and statistics obtained from the ESRI.

4.2.3 Receiving Environment

CSO 2016 statistics noted a State employment level of 2,006,641 compared with 1,807,360 in 2011 which resulted in an 11% increase in employment over the 5 year period. Q2 figures for 2018 indicate 2,255,000 are in employment with an unemployment level of 144,300.

The unemployment rate as measured by the Census was 12.9%, down from 19.0% in April 2011. The industries with the largest increase in employment levels include IT Activities, residential care and social work.

Table 4.2 – Total Number of Persons 15+ at work in Electoral Districts and Dublin 2016 (Source: Census 2016, Quarterly Employment Update Q2)

Change in Employment Between 2006-2011			
Area	**2006**	**2011**	**2016**
Fingal	120,794	119,276	133,971
Dublin	572,896	540,729	695,100
Leinster	1,077,710	1,009,942	1,138,817
State	1,903,042	1,807,360	2,255,000 (Q2,2018)

The long-term unemployment rate and the seasonally adjusted unemployment rates have also declined. This represents a considerable period where unemployment has declined indicating the recent growth in the economy following the recession.

4.2.4 Characteristics of the Proposed Development

The proposed development will take place on a site area of approximately 16.9 hectares. The continuation of the existing car park on a permanent basis will ensure the existing employment on the lands is retained. A new entrance building is also proposed comprising office space for Quickpark which will accommodate c. 40 workers. There are no works proposed to the existing car park except minor alterations to the layout to accommodate the new entrance building.

4.2.5 Potential Impact of the Proposed Development

4.2.5.1 Construction Phase

The proposed development will provide construction sector and related employment over the construction period of the entrance building. It can be difficult to determine the exact numbers that may be employed directly on site during the construction phase as a number of workers may only be employed on a temporary basis as sub-contractors and may also work on other sites during the period. Should An Bord Pleanála grant planning permission for this proposed development, then it will be constructed over a number of months. Aside from the benefits of direct employment, it is anticipated that builder suppliers and other related services will benefit from the construction phase of the proposed development.

The construction phase will be beneficial to the local economy due to the additional income and expenditure that will arise. The existing employment on site will also be

safeguarded in relation to the existing ongoing operation of the car park such as bus drivers, maintenance, administration etc. This is considered to be a positive impact arising from the development.

4.2.5.2 Operational Phase

The proposed development will attract visitors to the area on a temporary basis, possibly sustaining and increasing the demand for local services, including shops, public houses, restaurants, etc. The continued operation of the development will also maintain existing employment associated with the car park including reception/cashiers/maintenance and management staff.

4.2.6 Remedial and Reductive Measures

No adverse impacts on employment are predicted during the construction or operational phase of the development. No remedial or mitigation measures are considered necessary.

4.2.7 Predicted Impact of the Proposed Development

The predicted impact of the proposed development will be the same as that set out for potential impacts.

4.2.8 Monitoring

There is no requirement for economic monitoring.

4.3 Community Infrastructure and Social Facilities

4.3.1 Introduction

This section of the EIAR assesses the impact of the proposed development on the local community, social infrastructure and facilities in the vicinity of the subject site.

4.3.2 Research Methodology

This section was undertaken with regard to existing community facilities in proximity to the site, which may be affected by the proposed development.

4.3.3 Receiving Environment

The Fingal Development Plan 2017-2023 defines the term ‘community infrastructure’ as including infrastructure and facilities such as education facilities, facilities associated with social service provision, public health facilities, childcare facilities including private nurseries, community facilities, libraries and arts centres, religious buildings, and cemeteries. The current situation in relation to these facilities in the subject area is set out in the following sections.

Community

The subject site is located on the periphery of the urban area of Dublin. The immediate vicinity of the site is very sparsely populated.

There is a full range of community facilities in Ballymun and within the urban area proper including schools, churches, library services and health services. These areas are well provided for in terms of active community recreation facilities, including playing fields, parks and sports facilities. These areas are also well provided for in terms of passive recreation facilities including public houses, restaurants, cinemas etc.

Education

There are no primary schools within the immediate vicinity of Dublin Airport. The nearest primary schools comprise St. Margarets National School or the primary schools in Ballymun. Similarly the nearest secondary school to the subject lands are located in Swords or Ballymun. This is reflective of the location of the lands in close proximity to the airport and the safety restrictions associated with an International Airport.

Recreation
There are a number of recreational and sporting facilities to the west and north/northeast of the site. To the east of the lands along Swords Road there are further recreational facilities, including the grounds of the Royal College of Surgeons, and the GAA facilities of Ballymun Kickhams and Parnells.

4.3.4 Characteristics of the Proposed Development

The proposed development consists of the continuation of use of an existing surface car park serving as a long-stay car park for Dublin Airport. Minor construction works are proposed to facilitate the ongoing operation of the car park and the construction of a new entrance building to the car park.

4.3.5 Potential Impact of the Proposed Development

4.3.5.1 Construction Phase

Construction impacts are expected to be short term, but some potential adverse local impacts can be expected due to the actual construction of the development. This is likely to be associated with construction traffic and any possible nuisance with such movements, for example an increase in daytime noise levels. The resident community in adjoining dwellings are most likely to be affected by these short term temporary impacts. Corresponding mitigation measures are set out in Chapter 12.0 which will reduce these impacts to an insignificant level.

The development may also have some positive impacts on passive recreational facilities within the area with additional revenue being derived from the use of these facilities by the construction workers.

4.3.5.2 Operational Phase

The operational phase of the development should not have any direct impact on the community infrastructure or social facilities within the area.

4.3.6 Remedial and Reductive Measures

4.3.6.1 Construction Phase

Measures to mitigate potential impacts arising from the construction phase of the proposed development such as noise are set out in relevant chapters of this EIAR.

4.3.6.2 Operational Phase

The proposed development is not predicted to have any adverse impacts on community facilities in the area. No remedial or reductive measures are proposed with reference to community facilities.

4.3.7 Predicted Impact of the Proposed Development

4.3.7.1 Construction Phase

The proposed continuation is use is unlikely to have any significant operational impacts.

4.3.7.2 Operation Phase

There is no predicted impact on community facilities as a result of the proposed development.

4.3.8 Monitoring

There is no requirement for community monitoring.

4.4 Human Health

The continued use of the existing Quickpark Car Park will not have an adverse impact on human health including mental health or wellbeing. Furthermore, there will be no adverse impacts on social, economic or environmental living conditions as a result of the continued use of the car park. No mitigation measures are required in respect of Population and Human Health during the operational phase of the development.

Chapter 5 Biodiversity

5.1 Introduction

This biodiversity impact assessment has been prepared by Padraic Fogarty of OPENFIELD Ecological Services. Pádraic Fogarty has worked for over 20 years in the environmental field and in 2007 was awarded an MSc from Sligo Institute of Technology for research into Ecological Impact Assessment (EcIA) in Ireland. OPENFIELD is a full member of the Institute of Environmental Management and Assessment (IEMA).

Under the EIA Directive as well as best practice methodology from the EPA, the analysis of impacts to biodiversity is an essential component of the EIA process, and so is a required chapter in any EIAR.

Under Article 6(3) of the Habitats Directive an 'appropriate assessment' of projects must be carried out to determine if significant effects are likely to arise to the integrity of Natura 2000 sites. An Appropriate Assessment Screening Report has been prepared as a separate stand-alone report.

5.2 Research Methodology

The assessment was carried out in accordance with the following best practice methodology: 'Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland' by the Institute of Ecology and Environmental Management (IEEM, 2016) and 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' by the Environmental Protection Agency (EPA, 2017).

A site visit was carried out on the 3rd of May 2018. The site was surveyed in accordance with the Heritage Council's Best Practice Guidance for Habitat Survey and Mapping (Smith et al., 2010). Habitats were identified in accordance with Fossitt's Guide to Habitats in Ireland (Fossitt, 2000). A species list for each habitat was compiled and these are presented in Appendix 5.2 of this Chapter. Species abundance was determined using the DAFOR scale (D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare). This is a subjective form of habitat description commonly used in conjunction with habitat classifications. Sample digital photos were also taken. Data were then uploaded to the ArcView 9.2 GIS software suite.

The nomenclature for vascular plants is taken from *The New Flora of the British Isles* (Stace, 2010) and for mosses and liverworts *A Checklist and Census Catalogue of British and Irish Bryophytes* (Hill et al., 2009).

May lies within the optimal survey period for general habitat surveys (Smith et al., 2010) and so a full classification of all habitats was possible. It is also within the season for breeding birds, bats and amphibians. It is outside the optimal season for mammal survey as tall vegetation can obscure field signs. It was possible to classify all habitats on the site to Fossitt level 3. A full species list is presented as an appendix to this chapter (see Appendix 5.1).

5.3 Receiving Environment

Best practice guidance suggests that an initial zone of influence be set at a radius of 2km for non-linear projects (IEA, 1995). However, some impacts are not limited to this distance and so sensitive receptors further from the project footprint may need to be considered as this assessment progresses. This is shown in figure 5.1.

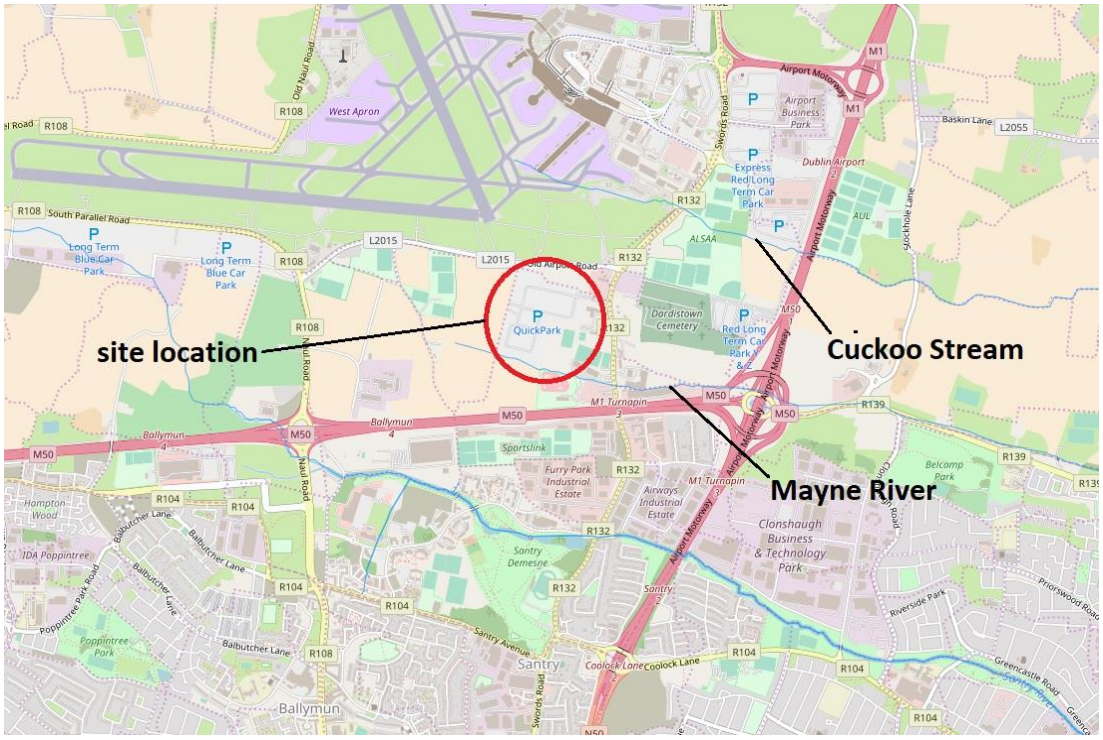


Figure 5.1 – Approximate 2km radius of proposed site. There are no areas designated for nature conservation within this zone (from www.epa.ie)

5.3.1 Literature Review

There are a number of designations for nature conservation in Ireland including National Park, National Nature Reserve, RAMSAR site, UNESCO Biosphere reserves, Special Protection Areas (SPA – Birds Directive), Special Areas of Conservation (SAC – Habitats Directive); and Natural Heritage Areas. The mechanism for these designations is through national or international legislation. Proposed NHAs (pNHA) are areas that have yet to gain full legislative protection. They are generally protected through the relevant County Development Plan. There is no system in Ireland for the designation of sites at a local, or county level. Within 2km of the site there are no such areas. Local drainage patterns enter the Baldoyle Bay, which is designated as a SPA, SAC and a pNHA. Baldoyle Bay is also internationally recognised as a Ramsar wetland site.

Baldoyle Bay SAC (code: 0199)

This SAC is the estuary of the Sluice and the Mayne Rivers that is largely enclosed by a sand spit that stretches from Portmarnock to Howth. At low tide it has large areas of exposed mud and sediment that support rich invertebrate communities. There are a number of habitats here that are listed in the EU's Habitats Directive Annex I while there are two plants recorded from the Bay that are protected under the Flora Protection Order: Borrer's Saltmarsh-grass *Puccinellia fasciculata* and Meadow Barley *Hordeum secalinum.*

The reasons why the bay falls under the SAC designation are set out in the qualifying interests. They are either habitat types listed in Annex I or species listed in Annex II of the Habitats Directive. This information is provided by the National Parks and Wildlife Service (NPWS) and is shown in table 5.1 below. In this case the SAC is designated only for protected habitat types.

Table 5.1 – Qualifying interests for the Baldoyle Bay SAC (from NPWS)

Code	Habitats
1140	Mudflats and sandflats not covered by seawater at low tide
1310	Salicornia and other annuals colonizing mud and sand
1330	Atlantic salt meadows
1410	Mediterranean salt meadows

- **Tidal mudflats (1140)**. This is an intertidal habitat characterised by fine silt and sediment. Most of the area in Ireland is of favourable status however water quality and fishing activity, including aquaculture, are negatively affecting some areas.
- **Salicornia mudflats (1310)**: This is a pioneer saltmarsh community and so is associated with intertidal areas. It is dependant upon a supply of fresh, bare mud and can be promoted by damage to other salt marsh habitats. It is chiefly threatened by the advance of the alien invasive Cordgrass *Spartina anglica.* Erosion can be destructive but in many cases this is a natural process.
- **Atlantic and Mediterranean salt meadows (1330 & 1410)**: these are intertidal habitats that differ somewhat in their vegetation composition. They are dynamic habitats that depend upon processes of erosion, sedimentation and colonisation by a typical suite of salt-tolerant organisms. The main pressures are invasion by the non-native *Spartina anglica* and overgrazing by cattle and sheep.

Baldoyle Bay SPA (site codes: 4016)

Estuarine habitats are some of the most productive in the world and the nutrients that are deposited here fuel primary and secondary production (levels in the food chain) that in turn provide food for internationally significant numbers of wintering birds (Little, 2000). It had a mean of 5,780 birds between the winters of 2006/07 and 2010/11 (Crowe et al., 2012). Specifically it has a number of species which are 'features of interest' of the SPA, along with 'wetlands and waterbirds'. Table 5.2 details these.

Table 5.2 – Features of Interest for the Baldoyle Bay SPA (from NPWS)

Species		Status[1]
Branta bernicula hrota	Light-bellied brent goose	Amber
Charadrius hiaticula	Ringed plover	Green
Limosa lapponica	Bar-tailed godwit	Amber
Pluvialis apricaria	Golden plover	Red
Pluvialis squatarola	Grey plover	Amber
Tadorna tadorna	Shelduck	Amber
Wetlands & Waterbirds		

[1] Birds of Conservation Concern in Ireland. Colhoun & Cummins, 2013

- **Light-bellied Brent Goose.** There has been a 67% increase in the distribution of this goose which winters throughout the Irish coast. The light-bellied subspecies found in Ireland breeds predominantly in the Canadian Arctic.
- **Ringed Plover.** This bird is a common sight around the Irish coast where it is resident. They breed on stony beaches but also, more recently, on cut-away bog in the midlands.
- **Bar-tailed Godwit.** These wetland wading birds do not breed in Ireland but are found throughout the littoral zone during winter months. They prefer estuaries where there are areas of soft mud and sediments on which to feed.
- **Golden Plover.** In winter these birds are recorded across the midlands and coastal regions. They breed only in suitable upland habitat in the north-west. Wintering abundance in Ireland has changed little in recent years although it is estimated that half of its breeding range has been lost in the last 40 years.
- **Grey Plover.** These birds do not breed in Ireland but winter throughout coastal estuaries and wetlands. Its population and distribution is considered to be stable.
- **Shelduck.** The largest of our ducks, Shelduck both breed and winter around the coasts with some isolate stations inland. Its population and range is considered stable.

The NPWS web site (www.npws.ie) contains a mapping tool that indicates historic records of legally protected species within a selected Ordnance Survey (OS) 10km grid square. The site is located within the square O14 and four protected plant species are recorded. These are detailed in table 5.3. It must be noted that this list cannot be seen as exhaustive as suitable habitat may be available for other important and protected species.

Table 5.3 – Known records of protected species from the O14 square (from www.npws.ie)

Species	Habitat[2] [3]	Current status[4]
Galeopsis angustifolia Red Hemp-nettle	Calcareous gravels	Record pre-1970
Hordeum secalinum Meadow Barley	Upper parts of brackish marshes, chiefly near the sea	Record pre-1970

[2] Parnell et al., 2012
[3] Hayden & Harrington, 2001
[4] Preston et al., 2002

Hypericum hirsutum Hairy St. John's-wort	Woods and shady places	Current, record from Santry Court
Viola hirta Hairy Violet	Sand dunes, grasslands, limestone rocks	Current, record from Santry Demesne

As can be seen there are two current records of protected plants from this 10km square. The record of Hairy St. John's-wort is noted as the "east side of Santry woods" in the *Flora of County Dublin* while this reference gives the location of the Hairy Violet as coastal locations near Donabate and Portrane (Doogue et al., 1998).

The site is currently composed of a car park, which dates from the 2000's. A number of similar car parks can be found in the general vicinity and which service Dublin Airport. As such the lands can be described as highly modified/artificial in nature.

Water quality in rivers is monitored on an on-going basis by the Environmental Protection Agency (EPA). It assesses the pollution status of a stretch of water by analysing the invertebrates living in the substrate as different species show varying sensitivities to pollution. They arrive at a 'Q-Value' where Q1 = grossly polluted and Q5 = pristine quality (Toner et al., 2005). The Q-Park site is within the catchment of the Mayne River, which drains a portion of north County Dublin and discharges into Baldoyle Bay. The River Mayne passes along the southern boundary of the subject lands and the site falls within the Mayne sub-catchment. It includes the Sluice River, which flows further to the north, and is assessed as having 'poor overall ecological status'. There is one EPA monitoring point along the Mayne, downstream of its confluence with the Sluice, and here Q2-3, or 'poor' status, was most recently recorded (2016). This is a deterioration from Q3 measured in 1988. The ecological quality of the transitional water body at Baldoyle Bay has been assessed as 'eutrophic', indicting 'bad' status. These data are taken from the ENVision mapping tool on www.epa.ie.

5.3.2 Stakeholder Consultation

Because of the low ecological sensitivity of the subject lands, third party observations were not sought.

5.3.3 Plans or policies relating to natural heritage

5.3.3.1 Convention on Biological Diversity (CBD)

The protection of biodiversity is enshrined in the CBD to which Ireland is a signatory. As part of its commitment to this international treaty Ireland, as part of a wider European Union initiative, was committed to the halt in loss of biodiversity by the year 2010. This target was not met but in 2010 in Nagoya, Japan, governments from around the world set about redoubling their efforts and issued a strategy for 2020 called 'Living in Harmony with Nature'. In 2011 the Irish Government incorporated the goals set out in this strategy, along with its commitments to conservation biodiversity under national and EU law, in the second national biodiversity action plan (Dept. of Arts, Heritage and the Gaeltacht, 2011).

5.3.3.2 Fingal Biodiversity Action Plan (FBAP) 2010 – 2015

This plan 'provides a framework for biodiversity action' in Fingal over its lifetime. It is stated that "the primary purpose of the FBAP is to focus the efforts and resources of Fingal County Council and other nature conservation groups to protect and enhance biodiversity within Fingal in the most efficient manner." Its objectives are defined as:

- To maintain, and where practicable enhance, the wildlife and habitats that give Fingal its character and natural diversity.
- To ensure that (inter)national targets for sites, species and habitats are translated into effective action at local level.
- To develop effective partnerships to ensure that programmes for biodiversity conservation are maintained in the long-term.
- To raise public awareness and encourage involvement in biodiversity action by the wider community.
- To increase our knowledge and understanding of biodiversity through ecological research.
- To ensure the full integration of biodiversity into Fingal County Council's policies and programmes as part of sustainable development in Fingal.

Much work has been done to map the ecological resource of the county, also known as 'green infrastructure', which includes not only designated areas for nature

conservation but also green corridors and 'nature development areas'. The site is not within any of these areas however ecological corridors are given as including linear landscape features such as hedgerows.

5.3.3.3 Fingal Development Plan 2017 – 2023

Chapter 8 of this plan relates to Green Infrastructure. Objective GI17 is to "Ensure the Green Infrastructure Strategy connects and integrates existing and new communities through appropriate planning, ongoing management and governance". Chapter 9 relates to Natural Heritage and highlights how all plans or projects should be subject to Appropriate Assessment.

5.3.3.4 River Basin Management Plan 2018-2021

Under the Water Framework Directive (Directive 2000/60/EC) all Irish waters must achieve 'good ecological status' by 2015 or, with exemptions, by 2027 at the latest. The second RBMP has identified 190 'priority areas for action' where improvements to water status is expected over the lifetime of the plan. One of these areas is the Mayne sub-catchment.

5.3.4 Site Survey

Aerial photography and historic mapping from the OSI shows that this has been used as a car park since the mid-2000s. This coincided with similar land use change through this part of north Dublin which has seen open agricultural land transformed to urban uses and built development.

5.3.4.1 Flora

The body of the site is entirely composed of **buildings and artificial surfaces – BL3** and these range from smooth tarmac, service buildings near the car park entrance, and loose stones on the parking bays. Some ruderal species of plants have become established here but they are small in number of the level of vegetation cover is negligible.

External boundaries are native **hedgerows – WL1** associated with the original agricultural field layout. These are mostly made up of Hawthorn *Crataegus*

monogyna with Brambles *Rubus fruticosus agg.,* Elder *Sambucus nigra* and occasional Ash *Fraxinus excelsior* and Alder *Alnus glutinosa.* Nearly all of these hedges are accompanied by a **drainage ditch – FW4.** Standard methodology is available from the Heritage Council to evaluate the quality of linear woodland features and this is based on their age, structure and species diversity (Foulkes et al., 2013). Using these guidelines, the bulk of these boundary hedgerows can be assessed as 'higher significance'. Nearer the entrance, to the east of the site, there is a 'lower significance' hedgerow which is dominated by poorly structured Hawthorn, while there is also a 'lower significance' **treeline – WL2** made up of Leyland Cypress *Cuprocyparis leylandii,* Elder, Cherry *Prunus sp.* and a planted line of well-spaced, mid-aged Ash and Dogwood *Cornus sanguineus.*

To the north-east there are bands of **grassy verges – GS2** and these have a range of flora including Willowherbs *Epilobium sp.,* Vetches *Vicia sp.,* Cow Parsley *Anthriscus sylvestris,* Cowslip *Prumula veris,* and Ground Ivy *Glechoma hederacea,* and well as non-native or horticultural species such as Daffodils *Narsissus sp.,* Dogwood and Snowberry *Symphoricarpos albus.* Within one of these verges there is Three-cornered Garlic *Allium triquetrum* and this is listed as an alien invasive species. No plants which are considered rare or protected were recorded during the site survey and there are no historic records of such plants. All habitats described are shown as a habitat map in figure 5.3.

Figure 5.3 – Habitat map of Quick-Park lands

5.3.4.2 Fauna

The site survey included incidental sightings or proxy signs (prints, scats etc.) of faunal activity, while the presence of certain species can be concluded where there is suitable habitat within the known range of that species. Table 5.4 details those mammals that are protected under national or international legislation in Ireland.

Table 5.4 – Protected mammals in Ireland and their known status within the zone of influence (Harris & Yalden, 2008)[5] Those that are greyed out indicate either that suitable habitat is not present or that there are no records of the species from the National Biodiversity Date Centre.

Species	Level of Protection	Habitat[6]	Red List Status[7]
Otter *Lutra lutra*	Annex II & IV Habitats Directive; Wildlife (Amendment) Act, 2000	Rivers and wetlands	Near Threatened
Lesser horseshoe bat *Rhinolophus hipposideros*		Disused, undisturbed old buildings, caves and mines	Least Concern
Grey seal *Halichoerus grypus*	Annex II & V Habitats Directive; Wildlife (Amendment) Act, 2000	Coastal habitats	-
Common seal *Phocaena phocaena*			-
Whiskered bat *Myotis mystacinus*	Annex IV Habitats Directive; Wildlife (Amendment) Act, 2000	Gardens, parks and riparian habitats	Least Concern
Natterer's bat *Myotis nattereri*		Woodland	Least Concern
Leisler's bat *Nyctalus leisleri*		Open areas roosting in attics	Near Threatened
Brown long-eared bat *Plecotus auritus*		Woodland	Least Concern
Common pipistrelle *Pipistrellus pipistrellus*		Farmland, woodland and urban areas	Least Concern

[5] Excludes marine mammals
[6] Harris & Yalden, 2008
[7] Marnell et al., 2009

Soprano pipistrelle *Pipistrellus pygmaeus*		Rivers, lakes & riparian woodland	Least Concern
Daubenton's bat *Myotis daubentonii*		Woodlands and bridges associated with open water	Least Concern
Nathusius' pipistrelle *Pipistrellus nathusii*		Parkland, mixed and pine forests, riparian habitats	Least Concern
Irish hare *Lepus timidus hibernicus*	Annex V Habitats Directive; Wildlife (Amendment) Act, 2000	Wide range of habitats	Least Concern
Pine Marten *Martes martes*		Broad-leaved and coniferous forest	Least Concern
Hedgehog *Erinaceus europaeus*	Wildlife (Amendment) Act, 2000	Woodlands and hedgerows	Least Concern
Pygmy shrew *Sorex minutus*		Woodlands, heathland, and wetlands	Least Concern
Red squirrel *Sciurus vulgaris*		Woodlands	Near Threatened
Irish stoat *Mustela erminea hibernica*		Wide range of habitats	Least Concern
Badger *Meles meles*		Farmland, woodland and urban areas	Least Concern
Red deer *Cervus elaphus*		Woodland and open moorland	Least Concern
Fallow deer *Dama dama*		Mixed woodland but feeding in open habitat	Least Concern
Sika deer *Cervus nippon*		Coniferous woodland and adjacent heaths	-

Irish Hare was noted using the car park and this is a common phenomenon across similar areas near Dublin Airport (as well as the airport itself). Rabbits *Oryctolagus cuniculus* were also noted.

While limited data are available on the distribution of Hedgehog, Pygmy Shrew and Irish Stoat, they are considered ubiquitous in the Irish countryside and suitable habitat is available for them (Lysaght & Marnell, 2016).

Features on the site are of low value to roosting Bats (Hundt, 2012) with no suitable buildings or veteran trees with holes, cracks etc. A detector survey has not been carried out. Bats are likely to use hedgerows for foraging in the locality.

No evidence of Badger activity was found in any area of the site. Records from the National Biodiversity Data Centre are roadkill from the M50 and so it can be assumed that Badgers are active in the wider area.

There is no suitable habitat for Otter, Deer, Squirrels or Pine Marten. Non-protected species such as Fox *Vulpes vulpes,* Wood Mouse *Apodeumus sylvatica,* House Mouse *Mus domestica,* and Brown Rat *Rattus norvegicus* are likely to be found.

Suitable habitat for breeding birds can be found along hedgerows. Table 5.5 details those birds which were recorded during the survey.

As can be seen all of the birds recorded are of low conservation concern.

Table 5.5 Records of birds from surveys in May 2018 and their current national status

Species		BoCCI[8]
Carduelis carduelis	Goldfinch	Green
Columba palumbus	Wood pigeon	Green
Erithacus rubecula	Robin	Green
Parus ater	Coal Tit	Green
Pica pica	Magpie	Green
Turdus merula	Blackbird	Green

Of those species listed by BirdWatch Ireland as being of high conservation concern (Colhoun & Cummins, 2013) Grey Partridge *Perdix perdix,* Corncrake *Crex crex,* Barn Owl *Tyto alba,* and Yellowhammer *Emberiza citrinella* were recorded as breeding in North Dublin during the 2007-11 Bird Atlas project (Balmer et al., 2013).

[8] Colhoun & Cummins, 2013. Birds of Conservation Concern in Ireland. Green = Low; Amber = Medium; Red = High

There is no suitable breeding habitat for Barn Owl on the subject lands while records for Corncrake and Grey Partridge date from pre-1972. Yellowhammer has been recorded from elsewhere in north Dublin and are generally associated with arable cropland.

Common Frog *Rana temporaria* and Common Lizard *Lacerta vivipara* are protected under the Wildlife Act 1976 and are likely to be present on this site. Suitable habitat for spawning Frogs is present in drainage ditches. Smooth Newts *Lissotriton vulgaris* can be found in Dublin but there are no permanent ponds on this site in which they are likely to be breeding.

Monitoring by Inland Fisheries Ireland, from 2011, indicated that the Mayne holds populations of European Eel *Anguilla anguilla* and Three-spined Stickleback *Gasterosteus aculaetus*[9]. European Eel is assessed as 'critically endangered (King et al., 2011).

Water quality testing has been carried out during 2018 at a number of locations upstream of, within and downstream of the site. These were analysed for a range of standard pollutants. The data showed that no samples exceeded WHO drinking water limits for Total Petroleum Hydrocarbons (TPH), although one sample exceeded the 200ug/l limit set under the Surface Water Regulations 2009. This was from a sampling point upstream of an oil/grit interceptor (test location 6). The Engineering Assessment, prepared by Waterman Moylan, states:

Despite this slightly high result, there does not appear to be an adverse effect to the surrounding water bodies: the petrol interceptor at test location 6 impeded the flow of TPHs beyond the surface water pipeline, ensuring that the downstream ditch was not affected. This is confirmed by the test results from sample 3, taken from the ditch into which testing location 6 feeds. Results from within the ditch indicate that the TPHs are below the drinking water threshold limit.

All samples were below a nominal threshold of 0.5mg/l for detergents. A number of results, indicative of human or animal waste contamination, were found in surface water samples upstream and downstream of the car park. On foot of these results, a thorough foul water cross-connections investigation was conducted by Liffey

[9] From www.wfdfish.ie

Developments in August 2018. No cross connections were identified. It has been concluded that the source of the contamination does not originate from the Q-Park site.

Most habitats, even highly altered ones, are likely to harbour a wide diversity of invertebrates. In Ireland only one insect is protected by law, the Marsh Fritillary butterfly *Euphydryas aurinia,* and this is not to be found on farmland. Other protected invertebrates are confined to freshwater and wetland habitats and so are not present on this site.

5.3.4.3 Overall Evaluation of the Context, Character, Significance and Sensitivity of the Proposed Development Site

In summary it has been seen that the application site is not within, or adjacent to, any area that has been designated for nature conservation at a national or international level. The River Mayne flows to the south of the site and this leads to the Baldoyle Bay SAC and SPA. There are no examples of habitats listed on Annex I of the Habitats Directive or records of rare or protected plants. There is a stand of Three-cornered Garlic and this is an alien invasive species listed in legislation. There are some high locally valuable hedgerows as well as populations of common breeding birds and Irish Hare.

Significance criteria are available from guidance published by the National Roads Authority (NRA, 2009). These are reproduced in table 5.6. From this an evaluation of the various habitats and ecological features on the site has been made and this is shown in table 5.7.

Table 5.6 Site evaluation scheme taken from NRA guidance 2009

Site Rating	***Qualifying criteria***
A - International importance	SAC, SPA or site qualifying as such. Sites containing 'best examples' of Annex I priority habitats (Habitats Directive). Resident or regularly occurring populations of species listed under Annex II (Habitats Directive); Annex I (Birds Directive); the Bonn or Berne Conventions. RAMSAR site; UNESCO biosphere reserve; Designated Salmonid water

B - National importance	NHA. Statutory Nature Reserves. Refuge for Flora and Fauna. National Park. Resident or regularly occurring populations of species listed in the Wildlife Act or Red Data List 'Viable' examples of habitats listed in Annex I of the Habitats Directive
C - County importance	Area of Special Amenity, Tree Protection Orders, high amenity (designated under a County Development Plan) Resident or regularly occurring populations (important at a county level, defined as >1% of the county population) of European, Wildlife Act or Red Data Book species Sites containing semi-natural habitat types with high biodiversity in a county context, and a high degree of naturalness, or populations of species that are uncommon in the county
D - Local importance, higher value	Sites containing semi-natural habitat types with high biodiversity in a county context, and a high degree of naturalness, or populations of species that are uncommon in the locality Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.
E - Local importance, lower value	Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; Sites or features containing non-native species that are of some importance in maintaining habitat links.

Table 5.7 Evaluation of the importance of habitats and species on the Quick-Park site

Higher significance hedgerow – WL1 Drainage ditch – FW4 (including Mayne River)	Local Importance (Higher Value). Semi-natural habitats types with high biodiversity in a local context with likely or potential breeding populations of protected species.
Treeline – WL2 Lower significance hedgerow – WL1 Grassy verges – GS2	Local Important (Lower Value)

Buildings and artificial surfaces – BL3 Amenity grassland – GA2	Negligible ecological value

5.4 Characteristics of the Proposed Development

The current application is for the continued use of the subject lands as a car park. It is also proposed to demolish the existing entrance building and construct a new building in its stead. Also proposed are changes to the surface water drainage in this vicinity.

5.5 Potential Impact of the Proposed Development

This section provides a description of the potential impacts that the proposed development may have on biodiversity in the absence of mitigation. Methodology for determining the significance of an impact has been published by the NRA. This is reproduced in table 5.8 and is based on the valuation of the ecological feature in question (table 5.7) and the scale of the predicted impact.

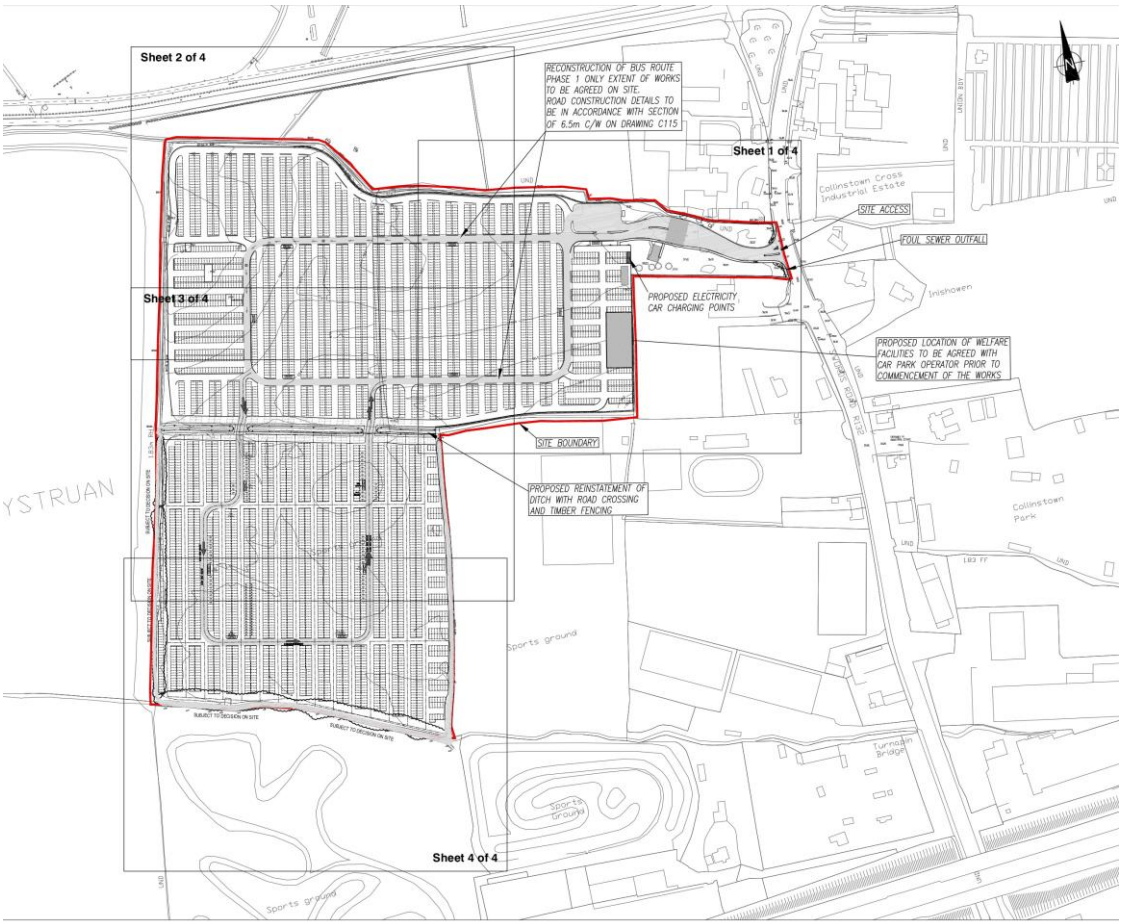


Figure 5.5 – Existing site layout

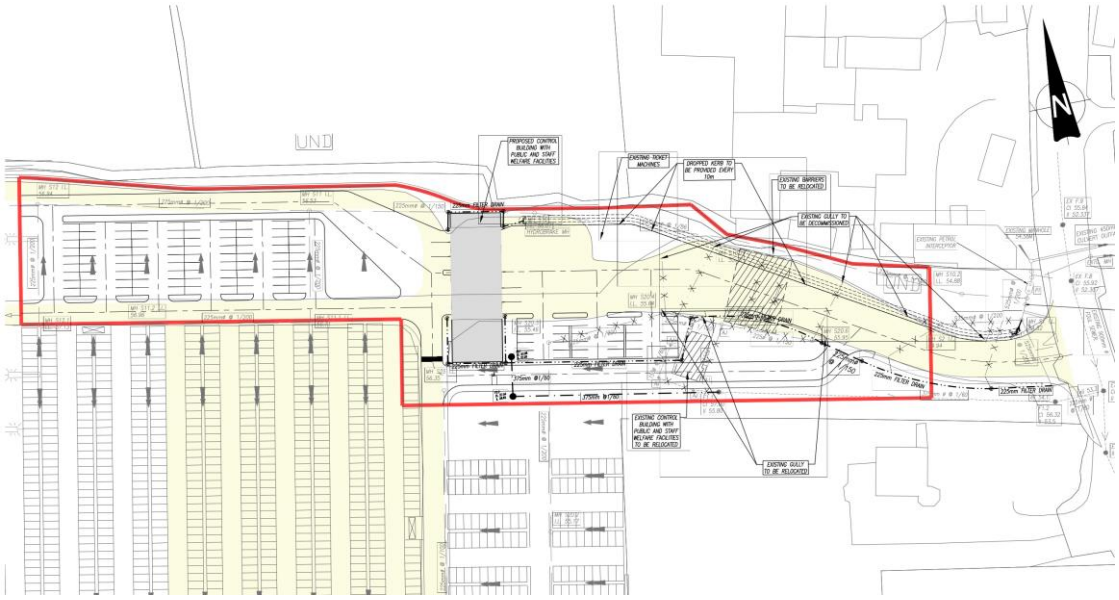


Figure 5.6 – Proposed new elements of the project

5.5.1 Construction Phase

The following potential impacts are likely to occur during the construction phase in the absence of mitigation:

1. The removal of habitats: all habitats are of hard standing or low value amenity grassland. There will be no effects to biodiversity from this aspect.

2. Pollution of water courses through the ingress of silt, oils and other toxic substances. The construction works will be close to a drainage ditch. However, as surfaces are of hard standing, there will be minimal soil movement. Nevertheless there is a direct pathway for pollutants to enter this waterway and measures will be needed to avoid this effect.

3. Damage to treelines to be retained. Adjacent hedgerows are not to be affected by this project. The lands are already of hard standing and so the risk to root zones is minimal.

5.5.2 Operation Phase

The following potential impacts are likely to occur during the operation phase in the absence of mitigation:

4. Pollution of water from foul wastewater arising from the development. The project will result in no increase in loading to the wastewater network. Wastewater will continue to be sent to the municipal treatment plant at Ringsend. This plant is licenced to discharge treated effluent by the EPA (licence number D0034-01) and is managed by Irish Water. It treats effluent for a population equivalent (P.E.) on average of 1.65 million however weekly averages can spike at around 2.36 million. This variation is due to storm water inflows during periods of wet weather as this is not separated from the foul network for much of the older quarters of the city, including at the subject site. The Annual Environmental Report for 2017, the most recent available, indicated that there were a number of exceedences of the emission limit values set under the Urban Wastewater Treatment Directive and these can be traced to pulse inflows arising from wet weather. In February 2018 Irish Water announced proposals to upgrade the Ringsend plant and apply for planning permission for a new plant in north County Dublin. This will see improved treatment standards and will increase network capacity by 50%, with a target completion date of 2023.

5. Pollution of water from surface water run-off. The Greater Dublin Strategic Drainage Study (2005) identified issues of urban expansion leading to an increased risk of flooding in the city and a deterioration of water quality. According to the engineering report prepared by Waterman Moylan: “The entire car park site has been designed to retain storm water during storm events with an impermeable berm having been constructed on the perimeter of the site. This controls the storm water runoff from the site to specific discharge points where flow controls and petrol interceptors are used to control the flow and quality of the storm water discharges. […] The excess storm water is stored on site for the duration of the storm and is discharged to the existing watercourses over an extended period of time at a controlled rate. The required flow restriction is achieved by means of Hydrobrakes installed at the outfall manholes. The car park was constructed using permeable gravel surfacing on a layer of geotextile in order to replicate the original greenfield conditions. The permeable gravel surfacing also provides storage capacity for the

retained surface water in storm conditions and acts as a filter to improve the quality of water being discharged to the existing ditches. In addition, silt traps and Class 1 light liquid separators were provided in Phase 2 as part of the site development works."

Sampling of water from manholes and peripheral drainage ditches was undertaken at eight points in 2018 and these were analysed for a range of parameters. Elevated levels (i.e. above accepted thresholds) of BOD, COD, Conductivity and Total Coliforms were recorded in some samples. All samples tested for Total Petroleum Hydrocarbons and Anionic Detergents were within accepted limits for drinking water. This suggests that contamination of surface waters is arising from wastewater outfalls and not dangerous substances associated with the operation of the car park. A thorough investigation of the foul wastewater line was carried out by Waterman Moylan in August 2018. This found no indication of misconnections and it has been concluded that the source of the contamination is beyond the site boundary.

It can be concluded that this development is having no negative effect upon water quality in the Mayne River.

6. Disturbance to species. No disturbance to nesting birds, foraging bats, Irish Hare or other species found on the site will occur. No effects to any of the hedgerow habitats will occur as no works are planned. There will be no increase in the level of artificial noise or light on the site. No negative effect to biodiversity can therefore occur.

7. Invasive species. Three-cornered Garlic is a common garden plant however it is listed in legislation as an alien invasive species, and as such there is an onus on the development not to allow its spread. There are no works planned as part of this application that would result in its spread. Nevertheless, best practice suggests that measures should be taken to eradicate this plant while it is still limited in extent.

Table 5.8 sets out the criteria for determining the significance of impacts for flora and fauna.

Table 5.8: Determination of significance matrix taken from NRA guidance Appendix 4 (2006)

Impact Level	***Site category***				
	A	***B***	***C***	***D***	***E***
Severe negative	Any permanent impact	Permanent impact to a large part of the site			
Major negative	Temporary impact to a large part of the site	Permanent impact to a small part of the site	Permanent impact to a large part of the site		
Moderate negative	Temporary impact to a small part of the site	Temporary impact to a large part of the site	Permanent impact to a small part of the site	Permanent impact to a large part of the site	
Minor negative		Temporary impact to a small part of the site	Temporary impact to a large part of the site	Permanent impact to a small part of the site	Permanent impact to a large part of the site
Neutral (Negligible)	No impact	No impact	No impact	No impact	Permanent impact to a small part of the site
Minor positive				Permanent beneficial impact to a small part of the site	Permanent beneficial impact to a large part of the site
Moderate positive			Permanent beneficial impact to a small part of the site	Permanent beneficial impact to a large part of the site	
Major positive		Permanent beneficial impact to a small part of the site	Permanent beneficial impact to a large part of the site		

In this way it is possible to assign an impact significance in a transparent and objective way. In EIA terms, any impact that is 'moderate', 'major' or 'severe' will be considered to be significant. Table 5.7 summaries the nature of the predicted impacts prior to mitigation measures being incorporated.

Table 5.9 – Nature of predicted impacts in the absence of mitigation

Impact		Direct/ Indirect	Cumulative	Duration[10]	Reversible?	Positive/ Negative
Construction Phase						
1	Habitat loss	Direct	Yes	Permanent	No	Neutral
2	Pollution of water courses	Indirect	Yes	Temporary	Yes	Negative
3	Damage to treelines to be retained	Indirect	No	Permanent	No	Neutral
Operation Phase						
4	Wastewater	Indirect	Yes	Permanent	Yes	Neutral
5	Surface water run-off	Indirect	Yes	Permanent	Yes	Neutral
6	Disturbance to species during operation	Indirect	Yes	Permanent	Yes	Neutral
7	Spread of Three-cornered Garlic	Indirect	Yes	Permanent	Yes	Neutral

Table 5.8 below assesses the scale and likelihood of the predicted impacts of the proposed development in the absence of mitigation.

[10] Temporary: up to 1 year; Short-term: 1-7 years; Medium-term: 7-15 years; Long-term: 15-60 years; Permanent: >60 years (NRA, 2006)

Table 5.10 – Scale and likelihood of predicted impacts in the absence of mitigation.

Impact		Magnitude	As proportion of resource	Likelihood
Construction Phase				
1	Habitat loss	~80,000m2 combined of bare soil and dry meadow	100%	Certain
2	Pollution of water	Not possible to quantity but no works to water courses will occur	Could impact on entire downstream stretch of this river system	Possible, depends upon site practices
3	Damage to treeline to be retained	Approximately 80m of hedgerow in this location	100%	Unlikely
Operation Phase				
4	Wastewater pollution	No increase to sewer system	N/A	Certain
5	Surface water pollution	Current system to GDSDS standard	N/A	Certain
6	Disturbance to species from increased human activity (incl. noise/ lighting)	No changes to occur	N/A	Certain
7	Spread of Three-cornered Garlic	A small clump of plants in one area – not likely to spread as a result of this project	N/A	Likely

Tables 5.7 to 5.10 are combined to determine the level of significance of any given impact. This is shown in table 5.11.

Table 5.11: Significance level of likely impacts in the absence of mitigation

Impact		Significance
Construction phase		
1	Surface water pollution	Moderate negative
Operation phase		
2	Wastewater pollution	Neutral

3	Surface water pollution	Neutral
4	Disturbance to species from human disturbance	Neutral
5	Spread of Three-cornered Garlic	Neutral

Overall it can be seen that one potential negative impact is predicted to occur as a result of this project.

5.5.3 Do Nothing Impact

The subject lands are currently highly modified and composed of artificial land uses. In a 'do nothing' scenario no changes to the biodiversity resource of the site is likely to occur.

Water quality may improve throughout the Mayne catchment with the implementation of the Water Framework Directive and in particular due to its designation as a 'priority area for action'.

5.6 Remedial and Reductive Measures

These measures include avoidance, reduction and constructive mitigation measures as set out in Section 4.7 of the Development Management Guidelines. Under the EIA Directive, where significant negative effects are predicted to arise from a project then mitigation measures are required.

This report has identified one impact that was assessed as 'moderate negative' and therefore mitigation is required.

Recommendation 1: Mitigation by avoidance

The drainage ditch to the north of the construction zone should be protected for the duration of works but the erection of a suitable barrier which will prevent the ingress of silt or other pollutants. Only silt-free run-off should enter the ditch and a suitably designed silt-trap should be employed to achieve this. Under no circumstances should unattenuated water be pumped directly to the ditch. The barrier will prevent diffuse silt run-off as well as disturbance effects to the associated hedgerow.

Recommendation 2: Three-cornered Garlic

Despite not a negative effect, it is considered appropriate that the patch of Three-cornered Garlic be treated so that this alien invasive species can be eradicated from the site. There is no commonly used guidance on the treatment of this plant and therefore it is recommended that it be treated with standard herbicide during the growing period.

5.7 Predicted Impact of the Proposed Development

This section allows for a qualitative description of the resultant specific direct, indirect, secondary, cumulative, short, medium and long-term permanent, temporary, positive and negative effects as well as impact interactions which the proposed development may have, assuming all mitigation measures are fully and successfully applied.

No negative effects to biodiversity are predicted to occur due to the continuation of use of these lands.

5.8 Interactions and Cumulative Impacts

A number of the identified impacts can also act cumulatively with other impacts from similar developments in this area of Dublin. These primarily arise through the urbanisation of the city's hinterland as provided for by land use zoning and include: loss of habitats and species ,particularly hedgerows; pollution from surface water run-off and pollution from wastewater generation.

This application will result in no changes to the scale or nature of built development on these lands. Therefore, it cannot act in a cumulative manner to result in significant effects to biodiversity.

The key environmental interactions with biodiversity is water and landscaping. A series of mitigation measures are proposed in the Water Chapter of this EIS document to ensure the quality (pollution and sedimentation) and quantity (surface run-off and flooding) is of an appropriate standard.

5.9 Monitoring

Monitoring is required where the success of mitigation measures is uncertain or where residual impacts may in themselves be significant. Section 5.7 summaries the likely impacts arising from this project. No negative impacts are predicted, and so no further monitoring is recommended.

5.10 References

Atherton I, Bosanquet S. & Lawley M. (editors) 2010. *Mosses and Liverwort of Britain and Ireland : a field guide.* British Bryological Society.

Bat Conservation Ireland. 2010. *Bats & Lighting. Guidance Note for planners, engineers, architects and developers.* www.batconservationireland.ie

Bealey C., Ledder E., Robertson H., Wolton R. 2009. *Hedgerows – their wildlife, current state and management needs.* British Wildlife Volume 20 Number 5 June 2009. pg323 – 329.

Boatman N.D., Stoate C., Henderson I.G., Vickery J.A., Thompson P.G.L. & Bence S.L. 2003. *Designing crop/plant mixtures to provide food for seed-eating farmland birds in winter.* BTO Research report no. 339. British Trust for Ornithology.

Bullock C., Kretch C. & Candon E. 2008. *The Economic and Social Aspects of Biodiversity*. Stationary Office.

Byrne A., Sleeman P.D., O'Keefe J. & Davenport J. 2012.*The ecology of the European badger (*Meles *meles) in Ireland: a review.* Biology and Environment. Volume 112B. Issue 1 (2012). Pg 105.

Clabby, K.J., Bradley, C., Craig, M., Daly, D., Lucey, J., McGarrigle, M., O'Boyle, S., Tierney, D. and Bowman, J. 2008. *Water Quality in Ireland 2004 – 2006.* EPA.

Colhoun K. & Cummins S. 2013. *Birds of Conservation Concern in Ireland 2014 – 2019.* Irish Birds. Volume 9 Number 4 pg523-541.

Cooney R. & Dickson B. 2005. *Biodiversity and the Precautionary Principle.* Earthscan.

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

Council Directive 97/11/EEC of 3rd March 1997 amending Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment

Council Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy – more commonly known as the Water Framework Directive

Curtis T.G.F.& McGough H.N. 1988. *The Irish Red Data Book 1: Vascular Plants.* Stationary Office.

Dempsey E. & O'Cleary M. 2010. *The Complete Guide to Ireland's Birds.* Gill & Macmillan.

Department of Arts, Heritage and the Gaeltacht. 2011. *Actions for Biodiversity 2011 – 2016. Ireland's National Biodiversity Plan.*

DG Environment. 2010. *Natura 2000 European Commission Nature and Biodiversity Newsletter.* Number 28. June 2010. ISSN: 1026-6151.

Doogue D., Nash D., Parnell J., Reynolds S., & Wyse Jackson P. 1998. *Flora of County Dublin.* The Dublin Naturalists' Field Club.

EPA. 2017. *Guidelines on the information to be contained in Environmental Impact Assessment Reports.*

EPA. 2008. *Ireland's Environment*

Fitter R., Fitter A. & Farrer A. 1984. *Grasses, sedges, rushes and ferns of Britain and Northern Europe.* Collins.

Fossitt J. 2000. *A Guide to Habitats in Ireland*. Heritage Council.

Flood K.W. 2012. *The National Newt Survey Completion Report 2011.* Irish Wildlife Trust, Dublin, Ireland.

Harris S. & Yalden D.W. 2008. *Mammals of the British Isles: Handbook, 4th Edition.* The Mammal Society.

Heritage Council. 2002. *Draft Habitat Survey Guidelines*. The Heritage Council.

Hickie D. 2004. *Irish Hedgerows: Networks for Nature*. Networks for Nature.

Hill M.O., Blackstock T.H., Long D.G. and Rothero G.P 2008. *A Checklist and Census Catalogue of British and Irish Bryophytes.* British Bryological Society.

Hundt L. 2012. *Bat Surveys: Good Practice Guidelines. 2nd Edition.* Bat Conservation Trust.

IEEM. 2016. *Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland.* Institute of Ecology and Environmental Management.

Institute of Environmental Assessment, 1995. *Guidelines for Baseline Ecological Assessment*'

Johnson O. & More D., 2004. *Tree Guide*', Collins

King, J.L., Marnell, F., Kingston, N., Rosell, R., Boylan, P., Caffrey, J.M., FitzPatrick, Ú., Gargan, P.G., Kelly, F.L., O'Grady, M.F., Poole, R., Roche, W.K. & Cassidy, D. 2011. *Ireland Red List No. 5: Amphibians, Reptiles & Freshwater Fish*. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

O'Keefe. Unknown Year. *Planting the Ideal Hedgerow.* Published on the Teagasc website

Marnell, F., Kingston, N. & Looney, D. 2009. *Ireland Red List No. 3: Terrestrial Mammals*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.

Mason C.F. 1996. *Biology of Freshwater Pollution.* Longman.

Morris P. & Therivel R., 2001. *Methods of Environmental Impact Assessment,* Spon Press

NRA. 2009. *Guidelines for Assessment of Ecological Impacts of National Road Schemes.* National Roads Authority.

Parnell J. & Curtis T. 2012. *Webb's An Irish Flora.* Cork University Press.

Preston C.D., Pearman D.A. & Dines T.D. 2002. *New Atlas of the British & Irish Flora*. Oxford University Press.

Rich C. & Longcore T. Editors. 2006. *Ecological Consequences of Artificial Night Lighting.* Island Press.

Roper T.J. 2010. *Badger.* New Naturalist Series. Collins.

Sargent G. & Morris P. 2003. *How to Find & Identify Mammals.* The Mammal Society.

Shannon D., Byrne N. & Flynn D. 2014. *Focus on Urban Wastewater Treatment in 2013.* Environmental Protection Agency.

Smal C. 1995. *The Badger and Habitat Survey of Ireland.* Department of Agriculture, Food & Forestry.

Smith G. F., O'Donoghue P., O'Hora K. and Delaney E. 2010. *Best Practice Guidance for Habitat Survey and Mapping.* Heritage Council.

Stace C. 2010. *New Flora of the British Isles.* Cambridge University Press

Statutory Instrument No. 94 of 1999. Flora (Protection) Order

Stone E.L., Jones G. & Harris S. 2012. *Conserving energy at a cost to biodiversity? Impacts of LED lighting on bats.* Global Change Biology (2012) 18, 2458–2465, doi: 10.1111/j.1365-2486.2012.02705.x

Treweek J., 1999. *Ecological Impact Assessment*', Blackwell Science.

United Nations. 1992. *Convention on Biological Diversity*

Whelan K. 2014. *Sea-trout populations in small coastal streams.* Biology & Environment. Volume 114B Issue 3 pg 199-204.

Appendix 5.1 – Species list for habitats identified for the site

The nomenclature for vascular plants is taken from the *New Flora of the British Isles* (Stace, 2010). Scientific names for mosses comes from *A Checklist and Census Catalogue of British and Irish Bryophytes* (Hill et al., 2008) while common names are taken from *Mossess and Liverworts of Britain and Ireland* (Atherton et al. eds., 2010). Species indicated with an asterisk '*' are known to have been introduced to Ireland by humans.

Chapter 6 – Land, Soils & Geology

6.1 Introduction

This section of the Environmental Impact Assessment Report (EIAR) has been prepared by Waterman Moylan and provides an assessment of the impact the Quickpark Car Park at Turnapin Great, Swords Road will have on the surrounding soil and geology within the vicinity of the site. It also sets out mitigation and remedial measures and methods of monitoring after the development is operational.

The land is currently utilised as a long stay at grade car park facility over 16.9 hectares at Turnapin Great, Swords Road, County Dublin, serving Dublin Airport. This proposal is for the continuation of use of the existing car park facility, complete with the associated exit / entry control facilities, roads, drainage and bus shelters. Therefore, there will be no additional land take as a result of the proposed development.

The infrastructure is in situ (i.e. road network, drainage, surface water, etc.). The proposed development provides for the demolition of the existing entrance structures and the provision of a new entrance building only on 1.721 hectares of the overall site of 16.9 hectares. In order to facilitate the upgrade works at the existing entrance, the total car parking spaces shall be reduced to 6,122 spaces.

However, this will be conducted within the existing site boundary and there will be no additional land take required to facilitate the construction of the building. The land use during the operation of the development will therefore remain as per that existing on the lands.

6.2 Research Methodology

A desktop study to classify the geological features related to the site was undertaken. The Bedrock Geology Map of Dublin produced by the Geological Survey of Ireland (GSI) was reviewed.

A site investigation was also completed in March 2011 to identify the soil classifications. The site investigation included 7 No. trial pits, 2 of which were left open for 5 days to confirm the level of the water table.

A review of the previous EIAR for phase 1 was undertaken, as well as a review of the Percolation test that was carried out by IGSL in July 1999 on the subject site. Refer to Appendix 6.1 for the IGSL report on Percolation tests, which shows very low percolation rates.

6.3 Receiving Environment

The subject lands consist of approximately 16.9 hectares of car parking. The car park is located approximately 1km south of Dublin Airport and is accessed from the R132 Swords Road.

The existing car park in these subject lands was originally constructed in 2 phases, with phase 1 (3,500 spaces) having been in operation for approximately 17 years and phase 2 (an additional 2,740 spaces) having been in operation for almost 12 years.

Prior to construction of the car park, the lands were relatively flat greenfield lands, with a level of between 56m and 59m OD Malin Head. The car park was constructed at grade, keeping construction levels very close to its previously existing greenfield levels.

The above mentioned desktop study established the bedrock geological features of the site as being Tober Colleen Formation, which is classified as dark grey, calcareous, commonly

bioturbated mudstones and subordinate thin micritic limestones. Fossils are generally scarce, but a goniatite fauna occurs towards the top. The formation can vary in thickness up to 250m.

The Tober Colleen Formation can also exhibit transported blocks of Waulsortian and locally derived limestones as can be seen north of Portmarnock Strand. This material reflects the tectonic event that also produced the Rush Conglomerate and the Boulder Conglomerate at Navan.

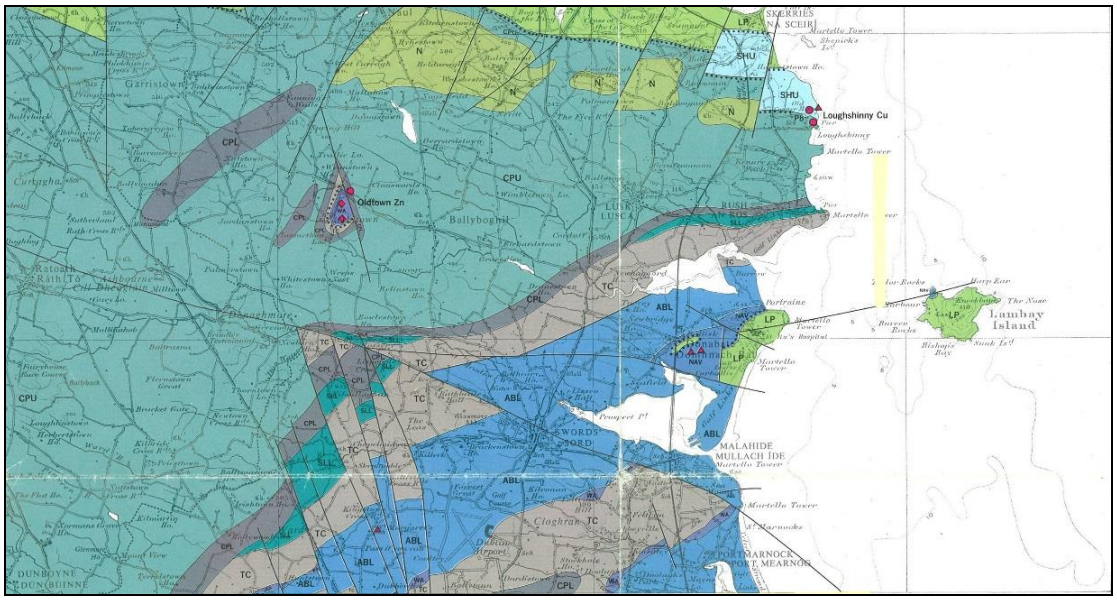


Figure 6.1 | *Extract from GSI Bedrock Geology Map*

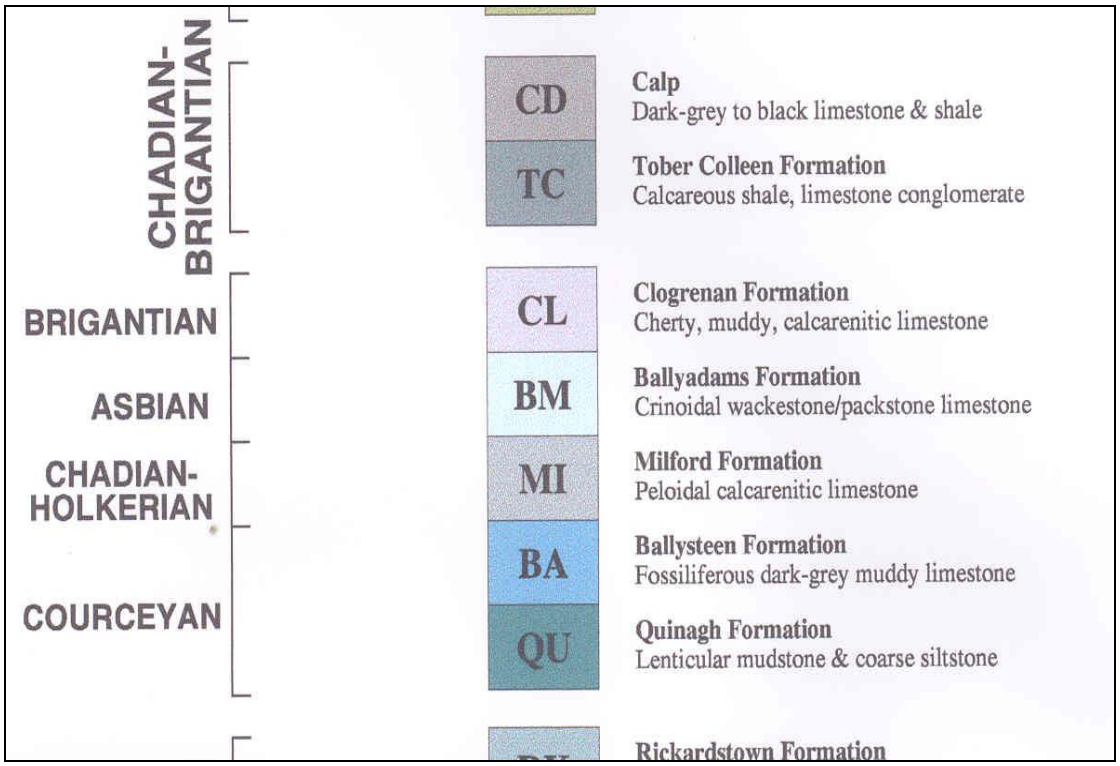


Figure 6.2 | *Extract of Legend from GSI Bedrock Geology Map*

Previous trial pits taken before the construction of the car park indicated that there was approximately 300mm of topsoil overlying firm brown very sandy gravelly clay.

Trial pits excavated in March 2011 indicated that there is now approximately 300mm of made crushed stone overlying stiff brown sandy gravelly clays which are glacial in origin. These clays are boulder clays (Lodgement Till) and are over-consolidated and relatively incompressible. The clays in this area are considered as being impermeable as confirmed in the Percolation tests.

Table 6.1 below shows the findings in the 7 No. trial pits excavated in March 2011:

Depth (mm)	**Trial Pit 1**
0-100	Crushed Stone (Clause 505)
100-300	Dark brown gravel with crushed rock
300-2100	Stiff brown sandy, gravelly clay with occasional cobbles
Depth (mm)	**Trial Pit 2**
0-200	Crushed Stone (Clause 505)
200-1800	Stiff brown sandy, gravelly clay with occasional cobbles
1800-2000	Shaley stone mixed in with darker sandy, gravelly clay
Depth (mm)	**Trial Pit 3**
0-100	Blinding layer of crushed stone (Clause 505)
100-300	Crushed Stone (Clause 505)
300-2100	Stiff brown sandy, gravelly clay with occasional cobbles
Depth (mm)	**Trial Pit 4**
0-100	Blinding layer of crushed stone (Clause 505)
100-250	Crushed Stone (Clause 505)
250-2350	Stiff brown sandy, gravelly clay with occasional cobbles
@ 2350	Hit shaley rock
@ 1250	Some moisture evident
Depth (mm)	**Trial Pit 5**
0-300	Crushed Stone (Clause 505)
300-1900	Stiff brown sandy, gravelly clay with occasional cobbles
@ 1700	Water encountered
Depth (mm)	**Trial Pit 6**
0-50	Blinding layer of crushed stone (Clause 505)
50-300	Crushed Stone (Clause 505)
300-2300	Stiff brown sandy, gravelly clay with occasional cobbles
@ 1600	Some moisture evident
Depth (mm)	**Trial Pit 7**
0-50	Blinding layer of crushed stone (Clause 505)
50-250	Crushed Stone (Clause 505)
250-2050	Stiff brown sandy, gravelly clay with occasional cobbles
@ 1800	Some moisture evident

Table 6.1 | *Findings from 7 No. Trial Pits, March 2011*

Figure 6.3 below shows the findings in two of the trial pits excavated in March 2011:

Figure 6.3 | *Findings from 2 of the Trial Pits, March 2011 Trial Pit Locations*

Figure 6.4 shows the location of the trial pits table above:

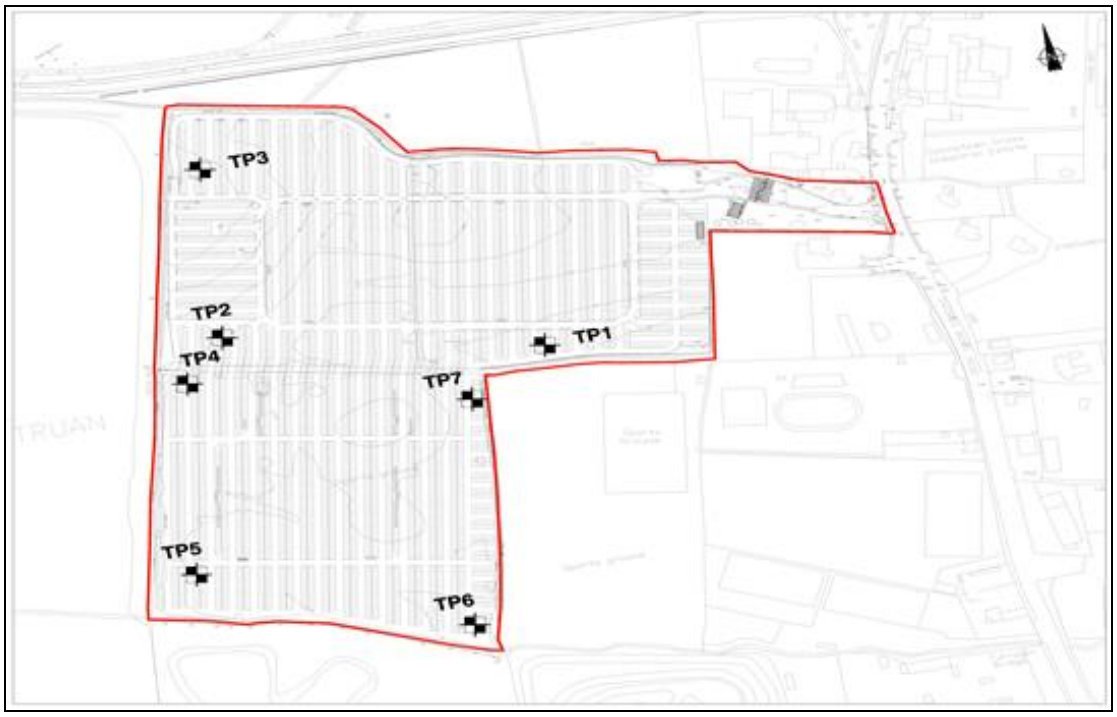


Figure 6.4 | *Trial Pit Locations*

The National Draft Aquifer Bedrock Map prepared by the Geological Survey of Ireland was consulted and it was established that the majority of the site is within the designation Pi which represents a poor aquifer which is generally unproductive while the south east corner of Phase 2 is within the designation Li which represents locally important moderately productive aquifer.

Figure 6.5 below is an extract from the GSI web mapping of underlying aquifers in the region of the subject site:

Figure 6.5 | *Extract of National Draft Aquifer Bedrock Map (GSI)*

Legend

Pi Poor Aquifer – Bedrock which is generally Unproductive except for Local Zones

Li Locally Important Aquifer – Bedrock which is Moderately Productive only in Local Zones.

6.4 Characteristics of the Proposal

It is proposed to continue the use of the existing car park.

The development consists of an at-grade car park with approximately 6,240 parking spaces and associated bus parking and control building with staff and public welfare facilities.

The car-parking areas and access roads have been constructed at grade. The parking areas consist of permeable crushed stone in compliance with Clause 505, acting as a soakaway, with a blinding layer.

The main access road, bus route and bus parking areas have been surfaced with dense bitumen macadam. This car park was constructed on top of a geotextile layer of Teram 1000.

During the construction phase of the car park, the topsoil was stripped and stockpiled for reuse with surplus top soil removed from site for re-use elsewhere. Suitable excess material was used in fill areas and banks around the perimeter of the car park to act as a natural berm. All spoil and unsuitable material was disposed of to an approved tip.

The main access road, bus route and bus parking areas have been surfaced with dense bitumen macadam.

The car park is already constructed. A number of upgrades to the car park drainage system have been carried out in recent years, such as the addition of 4 no. additional petrol interceptors and installation of 120m of new 150mm diameter private foul water drain for connection to an existing 375mm diameter.

These works were generally minor in nature but had potential impacts on the existing soil structure and underlying geology as follows:-

- Storm water runoff from the surface of the excavated areas may result in silt discharges to adjacent ditches and existing drainage systems in the car park.
- Accidental oil or diesel spillages from construction equipment, in particular at refuelling areas may result in oil contamination of the soils and underlying geological structures.
- The removal of surplus topsoil and subsoils from site may result in spillages on the public road network.

On completion of the upgrade construction works there have been no further direct impacts on the soils or geology in the area.

6.5 Potential Impact of the Proposal

There is a potential risk that use of the lands as a long term car park may result in the discharge of fuels or oils to the ground from parked cars. This potential long term risk has been reduced with the installation of 4 no. petrol interceptors in recent years in addition to those previously installed.

6.6 Remedial or Reductive Measures

The following mitigation measures to be implemented during any outstanding or future upgrade construction works are recommended:-

- During the excavation works, the area of topsoil stripped and exposed subsoil should be minimised and exposed subsoil should be covered as soon as possible. This will reduce the risk of soils being washed away during storm events.
- Measures will be implemented throughout the construction stage to prevent contamination of the soil and adjacent watercourses and ditches and from the existing car park drainage system from oil and petrol leakages from site plant.
- All storage of oils and fuels on site are to be within a dedicated bunded area, and refuelling of plant on site is to be carried out over an impermeable surface which can collect any accidental fuels that may be spilt and prevent the fuels or oils entering the subsoils.
- Use of heavy construction equipment in areas to be re-soiled and planted is to be avoided.
- The car park and adjoining road network should be cleaned on a regular basis during the upgrade works, to prevent the build-up of soils from the development site on the existing blacktop roads and in the existing surface water drainage systems.

The use of permeable stone and geotextiles within the parking areas was designed to trap and slow down the discharge of any accidental oil spillages and prevent the penetration of the subsoils by contaminants.

Class 1 Light Liquid Separators have been included within the existing surface water drainage system as part of previous upgrade works. The installation of these separators assists in preventing contamination of the soil and adjacent watercourses from oil and petrol leakages.

Refer to Drawings 15-194.P021 to 15-194.P023 for the location of the separators.

6.7 Predicted Impact of the Proposal

The car park is already constructed, with construction proposed at the entrance only, including relocation of the existing maintenance shed, demolition of the existing single-storey office and control building and canopy entrance structure, and the construction of a new three-storey car park entrance building with new car park barriers and ticket machines together with premium car parking offer, elevational signage to new entrance building, green roof, landscaping and revisions to the entrance layout to accommodate the new building. The construction programme is intended to be a 9-month programme.

The depth and impermeability of the underlying boulder clay will reduce the risk of accidental spillages during the upgrade works penetrating the ground and damaging deeper subsoils and the water table.

Appropriate protective measures will be taken during excavation works and transporting soil and spoil, including management of the runoff during upgrade works. Thus, any potential impacts on soils and geology in the area will be temporary and limited in extent.

The risk of oils and fuels from parked cars has been minimised by the use of stone filter materials, and with silt traps in place and Class 1 Light Liquid Separators located on each surface water system within the car park.

Following completion of these upgrade works, no significant adverse impacts on the soils and geology of the subject lands are anticipated.

6.8 Monitoring

Monitoring will ensure the following are provided:

- Adequate protection of topsoil stockpiled for reuse
- Adequate protection from contamination of soils for removal
- Monitoring of surface water discharged to existing watercourses, ditches and the car park surface water drainage system
- Monitoring cleanliness of the adjoining road network
- Monitoring measures for prevention of oil and petrol spillages

The existing Class 1 Light Liquid Separators will continue to be regularly inspected and maintained. The petrol interceptors were last inspected and cleaned out on 5 September 2018 by McBreen Environmental Drain Services Ltd., who confirmed that all interceptors are in good working order – refer to the letter from McBreen Environmental included in Appendix 7.2 of the Engineering Impact Assessment Report.

6.9 Conclusions

The site is generally composed of a thin layer of crushed stone overlying stiff sandy gravelly clays of glacial origin, which are relatively incompressible and considered impermeable. This impermeability was confirmed by the percolation testing carried out on site in July 1999. In the unlikely event of a vehicle spillage/leakage of fuel or oil, any soil impacts would therefore be highly localised, with low potential for vertical migration.

Potential impact to the underlying geology and aquifers has been offset in recent years via the introduction of petrol interceptors. Appropriate measures, including extensive monitoring, have taken place during previous excavation and construction works to prevent any impact on soils and geology in the area. The risk of oils and fuels from parked cars to underlying soils and geology have been minimised by the use of stone filter materials and with Class 1 light liquid separators on each surface water system. Proposed works will similarly undertake

these appropriate measures to ensure that there is no negative impact to the site soils and geology.

Chapter 7 – Water

7.1 Water Supply

7.1.1 Introduction

This section of the Environmental Impact Assessment Report (EIAR) has been prepared by Waterman Moylan and provides an assessment of the impact of the Quickpark Long Stay Car Park at Turnapin Great, Swords Road on the water supply network.

This section of the EIAR assesses the impact on the existing water supply in the vicinity of the site. It also sets out mitigation and remedial measures and methods of monitoring while the development is operational.

The application is for the permanent continuation of use of the at grade car park which forms the Quickpark Car Park with ancillary infrastructure. The infrastructure includes the existing water supply network that serves the control building and adjacent fire hydrants.

The site has an existing water supply connection in place which it is proposed to retain. The proposed development will not have an adverse effect on the water network.

The existing water network and car park layout is shown on drawing 15-194-P030.

7.1.2 Research Methodology

Research for this section included the review of the existing watermain layout from Fingal County Council records, and the review of design and as-built drawings of the watermain and valves constructed during construction of the car park development.

Site visits were also carried out by Waterman Moylan on 16th February 2018 identifying valve covers and confirming as-built records. Car park staff advised of no history of issues with water supply or damaged watermain on site.

7.1.3 Receiving Environment

The car park is located approximately 1km south of Dublin Airport and is accessed from the R132 Swords Road.

The watermain infrastructure serving the existing entrance building is in place. This 100mm watermain serves the control building and adjacent fire hydrants.

The existing water supply network and car park layout is shown on drawing 15-194.P030.

7.1.4 Characteristics of the Proposed Development

This proposal intends to retain the existing watermain supply network and extend to supply to the new proposed entrance building as shown on drawing 15-194-P030.

7.1.5 Potential Impact of the Proposed Development

As there are no additional watermain works proposed to the existing water supply network, there is no potential impact envisaged. The extension works proposed will be conducted within the site with no impact envisaged to the existing infrastructure including the existing 150mm diameter trunk watermain which runs along the R132 Swords Road.

7.1.6 Remedial or Reductive Measures

In advance of the proposed works, the existing 100mm diameter watermain will be shut off at the entrance to the development via the existing sluice valve at the boundary of the site, as shown on drawing 15-194-P030.

7.1.7 Predicted Impact of the Proposed Development

There is no predicted impact to the water supply network envisaged as a result of this proposal.

7.1.8 Monitoring

Management will monitor and report on any visible water leaks from possible damaged mains.

7.2 Foul Drainage

7.2.1 Introduction

This section of the Environmental Impact Assessment Report (EIAR) has been prepared by Waterman Moylan and provides an assessment of the impact of the Quickpark Car Park at Turnapin Great, Swords Road on the foul water drainage network.

This section of the EIAR assesses the impact on the existing foul water system in the vicinity of the site. It also sets out mitigation and remedial measures and methods of monitoring while the development is operational.

The application is for the permanent continuation of use of the at grade car park which forms the Dublin Airport Long Stay Car Park with ancillary infrastructure. The infrastructure includes the foul water system that currently serves the car park control building.

The proposal is to connect the new building to the existing 375mm diameter private foul water which connects to an existing 900mm diameter sewer in the Swords Road.

The existing and proposed foul water network and car park layout is shown on drawings 15-194-P021.

7.2.2 Research Methodology

Research for this section included the review of existing foul water layout from Fingal County Council records for the area and a review of design and as built drawings of the foul water system constructed during the car park development.

The developer and car park staff contributed input into the history and operation of the foul water system.

Waterman Moylan also carried out a site visit on 16th February 2018. During the site visit Waterman Moylan Engineers checked foul water manholes for signs of present or past blockages in the system. None were identified.

7.2.3 Receiving Environment

The car park is located approximately 1km south of Dublin Airport and is accessed from the R132 Swords Road.

The existing car park in these subject lands was originally constructed in 2 phases, with phase 1 (approximately 3,500 spaces) having been in operation for 17 years, and phase 2 (an additional 2,740 spaces approximately) having been in operation for 12 years.

As a result the necessary infrastructure is in place, including a foul water system serving the car park control building near the entrance of the car park. The foul water system will be extended from the existing control building to the location of the new control building as indicated on drawing 15-194-P021.

The associated flows are calculated below in Table 7.1.

Population	Hydraulic Loading / head (l/day)	Number of persons	Total l/day
Staff	60	100	6,000
Customers	20	10	200
Total			6,200

Table 7.1 | *Foul Water Outflow*

1 x D.W.F. = 6.2 m^3/day = 0.075 l/s

Peak Flow (6 x D.W.F.) = 0.45 l/s

The existing foul water network is shown on drawings 15-194-P021.

7.2.4 Characteristics of the Proposed Development

This proposal recommends retention and extension of the existing 375mm private foul water pipe. The proposed infrastructure will extend from the new control building to the car park entrance for connection to the recently constructed 900mm diameter foul water sewer.

The existing and proposed foul water layout is shown on drawings 15-194-P021.

7.2.5 Potential Impact of Proposed Development

There is no additional impact from the proposed development.

7.2.6 Remedial or Reductive Measure

There is no required remedial measures to undertake.

7.2.7 Predicted Impact of the Proposed Development

The existing 900mm diameter pipe running along the Swords Road receives an additional 6.2 m^3/day of untreated effluent with a peak flow of 0.45 l/s (6 DWF) as a result of the development. This additional flow is negligible in terms of the pipe's capacity.

7.3 Surface Water

7.3.1 Introduction

This section of the Environmental Impact Assessment Report (EIAR) has been prepared by Waterman Moylan and provides an assessment of the impact of the Quickpark Car Park at Turnapin Great, Swords Road on the surface water drainage network.

This section of the EIAR assesses the impact on the existing surface water system in the vicinity of the site. It also sets out mitigation and remedial measures and methods of monitoring while the development is operational.

The application is for the continuation of use of the at grade car park which forms the Dublin Airport Long Stay Car Park with ancillary infrastructure. The infrastructure includes the surface water system that treats, attenuates and drains surface water from the car park.

The existing and proposed surface water network and car park layout is shown on accompanying drawings 15-194-P020 to 15-194-P024.

7.3.2 Research Methodology

Research for this section included the review of Ordinance Survey and Topographical surveys of the subject site and surrounding area.

Existing surface water records were received from Fingal County Council for the surrounding area, and the review of design and as built drawings of the surface water system constructed during phase 1 and 2 of the car park development was also carried out.

Input from both the developer and Car Park staff regarding the history of any flooding of the car park or areas around the car park was received. No flooding was reported.

In addition to the above, Waterman Moylan carried out a site visit on 16th February 2018. During the site visit Waterman Moylan Engineers lifted manhole covers to check for signs of present or past blockages in the pipes, and inspected petrol interceptors and hydrobrake manholes. None were identified.

An examination of the surrounding ditch system and car park outfall pipes was undertaken.

Trial pits were excavated and left open during an inspection on the 23rd of March 2011 and inspected again on 28th of March 2011, suggesting a water table of between 1.6m and 2.0m below existing ground level.

In addition to the above, surface water quality testing has been undertaken on site to ensure that the Sustainable Urban Drainage Systems in place are adequately treating surface water entering the surrounding watercourses. Water Samples were carried out at each of the surface water outfalls from the car park in April 2018. Refer to Appendix 7.1 'Water Quality Testing' for a summarised report of SW quality results.

7.3.3 Receiving Environment

The car park is located approximately 1km south of Dublin Airport and is accessed from the R132 Swords Road.

The existing car park in these subject lands was originally constructed in 2 phases, with phase 1 (approximately 3,500 spaces) having been in operation for c. 17 years and phase 2 (an additional 2,740 spaces approximately) having been in operation for c. 12 years.

As part of this development, the surface water system serving the car park is in place.

The car park was designed in compliance with the Greater Dublin Strategic Drainage Study (GDSDS); Sustainable Urban Drainage Systems (SUDS) were implemented into this drainage scheme to improve the water quality of the surface water runoff and to limit the discharge rate to a volume equivalent to its greenfield runoff.

The entire car park site has been designed to retain storm water during storm events, with an impermeable berm having been constructed on the perimeter of the site controlling the storm water runoff from the site to specific discharge points where flow controls are used to control the surface water runoff from each catchment.

The excess storm water is stored on site for the duration of the storm and is discharged to the existing watercourses over an extended period of time at a controlled rate. The required flow restriction is achieved by means of Hydrobrakes installed at the outfall manholes.

An Engineering Assessment report, 15-194r.005, which accompanies this EIAR, further details the on-site attenuation and allowable discharge rate design as well as providing a Flood Risk Assessment for the car park.

To minimise the risk of any pollutant runoff from the site, SuDS devices were used in accordance with best practice and in accordance with the GDSDS.

The car park was constructed using permeable gravel surfacing of 300mm of Clause 505 material on a layer of Teram 1000 geotextile. The permeable gravel surfacing also acts as a storage area for the retained surface water in storm conditions, and as a filter to improve the water quality of the discharges to the existing ditches.

Each catchment of the car park discharge to the surround ditch network via a series of silt trap manholes and petrol interceptors. The petrol interceptors (Class 1 Light Liquid Separators) are used to control the quality of the storm water discharges by containing hydrocarbons and potential spillages.

The existing and proposed surface water network is shown on drawings 15-194-P020 to 15-194-P024. Storm water calculations, including attenuation storage volumes, are included in the Engineering Assessment Report, 15-194r.005.

7.3.4 Characteristics of the Proposed Development

This proposal includes retention of much of the existing car park and surface water system, as outlined in section 7.3.3 and shown in drawings 15-194-P020 to 15-194-P024, with modifications at the entrance to the car park and around the new entrance building, as shown on drawing 15-194-P021. The modifications include the introduction of swales and filter drains along the proposed new entrance road, a green roof on the new entrance building and all down pipes draining to filter drains before discharging to the surface water network.

7.3.5 Potential Impact of the Proposed Development

The hard standing car park has the potential to increase the rate of surface water runoff to that of a greenfield site. This increases the risk of flooding downstream watercourses serving the area.

The car park drainage system has the potential to impact on the quality of ground water and watercourses as a result of petrol and oil runoff form vehicles. This could have detrimental effect on local ecology.

The existing surface water system includes 6 No. Class 1 Light Liquid Separators, to European Standard pr EN858, Parts 1 and 2.

These are strategically located to ensure all surface water outfall systems have Separators provided, which will ensure cleaner surface water runoff as a result of a secondary SUDS devices in accordance with Greater Dublin Strategic Drainage Study (GDSDS) Sustainable Urban Drainage Systems.

7.3.6 Remedial or Reductive Measures

Flow control devices are currently located at all outfalls from the car park to only allow discharge to occur at greenfield rates.

The filter material in the car park filters pollutants such as hydrocarbons out from the runoff. The gravel carpark has sufficient capacity to retain the first flush which is equivalent to 15mm rainfall over the cark park. As such the car park will have a positive impact on the water quality.

The car park is also fitted with silt traps and petrol interceptors at each discharge point to the surrounding ditch network to further reduce the risk of pollutant runoff.

The introduction of the proposed SuDS features along the new proposed entrance road and at the new entrance building will facilitate the improvement of surface water runoff before draining back into the surface water network.

During a meeting with Fingal County Council Drainage Department on 23 May 2018, the above existing and proposed measures were approved in principle.

7.3.7 Predicted Impact of the Proposed Development

The current and cumulative impact on the surrounding surface water environment remains low as a result of the mitigating factors outlined above in Section 7.3.6.

Water sampling at each of the outfall locations was also carried out in April 2018 which indicate that the onsite SuDS features are working. Refer to Appendix 7.1 for the Water Sampling Report.

7.3.8 Monitoring

Monitoring and maintenance of the silt traps manholes, the Class 1 Light Liquid Separators and hydrobrake manholes will continue every 6 months.

7.4 Conclusions

There are no predicted negative impacts as a result of the proposed potable water and foul water works due to occur as a part of these development works.

Existing surface water drainage has been installed in accordance with relevant guidelines and are approved in principle with FCC Drainage Division.

The gravel material of the car park filters pollutants and has sufficient capacity to retain the first flush, therefore having a positive impact on water quality. Silt traps and petrol interceptors have been installed, ensuring SuDS requirements as set out in GDSGS have been met. Petrol interceptors shall be inspected every six months, and a log will be maintained detailing the depth of oil found, any oil volume removed and any silt removal or cleaning carried out.

The petrol interceptors were last inspected and cleaned out in September 2018 by McBreen Environmental Drain Services Ltd., who confirmed that all interceptors are in good working order – refer to the attached letter from McBreen Environmental included in Appendix 7.2.

Proposed works include swales and filter drains which will similarly have a positive impact on surface water before draining back into the surface water network.

Chapter 8 Air Quality

8.1 Introduction

Chapter 8 of this Environmental Impact Assessment Report (EIAR) has been prepared by RPS and assesses the Air Quality Impacts associated with the proposed continued use of the existing car park and the construction of a new part three storey entrance/office building. The development is located approximately 1km south of Dublin Airport and is currently accessed on the west side of the R132 Swords Road.

This study will identify, describe and assess the impact of the subject site in terms of air quality during the construction and operational phases of the scheme. Particular attention will be focused on sensitive receptors, such as residential areas adjacent to the site, and local amenities such as schools and shopping centres. Increased traffic volumes associated with the subject site is likely to be the main impact source.

This assessment was prepared in accordance with the EIA Directive 2014/52/EC and having regard for the following guidance:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, Draft, August 2017)
- Advice Notes for Preparing Environmental Impact Statements (EPA, Draft September 2015)
- Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes (Rev. 1) (TII, formerly NRA, 2011)
- Guidelines on the Information to be contained in Environmental Impact Statements (EPA, 2002),
- Advice Notes on Current Practice (in the Preparation of Environmental Impact Statements) (EPA, 2003),

This section should be read in conjunction with the site layout plans for the site and project description sections of this EIAR.

8.2 Research Methodology

Existing EPA air quality data has been examined in order to assess the background air quality in the area. It is used to identify the existing pollutant trends in the area and to establish spatial information in order to determine compliance with relevant ambient air legislation.

Future air quality trends for the key traffic-derived pollutants (nitrogen dioxide and particulate matter) with and without the proposed scheme in place have been predicted using the screening air quality assessment from the U.K Highway Agency Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 1 (May 2007), Air Quality Assessment.

8.2.1 Assessment Criteria

In May 2008, the European Commission introduced a revised Directive on ambient air quality and cleaner air for Europe (2008/50/EC), which has been transposed into Irish Legislation through the revised Air Quality Standards Regulations (S.I. 180 of 2011).

The Directive and Regulations specify limit values in ambient air for sulphur dioxide (SO_2), lead, benzene, particulate matter (PM_{10} and $PM_{2.5}$), carbon monoxide (CO) and nitrogen dioxide (NO_2). These limits are mainly for the protection of human health and are largely based on review of epidemiological studies on the health impacts of these pollutants. In

addition, there are limits that apply to the protection of the wider environment (ecosystems and vegetation). These limits are presented in Table 8.1.

Table 8.1: Air Quality Standards Regulations (Source: S.I. 180 of 2011)

Pollutant	Criteria	Value
Nitrogen Dioxide	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 μg/m^3 NO_2
	Annual limit for protection of human health	40 μg/m^3 NO_2
	Annual limit for protection of vegetation	30 μg/m^3 NO + NO_2
Benzene	Annual limit for protection of human health	5 μg/m^3
Carbon Monoxide	Maximum daily 8-hour running mean	10 mg/m^3
Lead	Annual limit for protection of human health	0.5 μg/m^3
Sulphur Dioxide	Hourly limit for protection of human health - not to be exceeded more than 24 times/year	350 μg/m^3
	Daily limit for protection of human health - not to be exceeded more than 3 times/year	125 μg/m^3
	Annual limit for protection of vegetation	20 μg/m^3
Particulate Matter PM_{10}	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 $PM_{2.5}$	Annual target value for the protection of human health	25 μg/m^3 $PM_{2.5}$

8.3 Receiving Environment

The Quickpark site is located to the west of the Carlton Hotel on the Old Swords Road, the R132. This development was previously permitted under temporary planning permissions ABP Ref. 06F.PA0023, Reg. Ref.s F99A/0376/PL06F.112955, F02A/1110, F05A/1464 and Reg. Ref. F06A/1746. The site is bounded by the Old Airport Road and the airport airfield to the north. The Carlton Hotel and the R132 lie to the eastern boundary of the site, while agricultural land lies to the west and south west of the site. The site is bounded to the south by sports fields, a kart racing track and other commercial operations to the south and further south by the M50.

Air quality data available from the Environmental Protection Agency (EPA) monitoring network was assessed. Four air quality zones have been defined for Ireland as follows:

- Zone A - Dublin Conurbation

- Zone B - Cork Conurbation
- Zone C - Other cities and large towns comprising Galway, Limerick, Waterford, Clonmel, Kilkenny, Sligo, Drogheda, Wexford, Athlone, Ennis, Bray, Naas, Carlow, Tralee, Dundalk, Navan, Letterkenny, Celbridge, Newbridge, Mullingar and Balbriggan.
- Zone D- Rural Ireland i.e. the remainder of the state excluding Zones A, B and C.

The subject site is located within air quality Zone A, the Dublin Conurbation. From the EPA report on ambient air quality in 2016 the most representative monitoring station in terms of the subject site is Swords, County Dublin. The Swords monitoring station does not record all ambient air quality parameters outlined in the Directive on ambient air quality and cleaner air for Europe (2008/50/EC) therefore air quality in the receiving environment is described using the average annual mean value concentrations from all measured monitoring stations in Zone A.

Table 8.2 shows the annual mean value concentrations measured for SO_2, PM_{10}, NO_2, CO and benzene in Zone A for 2016. The table compares the annual mean measured levels with the limit values defined in the National Air Quality Standards Regulations 2011 (S.I No. 180 of 2011).

Table 8.2: Extract of summary data from EPA Ambient Air Monitoring in 2016

Pollutant	Unit	Annual Mean Concentration in 2016	Annual Limit for Protection of Human Health
Sulphur Dioxide (SO_2)	µg/m^3	1.2	20
Particulate Matter (PM_{10})	µg/m^3	13.5	40
Nitrogen Dioxide (NO_2)	µg/m^3	23.7	40
Carbon Monoxide (CO)	mg/m^3	0.3	10
Benzene	µg/m^3	1.01	5

In summary, existing baseline levels of SO_2, PM_{10}, NO_2, CO and benzene based on data from the EPA monitoring network are currently below ambient air quality limit values in Zone A and by extension the levels in the vicinity of the subject site are also considered to be below the limit values.

8.4 Characteristics of the Proposed Development

The existing car park serves c.6,240 long stay car parking spaces and is located approximately 1km south of Dublin Airport with access from a previously permitted signal controlled junction on the Swords Road (Old Airport Road) with turning lanes and directional signs. The total site area for the proposed development is 16.9 hectares (41.8 acres).

The proposed development is for the continuation of use of an at-grade long term car park, demolition of existing single storey office, canopy structure and maintenance shed, and the construction of a new part three storey car park entrance building. The proposed development also includes ancillary infrastructure and facilities including: hard-standing; lighting; boundary fencing; bus shelters; culverts; bio-cycle waste water treatment system and percolation area; and landscaping works. The air quality assessment has considered the effects of the continuation of use based upon the following information:

- Existing access routes to the car park;

- Traffic data and information provided by the traffic consultants.

8.5 Potential Impact Of The Proposed Development

8.5.1 Construction Phase

As the car park in question is already constructed the construction phase assessment will pertain to the development of the proposed office block only.

The construction phase of the scheme has the potential to generate a number of short-term emissions to atmosphere. Construction activities are likely to generate some dust emissions. The potential quantity of dust emissions will depend on the type of construction activity being carried out such as excavations, mixing concrete, sawing wood and construction traffic travelling across exposed ground. Dust dispersion across the development site and out into the wider environment will be determined primarily by meteorological factors including levels of rainfall, wind speed and wind direction. The short-term impact from dust depends on the distance to potentially sensitive locations and whether the wind can carry the dust to these locations. The majority of any dust produced during the construction phase will be deposited close to the source and as such any impacts from dust deposition will typically be close to the source, within several hundred metres of the construction compound.

The construction phase may also generate low levels of typical exhaust emission compounds including nitrogen oxides, carbon dioxide and hydrocarbons such as benzene. Construction vehicles and any equipment fitted with an exhaust, such as generators etc., will give rise to petrol and diesel exhaust emissions.

8.5.2 Operational Phase

There is the potential for a number of emissions to the atmosphere during the operational phase of the scheme. In particular, the traffic-related air emissions may generate quantities of air pollutants such as nitrogen dioxide and particulate matter.

Vehicular traffic will also result in the increased emissions of greenhouse gases including carbon dioxide and acidifying gases such as nitrous oxides to the atmosphere. However, quantifying this impact is not possible without detailed origin and destination data for the traffic generated.

8.6 Predicted Impact Of The Proposed Development

8.6.1 Construction Phase

Where there are operations at a construction site there is a risk that dust may cause an impact at sensitive receptors in close proximity to the source of the dust generated. The risk of dust impact is best described in the NRA Guidelines 2011 and these distances are presented in **Table 8.3**.

Table 8.3: NRA Assessment Criteria for the Impact of Dust Emissions from Construction Activities, (with standard mitigation in place)

Source		Potential Distance for Significant Effects (Distance from source)		
Scale	**Description**	**Soiling**	**PM_{10}**	**Vegetation Effects**
Major	Large Construction sites, with high use of haul routes.	100m	25m	25m
Moderate	Moderate Construction	50m	15m	15m

	sites, with moderate use of haul routes.			
Minor	Minor Construction sites, with minor use of haul routes.	25m	10m	10m

The Carlton Hotel to the south of the proposed entrance building is located within 100 metres of the works and potentially the proposed construction works.

Construction related dust at these properties is likely to result in a '**Temporary Slight Adverse**' impact. Where dust related impacts are anticipated avoidance and mitigation measures will be put in place to reduce the impact level.

8.6.2 Operational Phase (Cumulative Traffic Impact)

The car park is accessed from the existing access road located on the R132. The Design Manual for Roads & Bridges (DMRB) screening air dispersion model from the U.K Highway Agency Design Manual for Roads and Bridges Volume 11, Section 3, Part 1 (May 2007), Air Quality Assessment was used to assess the impact of traffic associated with the continuation of use of the car park on local air quality.

Projected traffic figures associated with the scheme were used to predict the concentrations of traffic-derived pollutants in future years. The model then combined background concentrations of pollutants, sourced from the EPA report on ambient air quality in 2016 (Table 8.2), with predicted concentrations. Results were generated using an average speed of 10 km/hr on the car park access, and 20 km/h on the R132, assuming congested traffic conditions. The parameters assessed were nitrogen dioxide (NO_2) and particulate matter (PM_{10}). These are the pollutants of most concern with regard to road traffic emissions and the Air Quality Standards. Carbon monoxide (CO) and benzene were also assessed.

Using the DMRB screening air dispersion model, pollutant concentrations in 2028, with and without the scheme in operation, were predicted at the sensitive receptors adjacent to the development site. The receptors assessed were:

- R1 - Bungalow property located opposite the entrance to the car park, along R132; and,
- R2 - Carlton Hotel located adjacent to the car park.

Increases in ambient concentrations of traffic pollutants NO_2 and PM_{10}, with the scheme in place (Do-Something) are compared with the current background concentrations of pollutants, sourced from the EPA report on ambient air quality in 2016. In order to quantify the magnitude of change in pollutant concentrations, the descriptors in Table 8.4 were used. Table 8.5 was then used to describe the significance of the impact. These descriptor tables are from the NRA Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes 2011.

Table 8.4: Definition of Impact Magnitude for Changes in Ambient Air Pollutant Concentrations (Source: NRA, 2011)

Magnitude of Change	Annual Mean NO_2/PM_{10}	No. of Days with PM_{10} concentration greater than 50μg/m³	Annual Mean PM
Large	Increase/decrease ≥4μg/m³	Increase/decrease >4 days	Increase/decrease ≥2.5μg/m³
Medium	Increase/decrease	Increase/decrease	Increase/decrease

	2 - <4μg/m^3	3 of 4 days	1.25 - <2.5μg/m^3
Small	Increase/decrease 0.4 - <2μg/m^3	Increase/decrease 1 or 2 days	Increase/decrease 0.25 - <1.25μg/m^3
Imperceptible	Increase/decrease <0.4μg/m^3	Increase/decrease <1 day	Increase/decrease <0.25μg/m^3

Table 8.5: Air Quality Impact Descriptors for Changes in Annual Mean Nitrogen Dioxide and PM_{10} and $PM_{2.5}$ Concentrations at a Receptor (Source: NRA, 2011)

Absolute Concentration in Relation to Objective/Limit Value	Changes in Concentration		
	Small	Medium	Large
Increase with Scheme			
Above Objective/Limit Value with Scheme (≥40μg/m^3 of NO_2 or PM_{10}) (≥25μg/m^3 of $PM_{2.5}$)	Slight Adverse	Moderate Adverse	Substantial Adverse
Just Below Objective/Limit Value with Scheme (36-<40μg/m^3 of NO_2 or PM_{10}) (22.5-<25μg/m^3 of $PM_{2.5}$)	Slight Adverse	Moderate Adverse	Moderate Adverse
Below Objective/Limit Value with Scheme (30-<36μg/m^3 of NO_2 or PM_{10}) (18.75-<22.5μg/m^3 of $PM_{2.5}$)	Negligible	Slight Adverse	Slight Adverse
Well Below Objective/Limit Value with Scheme (<30μg/m^3 of NO_2 or PM_{10}) (<18.75μg/m^3 of $PM_{2.5}$)	Negligible	Negligible	Slight Adverse
Decrease with Scheme			
Above Objective/Limit Value with Scheme (≥40μg/m^3 of NO_2 or PM_{10}) (≥25μg/m^3 of $PM_{2.5}$)	Slight Beneficial	Moderate Beneficial	Substantial Beneficial
Just Below Objective/Limit Value with Scheme (36-<40μg/m^3 of NO_2 or PM_{10}) (22.5-<25μg/m^3 of $PM_{2.5}$)	Slight Beneficial	Moderate Beneficial	Moderate Beneficial
Below Objective/Limit Value with Scheme (30-<36μg/m^3 of NO_2 or PM_{10}) (18.75-<22.5μg/m^3 of $PM_{2.5}$)	Negligible	Slight Beneficial	Slight Beneficial
Well Below Objective/Limit Value with Scheme (<30μg/m^3 of NO_2 or PM_{10}) (<18.75μg/m^3 of $PM_{2.5}$)	Negligible	Negligible	Slight Beneficial

The results of the impact assessment on the sensitive receptors arising from traffic from the scheme are presented in Tables 8.6 & 8.7.

Table 8.6: Local Impact at R1 (Residential Dwelling at Site Entrance on R132)

Scenarios	Nitrogen Dioxide ($\mu g/m^3$)	Particulates (PM_{10}) ($\mu g/m^3$)		Benzene ($\mu g/m^3$)	Carbon Monoxide (mg/m^3)
	Annual Average NO_2	Annual Average PM_{10}	Days > 50$\mu g/m^3$	Annual Average Benzene	Annual Average CO
Background	23.7	13.5	1.1	1.01	0.30
2018 Baseline	26.4	14.45	1.1	1.11	0.38
2028 Do Nothing	26.0	14.32	1.1	1.09	0.37
2018 Do Something	26.3	14.44	1.1	1.11	0.38
Increase	+0.3	+0.12	0	+0.02	+0.01
Limits	40	40	35	5	10

Table 8.7: Local Impact at R2 (Carlton Hotel)

Scenarios	Nitrogen Dioxide ($\mu g/m^3$)	Particulates (PM_{10}) ($\mu g/m^3$)		Benzene ($\mu g/m^3$)	Carbon Monoxide (mg/m^3)
	Annual Average NO_2	Annual Average PM_{10}	Days > 50$\mu g/m^3$	Annual Average Benzene	Annual Average CO
Background	23.7	13.5	1.1	1.01	0.30
2018 Baseline	26.9	14.66	1.1	1.13	0.40
2028 Do Nothing	26.3	14.43	1.1	1.10	0.38
2028 Do Something	26.8	14.65	1.1	1.13	0.40
Increase	+0.50	+0.22	0	+0.03	+0.02

Scenarios	Nitrogen Dioxide ($\mu g/m^3$)	Particulates (PM_{10}) ($\mu g/m^3$)		Benzene ($\mu g/m^3$)	Carbon Monoxide (mg/m^3)
	Annual Average NO_2	Annual Average PM_{10}	Days > $50\mu g/m^3$	Annual Average Benzene	Annual Average CO
Limits	40	40	35	5	10

The local impact significance of traffic related pollutants, NO_2 and PM_{10}, on air quality at the sensitive receptors with continued use of the scheme are addressed based on the NRA criteria in Table 8.4. The impact equates to a "small" increase in annual average NO_2 at receptor R2 and "imperceptible" increases in annual average NO_2 at receptor R1 and in annual average PM_{10} for these receptors in the area.

Employing the NRA significance criteria in Table 8.5, a "medium" increase in annual average NO_2 at receptor R2 but remaining well below the limit value (i.e. less than $30\mu g/m^3$ as an annual average) results in a "**negligible**" impact in terms of local impact as a result of cumulative traffic.

Levels of benzene and CO are also predicted to be well below the statutory limits for the protection of human health under the 2028 scenario with or without the proposed development.

8.7 Remedial Or Reductive Measures

8.7.1 Construction Phase

In order to mitigate dust emissions during the construction phase, a dust minimisation plan will be prepared as part of the Environmental Management Plan. The dust minimisation plan will be prepared with regard to the industry guidelines such as the Building Research Establishment document entitled 'Control of Dust from Construction and Demolition Activities' and the Construction Industry Research and Information Association (CIRIA) 'Environmental Good Practice on Site'.

The dust minimisation plan should include the following mitigation measures:

- Site roads will be regularly cleaned and maintained as appropriate. Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic only.
- Any site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions (also applies to vehicles delivering material with dust potential).
- All vehicles exiting the site will make use of a wheel wash facility prior to entering onto public roads, to ensure mud and other wastes are not tracked onto public roads. Wheel washes will be self-contained systems that do not require discharge of the wastewater to water bodies.
- Public roads outside the site will be regularly inspected for cleanliness, and cleaned as necessary.

- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind.
- Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- The transport of soils should be undertaken in covered vehicles.
- Liaising with the commercial gardening operator to the north west in advance of any activities likely to cause dust impacts so that they could be minimised.

If the construction contractor adheres to good working practices and the dust mitigation measures outlined above, the levels of dust generated are assessed to be minimal and are unlikely to cause an environmental nuisance. The construction contractor will be required to maintain monthly dust levels below the guideline of 350mg/m^2/day as a 30-day average at sensitive receptors using standard Bergerhoff gauges. Where dust levels are measured to be above this guideline the mitigation measures in the area must be reviewed as part of the dust minimisation plan.

8.7.2 Operational Phase

The collection of EU Directives, known as the Auto Oil Programme, have outlined improved emission criteria which manufacturers are required to achieve from vehicles produced in the past and in future years. This is a trend, which has been in operation for many years and is destined to continue in future years for both cars and heavy-duty vehicles. The introduction of the National Car Test (NCT) has also helped to reduce transport emissions by ensuring that all vehicles on Irish roads over 4 years old undergo an emissions test.

No project specific mitigation measures have been identified but emissions of pollutants from road traffic can be controlled by either controlling the number of road users or by controlling the flow of traffic. For the majority of vehicle-generated pollutants, emissions rise as speed drops, although the opposite is true at very high speeds (i.e. speeds greater than 120 km/hr). Emissions also tend to be higher under stop-start conditions when compared with steady speed driving. The free flow of traffic on routes such as the R132 and the Collinstown Road will allow for the generation of lower concentrations of traffic related pollutants due to more steady speed driving. As outlined in the DMRB assessment, with the development operational, compliance with all the relevant limit values will be achieved at the nearest sensitive receptors.

8.8 Monitoring

No monitoring is deemed necessary due to the negligible impact of the development on air quality.

Chapter 9 Noise and Vibration

9.1 Introduction

Chapter 9 of this Environmental Impact Assessment has been prepared by RPS and assesses the Noise and Vibration Impacts associated with the proposed continued use of the existing car park and the construction of a new part three storey entrance/office building. The development is located approximately 1km south of Dublin Airport and is currently accessed on the west side of the R132 Swords Road.

This study will identify, describe and assess the impact of the subject site in terms of the noise and vibration environment during the construction and operational phases of the scheme. Particular attention will be focused on sensitive receptors, such as residential areas adjacent to the site, and local amenities such as schools, during both phases of the development. Increased traffic volumes associated with the subject site is likely to be the main impact source.

This assessment was prepared in accordance with the EIA Directive 2014/52/EC and having regard for the following guidance:

- Revised Guidelines on the Information to be contained in Environmental Impact Statements (EPA, Draft September 2015)
- Advice Notes for Preparing Environmental Impact Statements (EPA, Draft September 2015)
- Guidelines for the Treatment of Noise and Vibration in National Road Schemes (Rev. 1) (TII, formerly NRA, 2004)
- EPA Guidelines on the Information to be contained in Environmental Impact Statements (EPA 2002),
- Advice Notes on Current Practice (in the Preparation of Environmental Impact Statements) (EPA, 2003).

This section should be read in conjunction with the site layout plans for the site and project description sections of this EIAR.

9.2 Research Methodology

This section describes assessment criteria and methodologies used to assess the Noise and Vibration Impacts for the proposed scheme, including conducting a baseline noise survey in the area and identifying potential noise sensitive receptors (NSRs).

9.2.1 Construction Noise Criteria

The level of environmental noise generated during the construction phase of any development is determined primarily by the exact construction methods employed. The significance of the noise impact of such methods will arise from the specific sound power levels generated by the plant and machinery used, the duration of each particular construction activity, as well as the time and location in which the equipment is used.

The potential sources of environmental noise during the construction phase of the proposed development will primarily arise from increased traffic on the surrounding road network (from construction workers and delivery of plant and materials) and

actual on-site works where heavy plant and earth moving machinery may be required.

In the absence of a specific construction plan (which should outline details of plant and machinery to be used, materials, construction phasing and working hours) it is not possible to accurately model construction noise levels using the recommended standard ISO 9613:1996 Acoustics - Attenuation of sound during propagation outdoors – Parts 1 and 2; however, a basic indication of worst case noise levels at the nearest NSRs has been calculated. This basic indication was based on the likely construction methods required to complete the works and assessed noise impacts at the NSRs for a range of construction equipment.

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. Local authorities normally control construction activities by imposing limits on the hours of operation and consider noise limits at their discretion.

In the absence of specific noise limits, appropriate criteria relating to permissible construction noise levels for a development of this scale may be found in the British Standard BS 5228-1:2009+A1: 2014 - Code of practice for noise and vibration control on construction and open sites.

BS 5228-1:2009+A1: 2014 sets out a method of calculating the propagation of sound towards a receiver from the use of certain construction plant and machinery on a construction site. The standard describes single octave sound power level data for a range of standardised plant and machinery as would be expected to be the norm on construction sites.

9.2.2 Construction Vibration Criteria

During the construction phase of a development, certain aspects of the site work may result in increased levels of vibration in the vicinity of the site.

BS 5228-2:2009+A1:2014 - Code of practice for noise and vibration control on construction and open sites: - Part 2: Vibration, outlines a number of calculation methods for predicting peak particle velocity (PPV) resulting from construction works on open sites. The prediction methods require specific information relating to the soil composition and compaction levels within the propagation path between the construction area and nearest receiver, as well as highly detailed information regarding the type and location of plant and machinery.
As such specific data is not available; a quantitative impact of vibration will not be undertaken as part of this assessment. Construction practices employed should have regard to best practice as recommended in the following standards and guidance:

- BS 6472-1 (2008) Guide to evaluation of Human Exposure to Vibration in Buildings - Vibration sources other than Blasting.
- BS 7385-1 (1990) Evaluation and Measurement for Vibration in Buildings - Guide for Measurement of Vibration and evaluation of their effects on buildings.
- BS 7385-2 (1993) Evaluation and Measurement for Vibration in Buildings - Guide to damage levels from Groundborne Vibration.

- BS 5228-2:2009+A1:2014 - Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration.

9.2.3 Operational Noise Criteria

Currently, no universal statutory noise standards apply in Ireland. Although certain limits relating to noise levels may be prescribed for licensed facilities under the Environmental Protection Agency Act, operations at the subject site are not covered under any of schedules of the act and therefore do not require a licence.

In the absence of statutory limits, it is therefore necessary to reference appropriate best practice guidance and standards in order to determine the impact of the subject site on the noise climate in the surrounding area during the operational phase.

It is important to note that the primary potential source of noise arising during the operational phase is that of road traffic associated with the increased population of the area.

In the UK, the Department of Transport (Welsh Office) '*Calculation of Road Traffic Noise'* (1988) document recommends that the $L_{A10\ 18hour}$ parameter is used to provide an accurate correlation of road traffic volumes and associated community annoyance. No standard method exists for the calculation and assessment of road traffic noise in Ireland so it has generally been best practice to assess road traffic noise on the basis of the $L_{A10\ 18hour}$ parameter as outlined in the CRTN document.

Transport Infrastructure Ireland (formerly the National Roads Authority (NRA)) have produced guidelines for national road schemes which proposes that the $L_{A10\ 18hour}$ parameter be converted to the European L_{DEN} Index format (European Noise Directive 2002/49/EC) for which the NRA propose a design goal of 60 dB L_{DEN} (END 2002/49/EC). However as the construction of a new section of a National Primary Road is not required in connection with the subject site, it would not be appropriate to reference this design goal as a suitable benchmark for assessing the impact of operations from the subject site.

The World Health Organisation propose guideline values for the prevention of moderate and serious annoyance in outdoor areas as 50dB $L_{Aeq\ (16\ hour)}$ and 55dB $L_{Aeq\ (16\ hour)}$ respectively although a more appropriate criteria for assessing disturbance or annoyance from noise arising from the site would be related to the significance of changes in noise levels as perceptible to human beings.

The information in Table 9.1 is taken from the 'Guidelines for Noise Impact Assessment' produced by the Institute of Environmental Management and Assessment (IEMA). This document replaces the draft guidelines published by the Institute of Acoustics (IOA) and IEMA in April 2002 and shows an appropriate impact rating procedure for noise levels attributable to certain operations based on perception of loudness.

It should be noted that the subjective description outlined in Table 9.1 applies to relatively continuous noise only. RPS would therefore deem the outlined changes as suitable criteria for assessing noise arising from the subject site, from both onsite and road traffic related noise impacts.

Table 9.1: ***Likely impact associated with a change in traffic noise level***

Change in Noise Level	Subjective Reaction	Impact Guidelines for Noise Impact Assessment Significance	Impact Guidelines on the Information to be contained in EIARs (EPA)
0 dB	No change	None	Imperceptible
0.1 to 2.9 dB	Barely perceptible	Minor	Slight
3.0 to 4.9 dB	Noticeable	Moderate	Moderate
5.0 to 9.9 dB	Up to a doubling or halving of loudness	Substantial	Significant
10 dB or more	More than a doubling or halving of loudness	Major	Profound

The following tasks were carried out in order to assess the noise impacts of the subject site on identified NSRs, during the operational phase of the scheme;

- A baseline survey has been conducted to establish baseline noise levels at the nearest noise sensitive receptor surrounding the site. The survey was carried out in accordance with *ISO 1996: Acoustics: 'Description and measurement of environmental noise'*.

- A prediction of noise levels arising at the nearest noise sensitive receptors due to current and forecast increases in traffic arising from the subject site was undertaken with reference to the methodology outlined in the UK's Department of Transport (Welsh Office) 'Calculation of Road Traffic Noise' Document (1988).

- A detailed assessment of the cumulative predicted noise levels and potential impact upon noise sensitive receptors was carried out with reference to Irish and International best practice guidelines in the assessment of environmental noise.

9.2.4 Vibration Assessment Criteria

There are generally accepted criteria for vibration levels that would be likely to lead to complaints, and vibration levels that would be likely to lead to structural damage. These levels are outlined in the guidance documents BS6472: 1992 Guide to Evaluation of human exposure to vibration in buildings (1Hz to 80Hz), and BS7385: Part 2 1990: Evaluation and measurement for vibration in buildings - Guide to damage levels from ground-borne vibration.

9.2.5 Operational Vibration Criteria

Traffic has been identified as the only likely source of vibration during the operational phase of the scheme. In the case of nominally continuous sources of vibration, such as traffic, vibration is perceptible at around 0.5 mm/s PPV and may become disturbing or annoying at higher magnitudes. Currently no major sources of vibration exist on the subject site. It would therefore be appropriate to assume that negligible

vibration impacts will occur during the operation of the subject site and no further assessment is deemed to be required.

9.2.6 Receptor Identification

A noise sensitive receptor (NSR) is defined in the EPA Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4), 2016 as “any dwelling, house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels".

The choice of receptors as investigated in the baseline survey and assessed in this chapter was made having due regard to a number of considerations including:

- Determining the most exposed or closest NSR to potential sources of environmental noise related to current and future increases in traffic volumes.
- Ensuring that the number of receptors assessed would allow for sufficient baseline data to be obtained in the allocated baseline measurement period but also that the spatial spread of receptor locations was such that all locations in and around the subject site were assessed.

Descriptions of the baseline noise monitoring locations chosen and attended are presented in Table 9.2.

Table 9.2: Noise Monitoring Locations

Noise Measurement Location	Location	Measurement Type	Justification
NSR1	Residence on R132, opposite RCSI sportsgrounds	Attended	To determine baseline noise levels
NSR2	“Derryolam” residence on R132, opposite Quickpark entrance	Attended	To determine baseline noise levels
NSR3	Dardistown House, along R132	Attended	To determine baseline noise levels

9.2.7 Noise Forecasting Methodology

At the time of writing this report, a standard methodology for predicting the impact of road traffic (i.e. Common Noise Assessment Methods (CNOSSOS)) has not been formally adopted in the European Union. The National Roads Authority (NRA) in concurrence with the UK authorities recommends that the UK standard Calculation of Road Traffic Noise (CRTN) be used in place of the French NMPB96 as recommended under the Environmental Noise Directive (END 2006), as it is more suitable to the Irish traffic situation generally.

In the case of predicting road traffic noise from the forecasted increases in traffic volumes arising on the R132 and surrounding road network from the site, such

impacts were calculated using this CRTN method. Traffic data was provided by the traffic consultant for relevant sections of the surrounding road network.

9.3 Receiving Environment

The Quickpark site is located to the west of the Carlton Hotel on the Old Swords Road, the R132. This development was previously permitted under temporary planning permissions ABP Ref. 06F.PA0023, Reg. Ref.s F99A/0376/PL06F.112955, F02A/1110, F05A/1464 and Reg. Ref. F06A/1746. The site is bounded by the Old Airport Road and the airport airfield to the north. The Carlton Hotel and the R132 lie to the eastern boundary of the site, while agricultural land lies to the west and south west of the site. The site is bounded to the south by sports fields, a kart racing track and other commercial operations to the south and further south by the M50.

The Dublin Agglomeration Environmental Noise Action Plan December 2013 – November 2018, provides noise mapping from the main noises sources in the Dublin area (includes the road network, rail network and airports). The Quickpark site is located within the 60-64dB L_{den} contour from the aircraft noise from Dublin Airport and within the zone of 60-65dB L_{den} contours from road traffic from the M50 and M1. As a consequence the existing noise climate in the area is dominated by these road traffic and air traffic sources.

9.3.1 Baseline Noise Survey

In order to assess the surrounding environmental noise levels, a daytime noise survey was carried a noise survey was conducted on the 22nd of March 2018. During the survey, three attended locations were monitored.

Three consecutive 15-minute measurements were recorded during the period from 09:00 to 12:30, at each monitoring location. The measurements taken were deemed to be representative of typical noise levels in the vicinity of the subject site during the daytime period. The equipment used during this survey was a Brüel and Kjaer Type 1, 2250 Sound Level Meter with outdoor microphone protection.

All measurements were carried out in accordance with ISO 1996: 'Acoustics- Description and measurement of environmental noise'. Measurements were made placing the microphone at a height of 1.5m above ground level and were free field, measured >2m from reflecting surfaces. Before and after the survey the measurement apparatus was checked and calibrated using a Brüel and Kjaer 4231 Sound Level Calibrator to an accuracy of +/- 0.3dB.

Weather conditions during the survey were in line with the conditions described within ISO 1996, Acoustics 'Description and Measurements of Environmental Noise'. Weather conditions were dry, clear and cool on the day of surveying. Wind strength was between 3 and 4 on the Beaufort wind scale corresponding to a light gentle breeze.

The measurement results were noted down on survey record sheets immediately following each measurement and also stored in the instrument's internal memory for subsequent analysis, notes were taken in relation to the primary contributors to noise build-up at each location.

Five environmental noise parameters were measured which are defined below.

L_{Aeq} is the A-weighted equivalent continuous steady sound level during the measurement period and effectively represents an average ambient noise value.

L_{Amax} is the maximum A-weighted sound level measured during the measurement period.

L_{Amin} is the minimum A-weighted sound level measured during the measurement period.

L_{A10} is the A-weighted sound level that is exceeded for 10% of the sample period; this parameter is typically used to quantify traffic noise.

L_{A90} is the A-weighted sound level that is exceeded for 90% of the sample period; this parameter is typically used to quantify background noise.

A-weighting is the process by which noise levels are corrected to account for the non-linear frequency response of the human ear. All noise levels are quoted in dB(A) relative to a sound pressure of 20mPa.

Typical ranges of noise levels are presented in Table 9.3 to compare against the baseline noise levels measured:

Table 9.3: Typical Noise Levels in the Environment

Sound levels in decibels dB (A)	Description of Activity
0	Absolute silence
25	Very Quiet room
35	Rural night time setting with no wind
55	Day time, busy roadway 0.5km away
70	Busy Restaurant
85	Very busy pub, voice has to be raised to be heard
100	Disco or rock concert
120	Uncomfortably loud, conversation impossible
140	Noise causes pain in ears

Source: Guidance Note for Noise in relation to Scheduled activities, 2nd Edition, EPA 2006.

A description of the noise monitoring locations has been presented in Table 9.2 and the results at each location are presented in Table 9.4. Overall the noise climate in the area was dominated by road traffic noise from the R132 road, the M1 and M50 motorways and the airport.

Table 9.4: Summary of baseline measurements

Location	Time	L_{Aeq}	L_{Amax}	L_{Amin}	L_{A10}	L_{A90}	Comments
NSR1	09:55	72	88	58	76	63	Road traffic along the R132 the dominant continuous noise source, intermittent aircraft passing overhead and birdsong also audible
	10:46	72	86	60	75	64	
	11:37	72	83	60	75	64	
	Arithmetic Average	**72**	-	-	**76**	**64**	
NSR2	10:12	74	99	57	77	61	Road traffic along the R132 the dominant continuous noise source, aircraft overhead, noise from mechanics works nearby and leaves rustling also audible
	11:02	73	87	57	77	62	
	11:54	73	87	57	76	61	
	Arithmetic Average	**73**	-	-	**77**	**61**	
NSR3	10:29	74	86	57	77	62	Road traffic along the R132 the dominant continuous noise source, pedestrians talking as they pass and intermittent aircraft overhead
	11:20	72	83	56	76	61	
	12:04	73	85	57	76	62	
	Arithmetic Average	**73**	-	-	**76**	**62**	

During daytime periods, average ambient noise levels were in the range 72 to 74dB L_{Aeq}. Average background noise levels were in the range 61 to 64dB which is consistent with the local area noise mapping as described which indicates that the existing background noise climate in the area is dominated by the M1/M50 and the airport. No significant sources of vibration were observed.

9.3.2 Baseline Vibration Survey

It has not been considered necessary to undertake baseline vibration monitoring as there is no evidence to suggest that existing receptors are currently affected by appreciable environmental vibration.

9.4 Characteristics of the Proposed Development

The existing car park serves c.6,286 long stay car parking spaces and is located approximately 1km south of Dublin Airport with access from a previously permitted signal controlled junction on the Swords Road (Old Airport Road) with turning lanes and directional signs. The total site area for the proposed development is 16.9 hectares (41.8 acres).

The proposed development is for the continuation of use of an at-grade long term car park, demolition of existing single storey office, canopy structure and maintenance shed, and the construction of a new part three storey car park entrance building. The proposed development also includes ancillary infrastructure and facilities including:

hard-standing; lighting; boundary fencing; bus shelters; culverts; bio-cycle waste water treatment system and percolation area; and landscaping works.

9.5 Potential Impact of the Proposed Development

The potential noise impacts on the surrounding environment must be considered for each of the two distinct stages: the short-term impact of the construction phase and the longer-term impact of the operational phase.

9.5.1 Construction Phase

Short-term noise impacts are likely to occur during the construction phase of the development due to the requirement to use heavy plant and machinery. Due to the absence of specific information regarding works at the construction stage, construction noise impacts cannot be fully quantified at this point, therefore sample calculations have been provided.

Minor short-term vibration impacts may occur during the construction phase as a result of the use of heavy plant and machinery; however these impacts will be unlikely to propagate beyond the construction site boundary.

9.5.2 Operational Phase

The main potential noise source that would be evident during the operational phase of the development would be that of increased road traffic noise associated with the subject site. Specifically, sources would be likely to include but not be limited to the following:

- Vehicular traffic into and out of the estate by residents
- Vehicular traffic into and out of the estate from service and delivery vehicles (waste/recycling, oil/gas/electricity, tradesmen etc.);
- General residential activities (DIY, lawnmowers, house alarms etc.)

There will be no significant vibration sources as a result of the operational phase.

9.6 Predicted Impact of the Proposed Development

9.6.1 Construction Noise

Using the method outlined in BS5228, a worst case L_{Aeq} value at potential NSRs at distances of 30m, 150m, 180m and 220m have been calculated for a range of fixed plant and machinery. The following plant has been presented to give an example of the potential construction noise levels:

- 1 No. road haulage trucks (22t capacity).
- 1 No. tracked excavators (20t operating weight):
- 1 concrete mixers

The methodology F.2.4 as outlined in BS 5228-1:2009+A1: 2014 was followed for predicting the noise levels in the proposed development. This methodology relates to the method for mobile plant in a defined area. The prediction of the L_{Aeq} from mobile plant operating over a small area or on site can be used for other activities when items of mobile plant are operating in close proximity to the point of interest, taking into account the adjustment of the predicted L_{Aeq} for standing and idling time of the plant. It is assumed that over a 1-hour period, all mobile plant will be operational for 80% of the time.

The results of these calculations are presented in tables 9.6 and 9.7. For reference, the guidelines on construction noise levels outlined in BS 5228-1:2009+A1: 2014 have been presented.

Table 9.6: BS5228 Indicative Noise Level Predictions: Stationary Plant

Noise Source	Sound Power L_{WA} dB
1 x No. Road haulage trucks	102
1 x No. Tracked excavators	99
1 x concrete mixers	108

Table 9.7: Predicted noise levels at Potential Noise Sensitive Receptors

Distance of Potential NSR from construction site	Predicted Noise levels at NSR L_{Aeq} dB	BS5228-1 (2009)	
		Monday-Friday (07.00−19.00)	Saturday (07.00−13.00)
30m	70	70	65
150m	56		
180m	54		
220m	53		

The nearest NSR to the construction of the new three storey entrance building are the Carlton Hotel residential properties along Park Avenue, approximately 30m directly south of the site. At such a distance, the results of the indicative construction calculations shows that the resultant $L_{Aeq\ (1\ hour)}$ values of using such plant and machinery would be in the region of 70db L_{Aeq} and therefore not above the day time ambient level of 70 dB L_{Aeq}.

BS5228-1 (2009) +A1: 2014 specifies that a daytime limit of 70dB L_{Aeq} shall apply on weekdays and a daytime limit of 65dB L_{Aeq} shall apply on Saturday. The ambient noise levels at the nearest NSR are below the BS5228-1 limits and will be short-term in duration. As the construction phase is deemed to not have a noticeable change on the noise climate at this location. Noise levels at other identified NSRs are all also below the limits set out in BS5228-1 for construction noise.

9.6.2 Construction Vibration

Increases in ambient levels of ground borne vibration may occur as a result of the construction phase of the development. The exact impact of these vibration impacts cannot be quantified.

9.6.3 Operational Noise

The potential noise impacts from this development during its operational phase will primarily be as a result of increased traffic flows along the new and existing routes within and surrounding the development. A number of noise sensitive locations were identified during the baseline survey and site visit including the two schools to the north of the development.

It is anticipated that the additional road traffic noise attributable to the development (cumulatively with other developments) will result in an increase in the baseline noise environment by less than 5dB(A) at the most affected receptor with other receptors further from the road network experiencing a lower impact.

The change in noise levels and the significance of such changes can be categorised by the Guidelines for Noise Impact Assessment, Institute of Environmental Management and Assessment. Table 9.1 summarises the impact/category quantification related to changes in noise levels.

Based on the predictions relating to operational traffic noise, the changes in noise levels can be categorised, as “Slight/Moderate change” at the worst case locations. The increase in traffic associated with the proposed development scheme is therefore not expected to give rise to any significant noise nuisance in the area.

9.6.4 Operational Vibration

There will be negligible adverse impacts on sensitive receptors as a result of the operational phase of the proposed development.

9.7 Remedial and Reductive Measures

It is recommended that best practice construction noise management procedures be adhered to during the construction phase of the project to ensure that noise levels are kept within acceptable levels. Examples of best practice construction noise include:

- Ensure all plant and machinery are regularly maintained including any noise control measures such as gaskets, mufflers and covers.
- Site noisy equipment away from noise sensitive receptors (NSRs) where possible.
- Schedule high level noise activities for times when NSRs are less sensitive e.g. outside of school hours.
- Schedule noise generating activities to ensure that several noise producing equipment are not operating at the same time.
- Consider erected temporary noise barriers or siting construction compound portacabins along the site boundary to offer noise protection to off-site NSRs.

The assessment of noise levels arising from operations at the subject site has shown that no mitigation is required for either noise or vibration at the site during the operational phase of the development.

9.8 Monitoring

The subject site will not result in an increase in noise levels at any of the noise sensitive locations beyond the site boundary therefore no monitoring is deemed necessary going forward.

Chapter 10 Climate

10.1 Introduction

Chapter 10 of this Environmental Impact Assessment has been prepared by RPS and assesses the greenhouse gas emissions associated with the proposed continued use of the existing car park and the construction of a new part three storey entrance/office building. The development is located approximately 1km south of Dublin Airport and is currently accessed on the west side of the R132 Swords Road.

This study will identify, describe and assess the impact of the subject site in terms of greenhouse gas emissions during the construction and operational phases of the scheme. Construction activities have the potential for greenhouse gas emissions including the use of construction materials, materials transport and construction machinery.

Greenhouse gas emissions from the operational phase of the scheme will most likely arise as a result of increased traffic volumes associated with the subject site in addition to space heating and energy use.

This assessment was prepared in accordance with the EIA Directive 2014/52/EC and having regard for the following guidance:

- Revised Guidelines on the Information to be contained in Environmental Impact Statements (EPA, Draft September 2015)
- Advice Notes for Preparing Environmental Impact Statements (EPA, Draft September 2015)
- Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes (Rev. 1) (TII, formerly NRA, 2011)
- EPA Guidelines on the Information to be contained in Environmental Impact Statements (EPA 2002),
- Advice Notes on Current Practice (in the Preparation of Environmental Impact Statements) (EPA, 2003),

This section should be read in conjunction with the site layout plans for the site and project description sections of this EIAR.

10.2 Research Methodology

Existing climate data for the study area has been derived from the Met Eireann 30 year averages.

While is it not possible to apportion the increase in greenhouse gas emissions from this project with specific climate impacts, existing trends in residential and transport related greenhouse gas emissions are noted with reference to the targets outlined in Ireland's National Policy Position on climate action and low carbon development.

10.3 Receiving Environment

The Quickpark site is located to the west of the Carlton Hotel on the Old Swords Road, the R132. This development was previously permitted under temporary planning permissions ABP Ref. 06F.PA0023, Reg. Ref.s F99A/0376/PL06F.112955, F02A/1110, F05A/1464 and Reg. Ref. F06A/1746. The site is bounded by the Old Airport Road and the airport airfield to the north. The Carlton Hotel and the R132 lie to the eastern boundary of the site, while agricultural land lies to the west and south west of the site. The site is bounded to the south

by sports fields, a kart racing track and other commercial operations to the south and further south by the M50.

10.3.1 Baseline Climate

The weather in Ireland is influenced by the Atlantic Ocean, resulting in mild, moist weather dominated by maritime air masses. The prevailing wind direction is from a quadrant centred on west-southwest. These are relatively warm winds from the Atlantic and frequently bring rain. Easterly winds are weaker and less frequent and tend to bring cooler weather from the northeast in spring and warmer weather from the southeast in summer. The site of the proposed development close to the east coast would experience a higher frequency of easterly winds than more inland locations or those on the west coast.

The nearest meteorological station to the subject site is the Met Éireann Station in Dublin Airport which lies approximately 1km south of the subject site. The 30-year averages from the station at Dublin Airport are presented in **Table 10.1**

Table 10.1: 30-year Average Meteorological Data from Dublin Airport (Annual Values from 1981-2010, source: www.met.ie).

Parameter	30-year Average
Mean Temperature (˚C)	9.8
Mean Relative Humidity at 0900UTC (%)	83.0
Mean Daily Sunshine Duration (hours)	3.9
Mean Annual Total Rainfall (mm)	758.0
Mean Wind Speed (knots)	10.3

The prevailing wind direction for the area is between west and southwest as presented in the windrose for Dublin Airport Met Station for 1942 to 2014 in **Figure 10.1**. Northerly winds tend to be very infrequent (less than 5%) with easterly winds marginally more frequently (5-10%). Wind characteristics are typically moderate with relatively infrequent gales (average only 8.2 days with gales per annum).

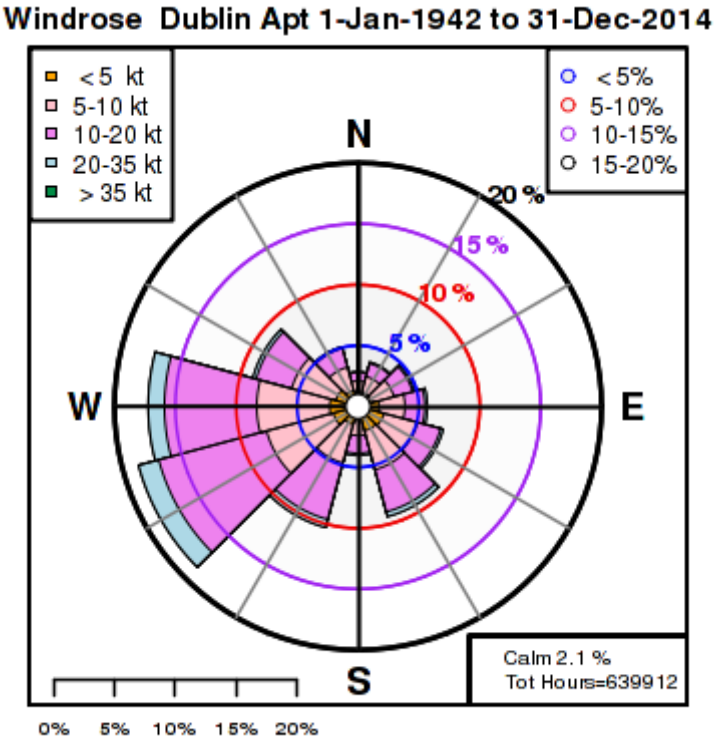


Figure 10.1: Windrose for the Dublin Airport Met Station 1942 to 2014 (source: www.met.ie)

The National Policy Position on climate action and low carbon development was published on the 23rd April 2014. The policy sets a fundamental national objective to achieve transition to a competitive, low-carbon, climate-resilient and environmentally sustainable economy by 2050. The policy states that greenhouse gas (GHG) mitigation and adaptation to the impacts of climate change are to be addressed in parallel national strategies – respectively through a series of National Mitigation Plans and a series of National Climate Change Adaptation Frameworks.

The National Policy Position envisages that development of National Mitigation Plans will be guided by a long-term vision of low carbon transition based on the following:

- An aggregate reduction in carbon dioxide (CO_2) emissions of at least 80% (compared to 1990 levels) by 2050 across the electricity generation, built environment and transport sectors; and
- In parallel, an approach to carbon neutrality in the agriculture and land-use sector, including forestry, which does not compromise capacity for sustainable food production.

With reference to this project, the aggregate reduction emissions of at least 80% from the residential and transport sectors by 2050 are the relevant policy targets.

Further to the National Policy Position, the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) was enacted on the 10th of December 2015. The Climate Act sets out the proposed national objective to transition to a low carbon, climate resilient and environmentally sustainable economy by the end of 2050.

Ireland reported an emission level of 61.2 million tonnes in 2016 which was an increase of 3.5% from the 2015 emissions. When compared to the 1990 baseline, Ireland has increased greenhouse emissions by 8.9% which is well below the 20% reduction target set for Ireland under the EU 2020 strategy.

Transport is currently the second largest contributor of GHG emissions (after agriculture) at 20.5% (which predominately consists of road transport). Between 1990 and 2016, the transport sector showed the greatest overall sectoral increase of 138.6% and increases are linked to economic prosperity with year on year increases observed up to 2007 followed by five years of year on year decrease during the economic downturn. The latest EPA projections indicate that under the "With Existing Measures" scenario, transport emissions are projected to increase by 12% over the period 2015 – 2020 to 13.2 Mt CO2eq. Under the "With Additional Measures" scenario emissions are projected to increase by 10% in this period. The latter scenario assumes the target of 8% renewable fuel use in transport is reached, 10,000 electric vehicles are deployed, and further rollout of the Biofuels Obligation Scheme are all in place by 2020.

10.4 Characteristics of the Proposed Development

The existing car park serves c.6,240 long stay car parking spaces and is located approximately 1km south of Dublin Airport with access from a previously permitted signal controlled junction on the Swords Road (Old Airport Road) with turning lanes and directional signs. The total site area for the proposed development is 16.9 hectares (41.8 acres).

The proposed development is for the continuation of use of an at-grade long term car park, demolition of existing single storey office, canopy structure, relocation of maintenance shed, and the construction of a new part three storey car park entrance building. The proposed development also includes ancillary infrastructure and facilities including: hard-standing; lighting; boundary fencing; bus shelters; culverts; bio-cycle waste water treatment system and percolation area; and landscaping works.

10.5 Potential Impact Of The Proposed Development

10.5.1 Construction Phase

The construction phase of the scheme has the potential to generate a number of greenhouse gas emissions in the short term. Emissions from construction activities will arise from embodied carbon in site materials as well as vehicles delivering this material to the construction site.

The principal sources of greenhouse gases are listed below:

- Quarried Material – stone, aggregate, sand, etc.
- Concrete, Mortars, Cement
- Metals – includes steel sub structure, reinforcement, cladding, piping, etc.
- Plant Emissions - both mobile (excavators, dozers, etc.) and fixed (generators, batching plants, etc.)
- Material Transport – both materials in and wastes removed from the site and Personnel Transport.

The design of the construction phase can be proactive in mitigating potential greenhouse gas emissions.

10.5.2 Operational Phase

During the operational phase a scheme of this nature has the potential to generate greenhouse gases through vehicular traffic into and out of the carpark as well as from the external lighting, space heating and energy use within the entrance building.

In terms of climate adaption, the main potential risk to and from the development relates to fluvial flood risk from the rivers in the area. In this regard the eastern Catchment Flood Risk Assessment and Management (CFRAM) study mapping indicates that the area does not fall within the Indicative 1% AEP (100-yr) Fluvial Flooding Event. In this regard, no specific climate adaption measures are proposed for the development outside of the SUDS drainage design.

10.6 Predicted Impact Of The Proposed Development

10.6.1 Construction Phase

Climate impacts cannot be predicted without specific details on the quantities of construction materials to be used on the subject site. As a mitigation measure it is proposed that a carbon foot-printing exercise is carried out during construction to assist in the identification of low carbon products from local sources to minimise emissions of greenhouse gases.

The construction of the proposed development is considered to pose a permanent slight adverse impact for climate.

10.6.2 Operational Phase

The transport emissions from the proposed development are largely dependent on the vehicles employed by users and the distances travelled.

On average in the EU, passenger cars sold in 2016 emit 118.1gCO_2 per kilometre travelled (European Environment Agency). Given the proposed development is 2.6km from Dublin Airport's on site short term parking area and from Terminal 1, a car travelling from the proposed development to Dublin Airport would generate 307 gCO_2 per round trip. A round trip to Dublin City centre will generate 2,126 gCO_2.

10.7 Remedial Or Reductive Measures

10.7.1 Construction Phase

Mitigation measures to minimise GHG emissions from transport during the construction phase include the following:-

- Local sourcing of construction materials such as the recycling of material won on excavations for reuse on site.
- Implementation of the Traffic Management Plan. This will outline measures to minimise congestion and queuing, reduce distances of deliveries and eliminate unnecessary loads.
- Reducing the idle times by providing an efficient material handling plan that minimises the waiting time for loads and unloads. Reducing idle times could save up to 10% of total emissions during construction phase.
- Turning off engines when not in use for more than five minutes. This restriction will be enforced strictly unless the idle function is necessary for security or functionality reasons.

- Regular maintenance of plant and equipment. Technical inspection of vehicles to ensure they will perform the most efficiently.

Materials with a reduced environmental impact may also be incorporated into the construction design through re-use of materials or incorporation of recycled materials in place of conventional building materials. The following materials should be considered for the construction phase:-

- Ground Granulated Blast Furnace Slag (GGBS) & Pulverised Fuel Ash - Used as replacements for Portland cements to increase sustainability and carbon footprint of civil and structural works.
- Steel - The recovery rates associated with using recycled steel are high and research exists which shows that 99% of structural steel arising from demolition sites is recycled or re-used. The carbon emissions emitted during the production of virgin steel can be higher than some other structural materials on a tonne by tonne basis, and recycled steel should be used where possible.

As part of the Construction Environmental Management, the Contractor will be required to implement an Energy Management System for the duration of the works. This Energy Management system may include such measures as:-

- The use of thermostatic controls on all space heating systems in site buildings to maintain optimum comfort at minimum energy use.
- The use of sensors on light fittings in all site buildings and low energy lighting systems.
- The use of adequately insulated temporary building structures for the construction compound fitted with suitable vents.
- The use of low energy equipment and “power saving” functions on all PCs and monitors in the site offices.
- The use of low flow showers and tap fittings.
- The use of solar/thermal power to heat water for the on-site welfare facilities and contamination unit (sinks and showers).

10.7.2 Operational Phase

Transport emissions, including greenhouse gases, from light and heavy duty vehicles are continually being reduced through EU and national initiatives. CO_2 emissions from cars are regulated through EU legislation (Regulation (EU) No 333/2014) which sets mandatory emission reduction targets for new cars sold in the EU and again the responsibility lies with the manufacturers to comply with these limits. The legislation requires that the new cars registered in the EU do not emit more than an average of 130 grams of CO_2 per kilometre (g CO_2/km) by 2015.

The EU average emissions level of a new car sold in 2016 was 118.1 g CO_2/km which is well below the 2015 target. The next binding target is for 2021 where the fleet average to be achieved by all new cars is 95 grams of CO_2 per kilometre.

As such, transport mitigation of GHG emissions are primarily delivered by EU legislation to ensure an ongoing reduction in emissions per car. Other national initiatives to reduce emissions include fiscal measures to promote the use of electric vehicles and the biofuels obligation scheme.

10.8 Monitoring

No monitoring is deemed necessary due to the insignificant impact of the development on climate.

Chapter 11 – Landscape and Visual Amenity

11.1 Introduction

This chapter provides an assessment of the impact of the proposed development on the landscape character and visual amenity of the area. The assessment should be read in conjunction with Chapter 2 - Description of the Proposed Development.

The LVIA has been prepared by The Big Space – Landscape Architects & Urbanism. Photomontages prepared as part of the assessment have been prepared by Modelworks. This assessment should be read in conjunction with these 7 No. photomontages.

11.2 Assessment Methodology

The assessment was undertaken in accordance with the following guidance documents:

- Draft Guidelines on Information to be contained in Environmental Impact Statements (EPA - Sept 2015)
- Draft Advise Notes for preparing Environmental Impact Statements (EPA - Sept 2015)
- Landscape Institute *Guidelines for Landscape and Visual Impact Assessment* (3nd Edition) 2013

11.2.1 Desk Study

A desktop review of the available information was undertaken to provide the baseline assessment for the existing environment. The desk study phase comprised a review of the following data sources and publications:

- Fingal Development Plan 2017-2023
- Photomontages as prepared by Modelworks
- Aerial photography
- OSi online historic mapping
- EPA Envision Map Viewer (www.epa.ie)

11.2.2 Site Visit

The visual appraisal was carried out during early March 2018 when visibility was high due to the absence of foliage in the largely deciduous vegetation which surrounds the site. Information regarding the site and surrounds was gathered from Ordnance Survey maps, a site survey of the subject site and immediate lands and from on-site observations.

11.2.3 Consultation

Outside of referencing the publicly available information, no specific consultations have been undertaken for this report.

11.2.4 Evaluation

The Draft EPA Advise Notes (2015) state that two aspects of the landscape need to be considered: (i) visual impacts – focusing on the extent to which new developments can be seen, and (ii) impacts on the character of the landscape. In addition, it is stated that: …'landscape impacts concern the surrounds as well as the site itself. In many instances effects at a considerable distance can be much greater than those at the development site. Such impacts can effect large areas or populations'. The latter observation is very relevant for this site given the proximity not only to the national motorway network but also the landing approach route to Dublin Airport.

The surface car park and proposed entrance building, which is the subject of this visual impact assessment has already been developed and is operational. Permanent planning permission is being sought for the car park and the visual assessment compares the quality of each of the existing views and then quantifies the degree of change.

The description of the receiving environment and expected impacts are thus considered at two levels:

- The experience from within the site itself and from the immediate surroundings
- The experience from the motorway/road network and immediate surroundings

The Advice Notes prescribe that landscape and visual impacts be assessed by separate, although linked procedures. Landscape assessment considers the effects deriving from alterations to the elements and characteristics of the landscape, which may give rise to changes in its character, how it is experienced and hence the ascribed value of the landscape. Visual assessment is concerned with changes that arise in the composition and character of available views, the response of people to these changes and the overall effects on the area's visual amenity.

In accordance with the EPA guidance (2002), the impacts have been assessed as positive, neutral or negative while the magnitudes have been assessed in accordance with the EPA criteria as outlined in **Table 11.1**.

Table 11.1: Assessment of Magnitude of Impact

Magnitude of Impact	**Description**
Imperceptible	An impact capable of measurement but without noticeable consequences.
Slight	An impact that alters the character of the environment without affecting its sensitivities.
Moderate	An impact that alters the character of the environment in a manner that is consistent with existing or emerging trends.
Significant	An impact, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Profound	An impact which obliterates all previous sensitive characteristics.

The Draft EPA Advise Notes (2015) state that two aspects of the landscape need to be considered: (i) visual impacts – focusing on the extent to which new developments can be seen, and (ii) impacts on the character of the landscape. In addition, it is stated that: …*'landscape impacts concern the surrounds as well as the site itself. In many instances effects at a considerable distance can be much greater than those at the development site. Such impacts can effect large areas or populations'*. The latter observation is very relevant for this site given the proximity not only to the national motorway network but also the landing approach route to Dublin Airport.

The description of the receiving environment and expected impacts are thus considered at two levels:

- The experience from within the site itself and from the immediate surroundings
- The experience from the motorway/road network and immediate surroundings

The ratings may have positive, neutral or negative applications where:

- Positive Impact: A change that improves the quality of the environment
- eg will enhance the existing view/landscape
- Neutral Impact: A change that does not affect the quality of the environment
- eg will neither detract from nor enhance the existing view/landscape
- Negative Impact: A change that does reduces the quality of the environment
- eg will detract from the existing view/landscape

The duration of the impacts have been assessed as follows:

- Temporary (construction related and lasting less than one year)
- Short-term (lasting 1 to 7 years)
- Medium – term (lasting between 7 to 15 years)
- Long term (lasting 15 to 60 years)
- Permanent (lasting over 60 years)

The LVIA has been informed by a survey of the site and receiving environment carried out during early March 2018, as well as consultation with the architects and analysis of relevant local planning policy. Photomontages included in the report to illustrate the potential visual amenity impacts have been produced by visualization specialists, Modelworks.

11.3 Baseline Environment

11.3.1 Landscape Policy Context

Fingal Development Plan 2017-2023

The Fingal Development Plan 2017-2023 sets out the policies and objectives in relation to proper planning and development of the county, including the area pertaining to the site and its surrounds.

The subject lands in addition to the lands to the immediate east and west are zoned Objective GE – '*Provide opportunities for general enterprise and employment'.* There is a local objective within the current Development Plan for a car park within the GE zoning. The lands immediately to the north of the site are zoned Objective DA – '*Ensure the efficient and effective operation and development of the airport in accordance with an approved Local Airport'*.

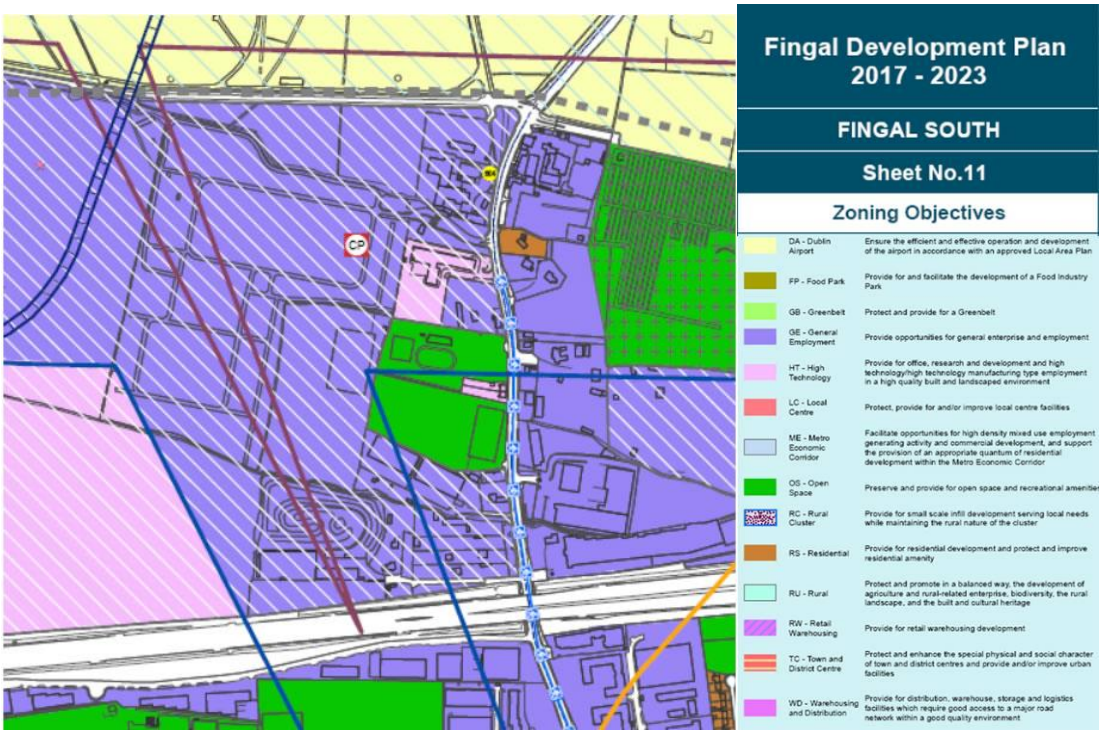


Figure 11.1 Extract from *Fingal Development Plan 2017-2023 – Sheet 11 - Zoning and Development Plan Objectives*

Green Infrastructure

The Fingal Development Plan 2017-2023 sets out a number of open space objectives for LAP's and development proposals eg. GIO1. A key objective of green infrastructure planning is that green infrastructure management and provision is integrated with plans for growth and development.

Objective G101 '*Support the implementation of the Fingal Heritage Plan in relation to the provision of Green Infrastructure'*.

Other relevant GI Objectives include G133 *'Seek the provision of green roofs and green walls as an integrated part of Sustainable Drainage Systems (SuDS) and which provide benefits for biodiversity, wherever possible'*.

Protected Properties

There are no protected properties within the vicinity of the subject lands.

11.3.2 Site Context and Description

The subject lands are strategically located immediately south of Dublin Airport at the junction of the R132 (Swords Road) and the Old Airport Road. The surrounding uses include the Carlton Hotel and Airside Industries to the east, with the Royal College of

Surgeons Sports Grounds located to the south east and arable fields to the south and west. The subject lands are set within a backdrop of the increasing development along the M50 motorway with partial views of IKEA possible from within the car park.

The car park itself is enclosed by palisade security fencing on all boundaries in combination with existing field hedgerows which provides visual enclosure on the eastern, western and southern boundaries. The hedgerows comprise Whitethorn (Crataegus monogyna), Ash (Fraxinus excelsior), Bramble (Rubus fruiticosa) and Elderberry (Sambucus nigra).

The entrance to the car park is located at the north-eastern corner of the site and access is on to the Old Swords Road. A covered canopy marks the entrance to the car park.

The subject lands comprise an overall area of circa 16.9ha with the area of change (entrance and road modification) at 1.721 ha. The lands have a gradual fall from north (+59.19m OD) to south (+56.42m OD). Vegetation within the subject site consists of perimeter field hedgerows. There is no vegetation within the subject lands.

The lands serve as a car parking area for users of Dublin Airport. There are approximately 6,240 spaces, the majority of which have a loose, gravel surface with some tarmac spaces (250/300 spaces).

The receiving environment is predominantly that of a hard landscape surface associated with the car parking facility, including lighting, bus shelters, bus pick up points and kerbing.

Figure 11.2: *Aerial view of subject lands*

Landscape Character

The landscape character of the area within and around the subject site is typical of the semi-urban fringe south of Dublin Airport, characterized by industrial units, surface car parking and agricultural lands typical of the location and zoning objective.

The site is not identified as being of high landscape quality or sensitivity, in that it is not located within a Special Amenity Area, a High Amenity Area or a Highly Sensitive Landscape.

The Fingal Development Plan 2017-2023 Landscape Character Assessment divides the County into six (6) Landscape Character Types. The subject lands are identified as Low lying Agricultural Type of low sensitivity to development. These landscapes can absorb a certain amount of development when the scale and building forms are kept simple and surrounded by adequate screen boundaries and appropriate landscaping to reduce impact on the rural character of the surrounding roads. The protection of views and riparian corridors from inappropriate development is of paramount importance in these areas.

The previous undisturbed rural landscape that existed prior to the construction of the M1/M50 and related industrial lands has now long since disappeared. Recent commercial developments to the south and east of the subject lands, in combination with related infrastructure within the strategically located lands, are gradually replacing agricultural lands and as a consequence the landscape surrounding the subject site is changing accordingly to reflect a more urban character.

11.3.3 Views and Prospects

The Fingal Development Plan 2017-2023 identifies a number of Key Views and Prospects. However, there are no Views or Prospects within the subject lands area generally.

11.3.4 Visibility into the site

The limited variation in topography, enclosing built development and existing vegetation contribute to restrict views into the subject site. The primary views towards the subject lands (access road and entrance building) are from the R132 immediately east of the subject lands. Glimpse views into the lands are also possible from the Old Airport Road southwards.

11.3.4 Views from the site

Views from the subject lands tend to be enclosed given the general topography and intervening perimeter hedgerow. Views are mostly confined to the adjoining lands within the immediate vicinity of the site. There are also views southwards (including IKEA), while the Dublin mountains are also apparent in the background.

11.4 Characteristics of the Proposed Development

11.4.1 Site layout and access

The current (temporary) planning permission is due to expire in October 2018. The proposed planning application is for the continuation of use of an at-grade long term car park on lands known as the Quick Park car park, Turnapin Great, Swords Road (Old Airport Road), Santry. The development also includes new ancillary infrastructure and facilities/drainage improvement works including the provision of 4no. petrol interceptors, new 150mm foul sewer connection to existing 375mm mains sewer on Swords Road and reinstatement of a land drain with a 20m riparian corridor and associated landscape works.

The proposal includes for 6,122 long term car parking spaces (reduced from 6,240 spaces), the majority of which have a loose, gravel surface with some tarmac spaces (250/300 spaces). The proposal also includes for an upgrade to the existing entrance and the construction of an ancillary administration building which will house offices relating to the operation of the car park.

The accompanying Design Statement prepared by Wilson Architects as part of this planning application provides detailed assessments of the current application site and proposed development and should be read in conjunction with this assessment.

The proposed three storey car-park barrier and entrance building is 10.33m in height.

11.4.2 Landscape Plan

A Landscape Plan has been developed by TBS for the proposed development lands to maintain and enhance the receiving environment's existing landscape character.

The landscape works have the following objectives:

- To renew existing boundary hedgerow vegetation with planting suitable to the existing environment;

- To provide a new landscape treatment in the form of ground modelling and tree planting to significantly enhance the main entrance from the R132.

Figure 11.3: *Proposed Landscape Plan*

11.5 Predicted Impacts

11.5.1 Description of the likely significant impacts

Every development has some degree of visual impact and this impact is influenced by emerging and likely trends for development in any given location. The impact tends to be most pronounced during the construction phase when the initial unfamiliarity, disturbance and visual intrusion associated with general construction activity and development of new structures are all aspects of particular attention. On completion of construction, this general disturbance and change associated with the site ceases as the new development establishes its presence and character influences on its environs.

The various visual impacts of the proposed residential development are considered in the following section.

11.5.2 Landscape and Visual Impact Assessment

The process of visual impact assessment involves the identification of the potentially affected elements or character areas in the receiving environment and the selection of representative locations within these areas for detailed assessment. Any objectives or concerns expressed by the planning authority about visual amenity are also taken into account.

11.5.3 Do Nothing Scenario

In the event that the development does not proceed it is likely that the site will be developed in the future for some similar GE related use as per the existing planning zoning as set out in the Fingal Development Plan 2017-2023. Any significant development of a similar nature on this site will be likely to have a similar level of landscape and visual impact to that of the proposed development.

11.5.4 Construction Phase

Impacts during the construction phase may arise from a number of activities, including site development works, emergence of the new building structure and from

general construction activity and traffic. In addition, noise and lighting will draw attention to the works and have the effect of increasing visual awareness. However, such impacts will be of a local short-term nature, primarily affecting views from properties immediately to the west of the subject lands.

Views of the construction of the development from the R132 will be possible when travelling in both northerly and southerly directions. Views of the construction will also be possible from the Old Airport Road. The existing field hedgerow is visible in the mid-ground and the proposed construction works will be visible, but glimpsed over the existing field hedgerow.

The impact of the construction works and the emergence of a new building structure must be set against the existing context where the site and surrounding lands are zoned for employment uses and therefore, the character of this area will be changed significantly in time and in manner that is considered consistent with the nature and character of the subject development westwards will progressively alter the semi-urban character of these lands.

The surrounding context, especially from the south, is heavily influenced by existing commercial and business park activities while the site and its environs are zoned for employment uses. As per the zoning objective, the character of these lands will be subject to significant change. Therefore, the construction phase of the proposed development will have only a slight to imperceptible negative and short-term impact on the local character of the landscape.

In summary, the construction phase of the proposed development will have little or no impact on the local landscape character. No significant, negative visual impacts will arise during the construction phase. The works will give rise to some degree of slight to moderate, negative short-term visual impact from the R132.

11.5.5 Operational Phase

During the operational phase, it is considered that the proposed development will generally be viewed in the landscape as being in-keeping with the trend and style of existing and future employment development in the area and future development. As development of the subject lands continues, the local landscape character is set to be maintained.

There will be a slight, neutral impact in the short term and an imperceptible impact in the medium term on the local landscape character as the development use continues.

For the principal residential properties impacted by the proposed development (located east of the subject lands), the impact will initially be slight, negative in the short term and slight in the medium term.

The impact will likely to be reduced to imperceptible in the medium term as further landscape matures and as other development proceeds around the site thereby establishing the emerging character of the wider airport lands.

11.5.6 Viewpoint Assessments (Photomontages)

Seven (7) viewpoints (refer to Fig. 11.4: Viewpoint location map and photomontages pm01-pm07) representing the main elements of the receiving environment and taking into account of relevant policy have been selected for detailed visual impact assessment. The assessment should be read in conjunction with the prepared photomontages (pm01-pm07).

Figure 11.4: Viewpoint Location Map

Photomontage View 01 illustrates the view from the Swords Road westwards and represents views from the entrance into the car park and is typical of pedestrian and vehicular views into the car park. This viewpoint is approximately 10m from the nearest boundary to the car park.

Existing View

The canopy to the car park entrance dominates the view into the car park from this viewpoint. The canopy and the car park office building restricts distant views into the car park. Lighting associated with the car park is the most dominant feature on the horizon dominating the view into the car park. It was determined that the viewpoint was of medium-low sensitivity.

Impact Assessment

The proposed entrance building is set back xxm beyond the existing building. The proposed building will continue to restrict views into the car park from this viewpoint. The provision of ground modelling and tree planting will further restrict views any distant views into the car park.

The development proposals effect on visual change was assessed as a slight deterioration within the first year after assessment. This situation would change to a negligible improvement seven years after assessment as a result of the screening

provided by the ground modelling and tree planting. The significance of this visual change was assessed as low adverse one year after assessment reducing to not significant seven years after the assessment. The impact will therefore be slight, neutral, cumulative and short term as the proposed tree planting along the entrance road will develop over a number of years.

View (pm01) westwards from the R139, 10m from the subject lands

Figure 11.5: Viewpoint 1 – Existing view Viewpoint 1 – Proposed view

Photomontage View 02 illustrates the view south-westwards from Collinstown Cross approximately 200m from the nearest site boundary.

Existing View

Existing trees dominates the foreground of this viewpoint. The existing commercial building located between the viewpoint and the car park prevents into the subject lands. It was determined that the viewpoint was of medium-low sensitivity.

Impact Assessment

The existing commercial building and tree planting prevents views of the proposed entrance building and car park. Glimpse views of the lighting columns within the car park will be possible.

The development proposals effect on visual change was assessed as a negligible deterioration within the first year after assessment. The situation would change to a negligible improvement seven years after the assessment as the existing and proposed planting matures. The significance of this visual change was assessed as not significant one year and seven years after the assessment.

The impact will therefore be slight, neutral, cumulative and short term as the proposed tree planting along the northern boundary will develop over a number of years.

View (pm02) south-westwards from Collinstown Road, 200m from the subject lands

Figure 11.6: Viewpoint 2 – Existing view Viewpoint 2 – Proposed view

Photomontage View 03 illustrates the view southwards from the Old Airport Road and represents vehicular views from this location, approximately 100m from the nearest site boundary.

Existing View
An existing maintained hedgerow screens views from this viewpoint into the car park, with glimpse views possible through breaks in the hedgerow. The lighting columns within the car park are visible from this location. The sensitivity of this viewpoint was determined as low.

Impact Assessment
The existing hedgerow prevents views into the car park from this viewpoint. Glimpse views will be possible through the gaps in the hedgerow especially through the winter months. The existing planting along the northern boundary will be supplemented by additional planting along the northern boundary.

The development proposals effect on visual change was assessed as a negligible deterioration within the first year after assessment. The situation would change to a negligible improvement seven years after the assessment as the existing and proposed planting matures. The significance of this visual change was assessed as not significant one year and seven years after the assessment.

The impact will therefore be slight, neutral, cumulative and short term as the proposed tree planting along the northern boundary will develop over a number of years.

View (pm03) southwards from the Old Airport Road, 100m from the subject lands

Figure 11.7: Viewpoint 3 – Existing view Viewpoint 3 – Proposed view

Photomontage View 04 illustrates the view westwards from the car park of the Carlton Hotel and is located approximately 15m from the boundary of the subject lands.

Existing View
An existing hedgerow is located behind the perimeter security fencing restricting views between the two car parks. Glimpse views of the car park are possible through breaks in the hedgerow. The lighting columns within the car park are also visible from this location. It was determined that this viewpoint was of low sensitivity.

Impact Assessment
The existing hedgerow prevents open views into the car park from this viewpoint. Supplementary hedgerow planting along the eastern boundary will assist in further restricting views between the two car parks.

The development proposals effect on visual change was assessed as a low to negligible deterioration within the first year after assessment. The situation would change to a negligible improvement seven years after the assessment as the existing and proposed planting matures. The significance of this visual change was assessed as not significant one year and seven years after the assessment.

The impact will therefore be slight, neutral, cumulative and short term as the proposed tree planting along the eastern boundary will develop over a number of years.

View (pm04) westwards from the Carlton Hotel car park, 15m from the subject lands


Figure 11.8: Viewpoint 4 – Existing view


Viewpoint 4 – Proposed view

Photomontage View 05 illustrates the view westwards from the Royal College of Surgeons playing fields approximately 100m from the boundary of the subject lands.
Existing View
An existing hedgerow is located behind the perimeter security fence restricting views of the car park. Glimpse views of the car park are possible through breaks in the hedgerow. The lighting columns within the car park are also visible from this location. It was determined that this viewpoint was of low sensitivity.

Impact Assessment
The existing hedgerow prevents open views into the car park from this viewpoint. Supplementary hedgerow planting along the eastern boundary will assist in further restricting views of the car park.

The development proposals effect on visual change was assessed as a low to negligible deterioration within the first year after assessment. The situation would change to a negligible improvement seven years after the assessment as the existing and proposed planting matures. The significance of this visual change was assessed as not significant one year and seven years after the assessment.

The impact will therefore be slight, neutral, cumulative and short term as the proposed tree planting along the eastern boundary will develop over a number of years.

View (pm05) westwards from the Royal College of Surgeons playing fields, 100m from the subject lands


Figure 11.9: Viewpoint 5 – Existing view Viewpoint 5 – Proposed view

Photomontage View 06 illustrates the view north-eastwards from Ballystraun Lane approximately 800m from the boundary of the subject lands and represents views from a vehicular access road across agricultural lands to the car park.

Existing View
Open agricultural lands bounded by fencing and field hedgerows forms the foreground of this viewpoint. The Carlton Hotel, Dublin Airport terminal buildings and other commercial buildings form the backdrop of the view. It is possible to distinguish the car park lighting from this viewpoint. It was determined that this viewpoint was of low sensitivity.

Impact Assessment
The combination of the existing hedgerow and the distance from the viewpoint ensures that no views of the car park itself are possible. While the lighting associated with the car parking is visible, the views are glimpse and distant and set within the semi urban environment.

The development effect on visual change was assessed as having no change one year and seven years after the assessment was carried out. The significance of this visual change was assessed as not significant one year and seven years after the assessment.

The impact will therefore be slight, neutral, cumulative and short term as the proposed tree planting along the western boundary will develop over a number of years.

View (pm06) westwards from Ballystraun Lane, 800m from the subject lands

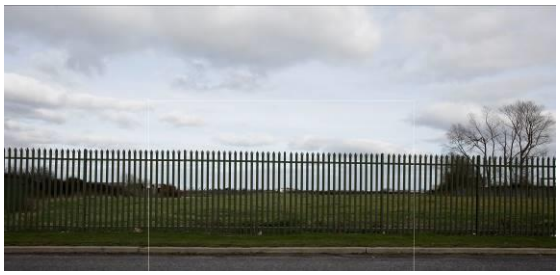



Figure 11.10: Viewpoint 6 – Existing view Viewpoint 6 – Proposed view

Photomontage View 07 illustrates the view from the M50 Motorway approximately 400m from the boundary of the subject lands. The viewpoint represents vehicular views from the motorway.

Existing View
Views towards the car park are screened through security the existing 'palisade' fence and motorway planting. Some glimpse views are afforded through the existing vegetation of the agricultural lands between the motorway and subject lands through the winter months. It is not possible to view any elements of the car park from this viewpoint. This viewpoint was determined as being of low sensitivity.

Impact Assessment
The existing edge of motorway planting and the raised bank at the top of the motorway screens views from the motorway into the adjoining agricultural lands.

The impact of the proposed development on visual change was assessed as having no change one year and seven years after the assessment was carried out. The significance of this visual change was assessed as not significant one and seven years after the assessment was carried out.

The impact will therefore be slight, neutral, cumulative and short term.

View (pm07) northwards from the M50 Motorway, 400m from the subject lands

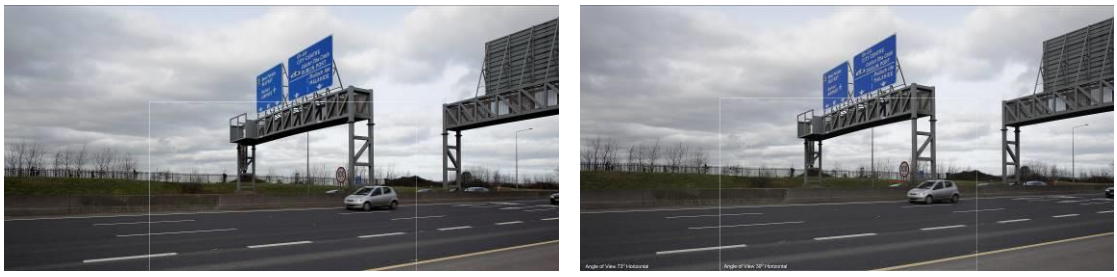


Figure 11.11: Viewpoint 7 – Existing view Viewpoint 7 – Proposed view

11.5.7 Interaction with other Environmental Aspects

Flora and Fauna
No significant indirect landscape or visual impact will arise as a result of the proposed development

11.5.8 Conclusion – Predicted Visual Impact of Development

The analysis of the identified viewpoints, which were tested objectively using a prescribed methodology, indicate that the visual significance of the proposed development one year after the assessment was carried out, would have a medium adverse impact for 28.5% of the viewpoints, a low adverse impact for 28.5% of the viewpoints and no perceivable change for 43% of the viewpoints.

The visual significance of the proposed development 7 years after the visual assessment of the car park, would have a low adverse impact for 28.5% of the viewpoints and no perceivable for 71.5% of the viewpoints. There is a significant drop

from medium and low adverse impacts to not significant 7 years following the carrying out of the assessment.

Analysis of Viewpoints 1-7

Visual Significance	*1 yr following assessment*	*7 yrs following assessment*
High beneficial impact	0%	0%
High adverse impact	0%	0%
Medium beneficial impact	0%	0%
Medium adverse impact	28.5%	0%
Low beneficial impact	0%	0%
Low adverse impact	28.5%	28.5%
No perceivable change	43%	7.5%

In summary, it was determined that the effects of the proposed development on the surrounding landscape are medium to low adverse impacts 1yr following the carrying out of the visual assessment. This medium adverse impact is reduced to a low adverse to no perceivable change 7 years after the completion of the visual assessment of the car park. The location of the car park and the existing mature hedgerow and trees which surround a large portion of the car park, ensure that, in general, views are restricted into the car park and from within the car park itself to the surrounding environment. This enclosure with additional mitigation planting will ensure that within 7 years of the assessment being carried out, there will be a low adverse to no perceivable change impact of the development on the surrounding landscape.

11.6 Mitigation Measures

The Landscape Assessment Guidelines give a useful description of mitigation. These guidelines use the term ‘mitigation’ because it is now common currency in describing measures to deal with environmental impact. Mitigation should not be an afterthought, or something that is applied to the final scheme to soften its more obvious adverse effects. If this approach is adopted, mitigation only serves to mask what would otherwise be an unacceptable design, rather than dealing with the underlying problems. Mitigation should be appropriate, adequate and enforceable in the long term. Developers should demonstrate that long term control is secured, for example, where mitigation is on someone else’s land.

The purpose of mitigation is to avoid, reduce and where possible remedy or offset any significant negative (adverse) effects on the environment arising from the proposed development. Mitigation is thus not solely concerned with ‘damage limitation’, but may also consider measures that could compensate for unavoidable residual effects.

Mitigation measures are generally more effective if they are designed as an integral part of an iterative process of project planning and design. Mitigation is thus used as a design approach that is, where possible, implemented from project inception when

alternative designs or site options are being considered. In such circumstances, it can be used to adapt and modify the development to take account of constraints and opportunities and achieve the optimum environmental fit as part of an environmentally integrated design.

A Landscape Plan has been prepared to further supplement the tree planting that has already been carried out following the construction of the car park. The additional tree planting will assist in screening views into and out of the car park. Tree planting will include Field Maple, Oak, Pine, Prunus, Whitethorn and Hazel. It is also proposed to provide new tree planting at the entrance to the car park to further screen views into the car park from Old Swords Road.

11.7 Potential Impact of the Proposal

The character of the subject lands is rapidly changing from marginal agricultural lands/semi urban environment to a more urbanized built character.

The subject site is in use as a car park with permanent planning permission being sought. A bus service picks up users of the car park and operates between the car park and Dublin Airport on a frequent basis.

The views across the marginal agricultural lands will be replaced with views of cars and the existing planting around the perimeter boundary. The existing boundaries currently screen the majority of views into and out of the car park. The screening will be increased with the provision of additional tree planting along the boundaries of the car park. This screening will mitigate the visual impact of the development from all the viewpoints.

11.8 Residual Impacts

On completion of the development, the tree planting will be at an early stage of establishment providing minimal visual benefit. However, within 3-5 years the trees will develop to assist reinforce the existing visual screen around the perimeter of the car park.

11.9 Monitoring

A Landscape Architect shall be appointed to oversee and monitor the implementation of the proposed landscape plan. The landscape architect will review the implementation works to ensure that they are according to the specification. Thereafter, a landscape management contract will be undertaken to ensure the continued establishment of the landscape works.

11.10 Reinstatement

All works shall be reviewed for a period of 18 months following practical completion. Any tree that has been damaged or died shall be replaced and made good on the instruction of the Landscape Architect.

11.11 References

The LVIA was undertaken utilising the following references:

- Draft Guidelines on Information to be contained in Environmental Impact Statements (EPA - Sept 2015)
- Draft Advise Notes for preparing Environmental Impact Statements (EPA - Sept 2015)
- Landscape Institute Guidelines for Landscape and Visual Impact Assessment (3nd Edition) 2013
- Fingal Development Plan 2017-2023
- Photomontages as prepared by CSC
- Aerial photography
- OSi online historic mapping
- EPA Envision Map Viewer (www.epa.ie)

VISUAL IMPACT ASSESSMENT T.+353 1 2899 039

Project :	Issue Date:		View Map	
Proposed Carpark Entrance Building Quick Park Carpark at Dardistown	**12-09-2018**			

Angle of View 73° Horizontal

Angle of View 39° Horizontal

MODEL WORKS

VISUAL IMPACT ASSESSMENT T.+353 1 2899 039

Project :	Issue Date:	Photo Info.			
Q Park, Dublin Airport	**22-03-2018**	13-03-2018	13:36	**VIEW 01**	**BASELINE**

Angle of View 73° Horizontal

Angle of View 39° Horizontal

MODEL WORKS

VISUAL IMPACT ASSESSMENT T.+353 1 2899 039

Project :	Issue Date:	Photo Info.		
Proposed Carpark Entrance Building Quick Park Carpark at Dardistown	**17-09-2018**	13-03-2018 13:36	**VIEW 01**	**PROPOSED**

Angle of View 73° Horizontal

Angle of View 39° Horizontal

MODEL WORKS

VISUAL IMPACT ASSESSMENT T.+353 1 2899 039

Project :	Issue Date:	Photo Info.			
Q Park, Dublin Airport	**22-03-2018**	13-03-2018	13:23	**VIEW 02**	**BASELINE**

Angle of View 73° Horizontal

Angle of View 39° Horizontal

MODEL WORKS

VISUAL IMPACT ASSESSMENT T.+353 1 2899 039

Project :	Issue Date:	Photo Info.		
Proposed Carpark Entrance Building Quick Park Carpark at Dardistown	**12-09-2018**	13-03-2018 13:23	**VIEW 02**	**PROPOSED**

Angle of View 73° Horizontal

Angle of View 39° Horizontal

MODEL WORKS

VISUAL IMPACT ASSESSMENT T.+353 1 2899 039

Project :	Issue Date:	Photo Info.			
Q Park, Dublin Airport	**22-03-2018**	13-03-2018	13:03	**VIEW 03**	**BASELINE**

Angle of View 73° Horizontal

Angle of View 39° Horizontal

MODEL WORKS

VISUAL IMPACT ASSESSMENT T.+353 1 2899 039

Project : **Proposed Carpark Entrance Building Quick Park Carpark at Dardistown**	Issue Date: **12-09-2018**	Photo Info. 13-03-2018 13:03	**VIEW 03**		**PROPOSED**

Angle of View 73° Horizontal

Angle of View 39° Horizontal

MODEL WORKS

VISUAL IMPACT ASSESSMENT T.+353 1 2899 039

Project :	Issue Date:	Photo Info.			
Q Park, Dublin Airport	**22-03-2018**	13-03-2018	15:32	**VIEW 04**	**BASELINE**

Angle of View 73° Horizontal

Angle of View 39° Horizontal

MODEL WORKS

VISUAL IMPACT ASSESSMENT T.+353 1 2899 039

Project :	Issue Date:	Photo Info.			
Proposed Carpark Entrance Building Quick Park Carpark at Dardistown	**12-09-2018**	13-03-2018	15:32	**VIEW 04**	**PROPOSED**

Angle of View 73° Horizontal

Angle of View 39° Horizontal

MODEL WORKS

VISUAL IMPACT ASSESSMENT T.+353 1 2899 039

Project :	Issue Date:	Photo Info.			
Q Park, Dublin Airport	**22-03-2018**	13-03-2018	13:59	**VIEW 05**	**BASELINE**

Angle of View 73° Horizontal

Angle of View 39° Horizontal

MODEL WORKS

VISUAL IMPACT ASSESSMENT T.+353 1 2899 039

Project :	Issue Date:	Photo Info.			
Proposed Carpark Entrance Building Quick Park Carpark at Dardistown	**12-09-2018**	13-03-2018	13:59	**VIEW 05**	**PROPOSED**

Angle of View 73° Horizontal

Angle of View 39° Horizontal

MODEL WORKS

VISUAL IMPACT ASSESSMENT T.+353 1 2899 039

Project :	Issue Date:	Photo Info.			
Q Park, Dublin Airport	**22-03-2018**	13-03-2018	15:32	**VIEW 06**	**BASELINE**

Angle of View 73° Horizontal

Angle of View 39° Horizontal

MODEL WORKS

VISUAL IMPACT ASSESSMENT T.+353 1 2899 039

Project :	Issue Date:	Photo Info.			
Proposed Carpark Entrance Building Quick Park Carpark at Dardistown	**12-09-2018**	13-03-2018	15:32	**VIEW 06**	**PROPOSED**

Angle of View 73° Horizontal

Angle of View 39° Horizontal

MODEL WORKS

VISUAL IMPACT ASSESSMENT T.+353 1 2899 039

Project :	Issue Date:	Photo Info.			
Q Park, Dublin Airport	**22-03-2018**	13-03-2018	15:53	**VIEW 07**	**BASELINE**

Angle of View 73° Horizontal

Angle of View 39° Horizontal

MODEL WORKS

VISUAL IMPACT ASSESSMENT T.+353 1 2899 039

Project :	Issue Date:	Photo Info.			
Proposed Carpark Entrance Building Quick Park Carpark at Dardistown	**12-09-2018**	13-03-2018	15:53	**VIEW 07**	**PROPOSED**

Chapter 12 – Transport

12.1 Introduction

This proposal is for permanent permission for the continuation of use of the existing long stay at grade car park facility, serving Dublin Airport, complete with the associated exit / entry control facilities, roads, drainage and bus shelters. This section of the Environmental Impact Assessment Report (EIAR) has been prepared by Waterman Moylan and provides an assessment of the requirement for the continued use of the Quickpark long term airport car park and its transportation impact.

As part of the application, it is also proposed to provide a new building and layout at the entrance. In order to facilitate the upgrade works at the existing entrance, the total car parking spaces shall be reduced from 6,240 spaces to 6,122 spaces. The site location of the Quickpark Car Park is shown on Figure 12.1.

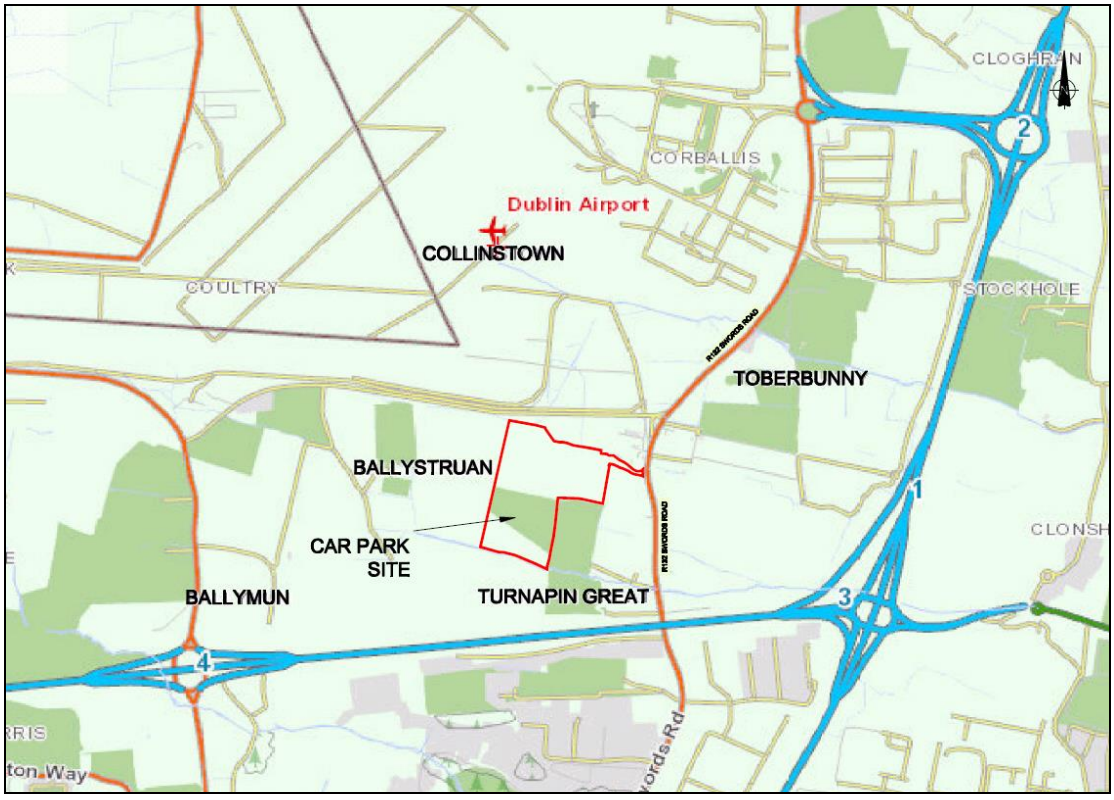


Figure 12.1 | *Site Location*

12.2 Demand for Long Term Car Parking at Quickpark

The Quickpark facility currently provides c.6,240 long term car parking spaces to Dublin Airport. It is one of three authorised long term airport car parks that provide a total of 25,420 parking spaces, all of which have been previously approved under the Strategic Infrastructure Development procedure. The DAA currently operates approximately 19,180 long term car park spaces. The continuation of use of the proposed 6,122 (reduced from 6,240) spaces at the Quickpark Car Park forms part of this plan.

The existing 25,420 authorised long term parking spaces falls below the Terminal 2 permission Reg. Ref. F06A/1248 and An Bord Pleanala Reference PL06F220670 which set a maximum of 26,800 parking spaces. Demand for long term parking has not diminished in the period since the previous temporary permission for Quickpark. Passenger levels are now at a comparable level to those predicted when the Terminal 2 permission was granted (32

million/yr), therefore the 26,800 spaces deemed necessary as part of this permission remains relevant.

Dublin Airport's Mobility Management Update (MMU) 2017 acknowledges that while there is a good modal split, with 34% of passengers arriving to the airport by bus, and that there have been 2 million more passengers using the bus to Dublin Airport in 2016 than in 2014, there is still a requirement for the long-stay car parks. Their MMU confirms that 33% of passengers arrive by car. With over 50% of passengers arriving from outside of Dublin and 10% of departing flights taking off before 8am, bus and public transport services do not meet the requirements of a large proportion of departing passengers, resulting in the long term car park's necessity to ensure the efficient use of Dublin Airport.

Origin of Departing Passengers (%)	
Dublin	46.6
Rest of Leinster	24.0
Munster	10.3
Connaught	6.6
Ulster	12.4

Source: Dublin Airport Passenger Insights Survey, 2016

Passenger Mode Share (%)*						
Transport Mode	2006	2011	2012	2014	2016	2016 NTA Results
Car – Private	44.0	40.0	34.0	33.3	33.4	31.0
Car – Rental	5.0	-	4.0	4.5	4.7	7.2
Bus	24.0	33.0	34.5	34.3	34.0	37.0
Taxi	26.0	24.0	26.5	21.7	21.5	22.8
Bicycle/ Motorbike/ Other	1.0	3.0	1.0	1.4	1.2	2.0
International Flights (Transfer and Transit Passengers)	-			4.8	5.3	n/a

***Figure 12.2** | Departing Passengers' Origin and Mode Share*

With passenger numbers rising year on year (increasing 46% since 2012) and the expected expansion of Dublin Airport operational capacity with the construction of an additional runway, this will create a requirement for additional long term car parking spaces, over and above that which is currently on offer. This further highlights the necessity for Long Term car parking at Quickpark.

12.3 Receiving Environment

12.3.1 Site Location

The subject lands are located approximately 1km south of Dublin Airport and are accessed on the west side of the R132 Swords Road. The existing car park in these subject lands was originally constructed in 2 phases, with phase 1 (3,500 spaces) having been in operation for approximately 17 years and phase 2 (an additional 2,740 spaces) having been in operation for almost 12 years. As a result, the necessary infrastructure is already in place, including the access junction off the R132.

12.3.2 Description of the Existing Highway Network

The site is in close proximity to the airport via the R132 Swords Road. The R132 Swords Road is a regional road that links Dublin City (via Santry) with Dublin Airport, and Swords to the North. The R132 Swords Road is a commuter route which serves local traffic. It is a 4 lane carriageway (including bus lanes either way) approximately 13m wide where it fronts the site. This section of road has been upgraded in recent years (since the last temporary planning approval for the Quickpark car park), as has the main roundabout to the airport which is on route from the Quickpark car park to the airport. Access to the existing car park is via an existing signal controlled junction complete with a right turning lane for southbound traffic.

The site is located to the north of the M50 Northern Cross Route. The site is easily accessible from the M50 motorway via the Ballymun interchange along Collinstown Road, and also from the M1 motorway via the Airport interchange along the R132 Swords Road.

12.4 Dublin Airport Mobility Management Plan and Public Transport

Dublin Airport is ranked as the 10th busiest airport in Europe for international passenger traffic and 21st busiest in the world. To cater for this demand in passenger traffic, Dublin Airport Authority has prepared the "Dublin Airport Mobility Management Framework Plan (2006)", since updated in 2017, to estimate the requirements for all modes of transport serving the airport

In comparison with other airports in UK and European cities, the percentage of passengers travelling to and from Dublin Airport by private car is lower than average. Dublin Airport's modal split will always dedicate a certain proportion to private cars, as some passengers may not have access to other forms of transport.

Dublin Airport's MMU sets out sustainable transport choices and identifies a number of objectives over the coming years to maintain and improve transport arrangements to and from the airport. This includes maintaining and improving on the modal split of 34% of passengers arriving by bus. This is achieved by:

1. Improved Dublin bus lanes and laybys, bus shelters, bus routes and real time information.
2. Improve national and regional bus and coach services, routes and parking facilities. Bus Eireann and Aircoach provide the majority of these services, with over 250 services arriving daily along 20 different routes.
3. BusConnects which will provide and connect orbital and radial bus routes and interact with Bus Rapid Transit routes, one of which will run from city centre to Swords, via the airport.

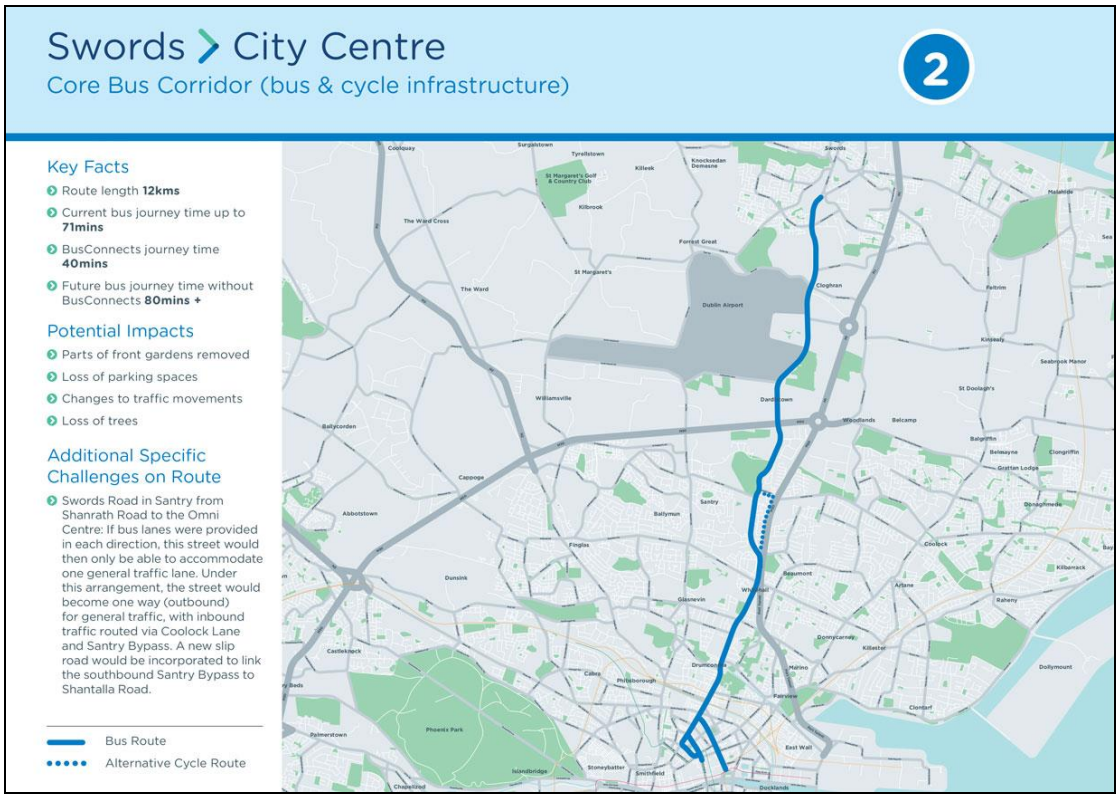


Figure 12.3 | *Proposed BusConnects Swords Route*

The Metro and Rail Network have plans to expand and interact LUAS, DART and heavy rail networks as well as providing the Metro Link, a light rail link from the south of the city centre to Swords, serving Dublin Airport. Metro North was anticipated to be in operation by 2017, however this scheme is now not anticipated to be in operation until 2027.

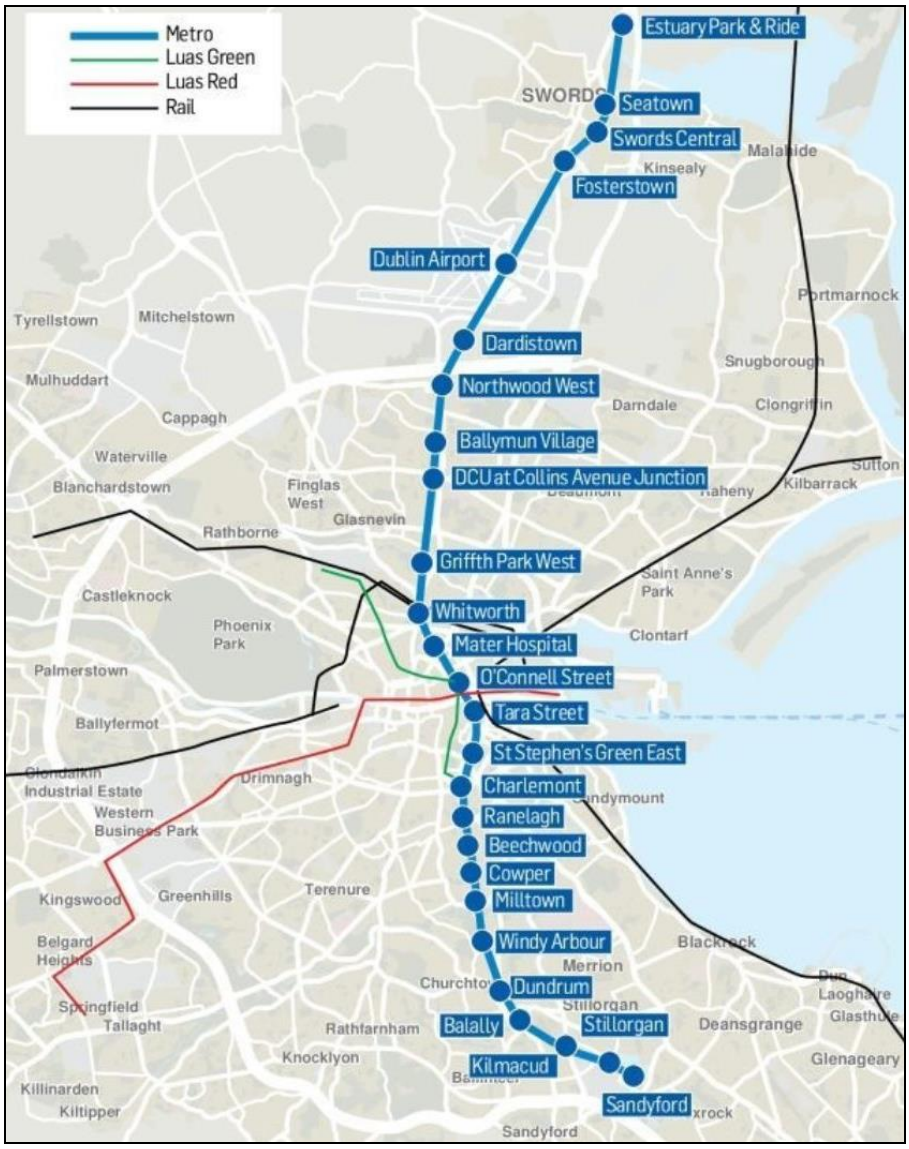


Figure 12.4 | *Proposed Metro Scheme*

Other passenger initiatives proposed by Dublin Airport to improve sustainable model split to the airport include electronic vehicle charging points, real time passenger information and on-line interactive journey tool that will give various options of public transport for passengers travelling from different parts of Ireland.

While Dublin Airport MMU sets out the above objectives, it also acknowledges that the peak period for passengers arriving at Dublin Airport is between 05.00 to 8.00, when public traffic is limited, hence the reliance on the long term car park for these times and for passengers travelling from areas that do not have a public transport link to Dublin Airport.

The long term car parks serving Dublin Airport via shuttle service are catering to those passengers who may be reliant on private car use as set out above. As a result, the Dublin Airport Authority (DAA) has set out guideline car park space requirements in the Mobility Framework Plan, with a current cap of 26,800 as outlined in Section 12.2.

12.5 Baseline Traffic Volumes and Traffic Surveys

In order to assess the impact of the proposed development on the existing road, a 24 hour manual classified traffic turning count was carried out by Abacus Transportation Surveys Ltd on Wednesday 7th February 2018. This included counts of all through traffic and of all turning movements at the existing car park access. Details of the traffic count are included in Appendix 12.1 of this report.

A copy of the 2011 traffic counts (14 hour) are also presented in Appendix 12.2. For comparative purposes the fourteen hour traffic flows from 2018 are compared against the 2011 counts below in Table 12.1.

Location : Existing Car Park Access	Total 14hr 2-WayTraffic Flows	
	Feb-2018	Mar-2011
South Leg: R132 Swords Road - to Santry / Dublin	16,951	14,900
West Leg: Existing Car Park Access	1,253	1,113
North Leg: R132 Swords Road - to Airport / Belfast	17,912	15,725

Table 12.1 | *Surveyed Traffic Flows at Existing Car Park Access*

The above data demonstrates that the traffic volume using the car park access increased by 13%. Similarly, traffic along each leg of the R132 Swords Road increased on average by 14% in the seven years.

12.6 Characteristics of the Proposal

The existing car park serves 6,240 long term car parking spaces (proposed to reduce to 6,122 spaces) and is accessed via an existing signal controlled junction complete with a separate right turning lane for southbound traffic.

A connection between the Car Park complex and Dublin Airport is provided for by a shuttle bus service as part of the development infrastructure. The shuttle bus is a regular service, with one bus operating every 5 minutes, with a journey time of 5 minutes in one direction.

A one-way main orbital route is in operation within the complex, allowing for buses to accommodate pedestrians and to create a safer environment. The layout of the parking aisles also separates the pedestrians from traffic on the main road, increasing the safety of these pedestrians.

Security measures are in place within the development. The complex is currently being monitored 24/7 by staff. CCTV cameras are also in operation with security barriers preventing any unauthorised exists from the car park.

The above mentioned security barriers are laid out to allow for one entry lane exclusively for shuttle bus use and entry two lanes for all other vehicles using the complex. The egress is laid out in the same manner, with one lane for shuttle buses and two for all other vehicles.

The security barriers are covered with a canopy to provide shelter and increased safety to motorists should they be required to leave the car to contact staff or to access the control panel for entry. The control panel requires the user to enter a pin or to take a ticket for payment upon departure.

Up to 80% of Quickpark airport car park tickets are now purchased online.

12.7 Predicted Traffic Impact of the Proposal

12.7.1 Traffic Generation

This car park is specifically for airport long-term parking, where the average duration of stay per vehicle is several days as opposed to several hours. As a result, the traffic generation from this development is far less significant than that of short stay car parks of the same size.

The surveyed and calculated traffic flows are illustrated in Diagram 12.1 a) and b) respectively.

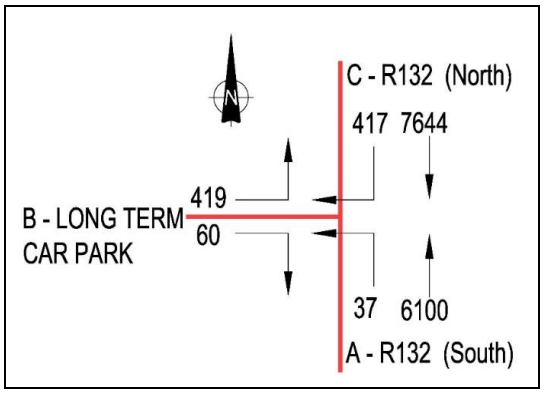


Diagram 12.1 a) | *Junction Layout and Surveyed Traffic Flows (8AM-7PM)*

The volumes of vehicular movements at the junction have been taken from the traffic survey carried out on Wednesday 7th February 2018 at the existing signal controlled junction. The use of expansion factors allows the estimation of the Annual Average Daily Traffic (AADT) from short period traffic counts. AADT is the annualised average 24-hour volume of vehicles at any given point or section of road. The expansion factors used to calculate the AADT are based on the recommendations of RT201 "Expansion Factors for Short Period Traffic Counts" which provides tables of expansion factors based on route type and the time period during which the survey was conducted.

The R132 Swords Road is classified as an urban commuter route with the time period 8am-7pm considered to calculate the AADT. An expansion factor of 1.43 from Table 1A of RT201 has been applied to the surveyed flows to estimate the AADT along the R132. The estimated traffic flow generated by the car park with 6,122 spaces between 8am-7pm is indicated in Table 12.2.

Destination and Origin	Surveyed Traffic Flows (8am-7pm)	Estimated Flow at 6,300 Spaces	AADT Flows	Directional Split (%)
South Leg: R132 Swords Road - to Santry / Dublin	107	175	250	10
North Leg: R132 Swords Road - to Airport / Belfast	836	1,505	2,152	90
Total Two Way	**943**	**1,680**	**2,402**	**100**

Table 12.2 | *Surveyed Traffic Flows Generated by the Existing Car Park*

12.7.2 Impact of the Proposal

There will be no additional traffic generated from the continuation of the Quickpark car park as it is already fully operational, albeit some minor construction traffic generated during the construction works of the new entrance building and entrance layout.

Diagram 12.1 above shows the turning movements as recorded by the traffic survey carried out on 7th February 2018. The total two-way traffic during the time period 8am – 7pm on the R132 Swords Road, assuming the car park was fully operational with 6,122 spaces, was calculated as 15,424.

Based on the recommendations of RT201, an expansion factor of 1.43 was taken to estimate the AADT on the R132 Swords Road:

15,424 x 1.43 = 22,056

In this EIAR, the increase of road traffic on the R132 Swords Road over a 10 year return period and the resultant impact of the continuation of use of the car park on the traffic volume are assessed. The National Roads Authority (NRA) document "Future Traffic Forecasts 2002-2040" provides forecast indices which represent growth factors for private cars, light goods vehicles and heavy goods vehicles for all public roads.

Using the TII document "Project Appraisal Guidelines, Unit 5.5 Link-Based Traffic Growth Forecasting", the forecasted 2028 AADT is obtained by factoring the 2018 AADT by 1.012. Table 12.3 summarises these projected traffic flows for 2028. Diagram 12.2 illustrates the breakdown of the traffic flow along each arm during the 8AM-7PM time period.

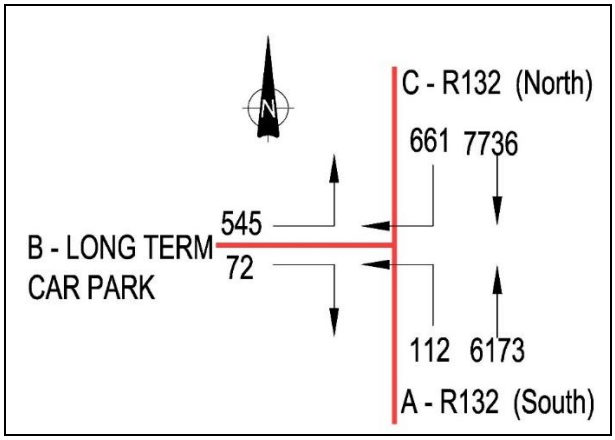


Diagram 12.2 | *Junction Layout and Estimated 2028 Traffic Flows (8AM-7PM)*

Location	2018 Traffic Flow (8am-7pm)	2018 AADT Flows	Forecast 2028 AADT Flows
South Leg: R132 Swords Road - to Santry / Dublin	13,919	19,904	20,153
North Leg: R132 Swords Road - to Airport / Belfast	15,249	21,806	21,614
West Leg: Existing Car Park Access	1,680	2,402	2,402
Total two-way Traffic R132	15,424	22,056	21,878

Table 12.3 | *Forecast Traffic Flows on R132 Swords Road*

The impact of retaining the existing car park on the traffic volume on the R132 Swords Road has been analysed based on "Do Something" and "Do Nothing" scenarios using the AADT figures in Table 12.3 above. The "Do Something" scenario considers the traffic flow with the continuing operation of the car park while the "Do Nothing" scenario considers the traffic flows should the continuation of the use of the car park not be sought.

The AADT for the "Do Nothing Scenario" (i.e. no car park) in 2028 was calculated as the traffic flow counted between 8am-7pm on 7th February 2018, discounting the traffic flows related to the car park, and factored by the expansion factor and forecast index:

13,744 x 1.43 x 1.012 = 19,890

A summary of the percentage impact on the R132 Swords Road is presented in Table 12.4.

Location : Existing Car Park Access	"Do Something"	"Do Nothing"	Percentage Impact (%)
South Leg: R132 Swords Road - to Santry / Dublin	20,153	19,890	1.3
North Leg: R132 Swords Road - to Airport / Belfast	21,614	19,890	8.7

Table 12.4 | *Percentage Impact on R132 Swords Road*

The Traffic Management Guidelines advise that generally an impact of less than 10% is not significant and does not warrant a Traffic Impact Assessment (TIA), except where traffic volumes are heavy or the area is considered sensitive, in which case an impact of 5% is considered to be the threshold. A TIA is therefore not required in this instance beyond the existing signal controlled access, as this is the first point of contact with the highway network and the area is not considered a sensitive area.

These percentage impacts represent the worst case scenario, whereby peak commuter traffic coincides with the busiest hour for the car park traffic. However in reality, this is unlikely to occur. In addition, while it is considered highly probable that the peak car park operation times are during the summer months, commuter traffic is generally less during these months with the closure of schools.

It is also noted that this Quickpark car park has been operational in full now for 12 years and since the previous approved temporary permission was granted seven years ago, the Swords Road and the main airport roundabout and internal airport road network have all been upgraded.

12.8 Junction Analysis and Operation

This section of the EIAR provides the results of the detailed traffic capacity assessments that have been undertaken at the existing signal controlled car park access. The assessment has been undertaken using the computer program Junctions 9, PICADY modelling software by TRL Software used for assessing the traffic capacity of traffic signals.

12.8.1 Methodology

For the assessment of signal controlled junctions the key performance indicator is known as the "degree of saturation" which refers to the percentage of capacity that is consumed by traffic demand. If all parts of a junction are predicted to operate with a degree of saturation of up to 90%, they can be said to perform satisfactorily and within capacity and any queues will be likely to clear on each cycle of the signal control.

Where any part of a junction has a degree of saturation of between 90% and 100%, the junction will not have sufficient reserve capacity to cope with periodic fluctuations in traffic demand throughout the period being modelled, and travel times through the junction therefore become less reliable, with delays possibly becoming significant for certain movements.

At degrees of saturation above 100%, the junction is said to be operating above capacity. In practice, this means that queues will build up and delays will be more pronounced. It is likely

that drivers queuing at a traffic signal junction would have to wait for more than one green period before reaching the front of a queue and crossing the stop line.

The operation of the signal controlled junction has been assessed using the traffic count data for the existing 6,240 car parking spaces.

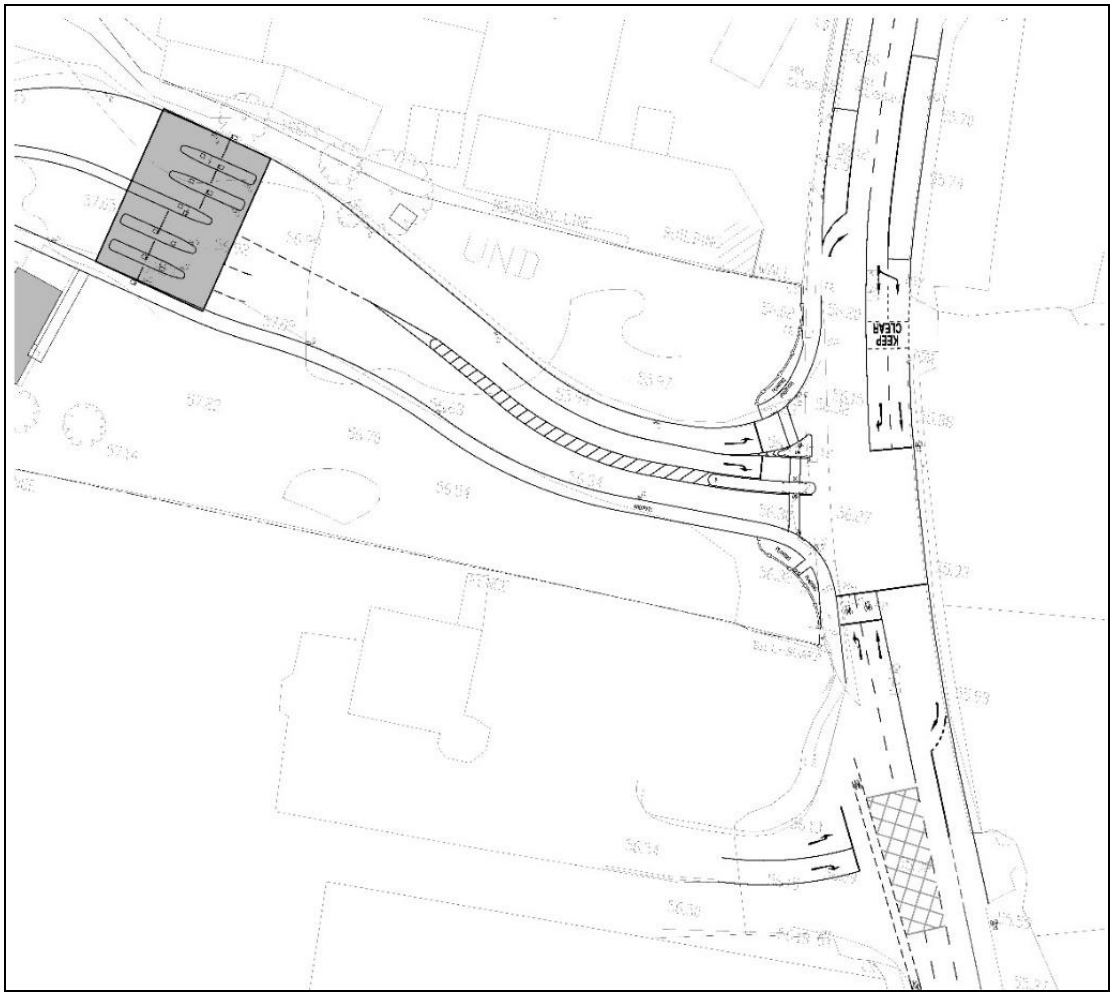


Figure 12.5 | *Signal Controlled Junction Layout*

12.8.2 Peak Traffic Flows

The NRA "National Road Needs Study" states that while a road type must cater for peak traffic conditions, designing a road to the highest hourly traffic flow in a year is considered an unreasonable standard which would involve gross under-utilisation of the road. The document recommends adopting the 30th highest hour traffic flow as a design standard. The 30th highest hour traffic flow is the hourly flow which would be expected to be exceeded for 30 hours in a year.

The relationship of 30th highest hour flow and AADT varies with traffic type. The R132 is considered a commuter route, a road type that shows lower variation in peak traffic in comparison with other road types. In this instance the 30th highest hour flow is taken as 10% of the AADT.

To assess the capacity of the existing junction with the existing and predicted traffic flows in 2018 and 2028 respectively, the 30th highest hour traffic flows have been assessed from the AADT.

These traffic flows are based on the data from the 7th February 2018 survey and on the assumption of the car park being full with 6,240 spaces used. The analysis was carried out

based on the traffic flows in Diagram 12.2, representing the impact of the traffic with the car park operating at its full capacity of 6,240 car parking spaces. Using expansion factors in Table 1A of the RT201 for the 8AM-7PM time period, the traffic flows for the 30th highest hour were calculated and summarised in Table 12.5. The turning movements are illustrated in Diagram 12.3 below.

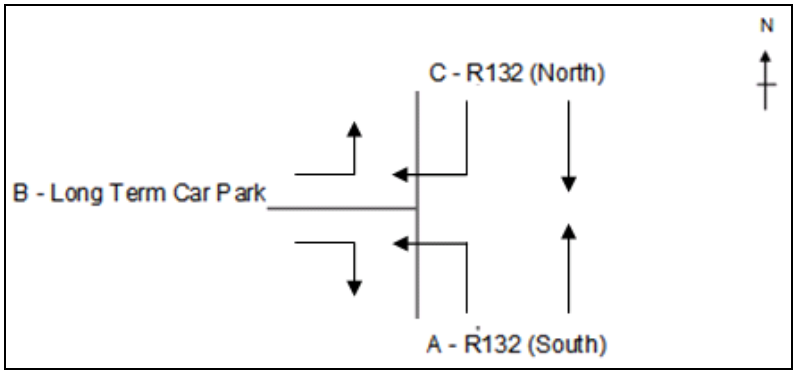


Diagram 12.3 | *Junction Layout and Lane Assignment*

From	To	2018	2028
Arm A – R132 Swords Road (South)	↑ Arm C	872	883
	← Arm B	10	10
Arm B – Long Term Car Park Site Access	↑ Arm C	108	109
	↓ Arm A	15	16
Arm C – R132 Swords Road (North)	← Arm B	107	109
	↓ Arm A	1,093	1,106

Table 12.5 | *30th Highest Hour Traffic Turning Movements*

12.8.3 Traffic Modelling

This section provides information on the input information for producing the model of the proposed improvements to the existing car park access.

The junction arms have been given the following designations:-

Arm A (R132 Swords Road (South) – Arm 1
Arm B (Long Term Car Park Site Access) – Arm 2
Arm C (R132 Swords Road (North) – Arm 3

The results of the model are represented as the degree of saturation (DOS), the maximum queue length and the practical reserve capacity (PRC).The DOS is given as a percentage and is described in Section 12.6.1 above, while the maximum queue length is given in the number of vehicles.

The PRC of a junction is a commonly used measure of its available space capacity. The PRC is related to the degree of saturation of a traffic signal junction. A positive PRC indicates that a junction has spare capacity and may be able to accept more traffic. A negative PRC indicates that the junction is over capacity and is suffering from traffic congestion.

The junction and lane layout for the modelling of the proposed improved signal controlled junction is shown on Diagram 12.4 below.

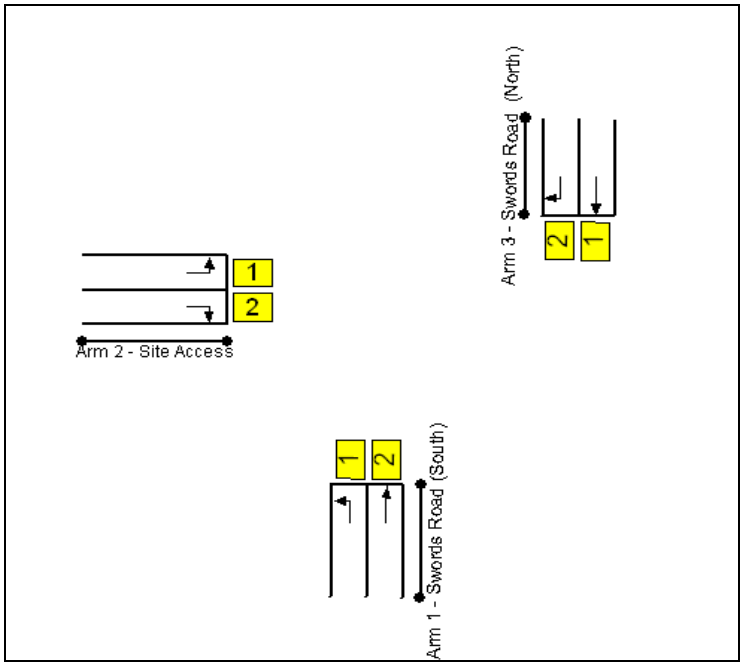


Diagram 12.4 | *Junction Layout and Lane Assignment*

The phases assessed for the proposed improved signal controlled junction are shown in Diagram 12.5 below.

The blue phases G and H represent the permitted pedestrian crossing phases, while the black phases A to F represent vehicle permitted phase movements.

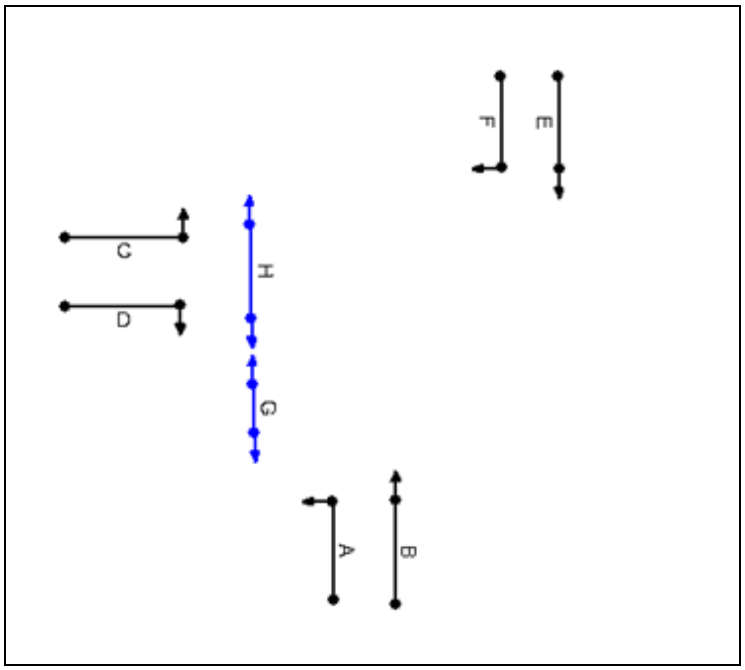


Diagram 12.5 | *Phase Layout for the Signal Controlled Junction*

The stage sequence assessed in the model is shown in Diagram 12.6 below.

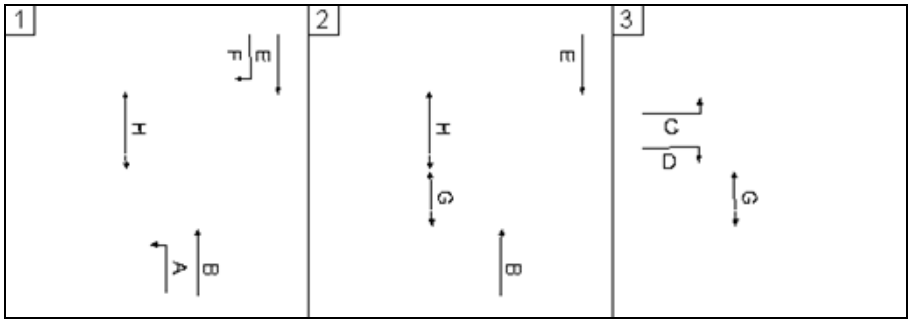


Diagram 12.6 | *Stage Sequence Assessed for the Signal Controlled Junction*

12.8.4 Existing Junction Capacity Assessment – 2018

Arm A (R132 Swords Road (South) – Arm 1
Arm B (Long Term Car Park Site Access) – Arm 2
Arm C (R132 Swords Road (North) – Arm 3

The results for a 120 second cycle for the 30th highest hour traffic flow for 2018 are summarised in Table 12.6. The turning movements are as illustrated in Diagram 12.3 above.

Turning Movement	Deg of Sat (%)	Max Queue	Practical Reserve Capacity (%)
A – B	1	0	8,135
A – C	69	10	30
B – C	72	4	25
B – A	10	0	800
C – A	87	19	4
C – B	14	2	553

Table 12.6 | *30th Highest Hour Car Park Site Access (base year 2018)*

12.8.5 Future Junction Capacity Assessment – 2028

Arm A (R132 Swords Road (South) – Arm 1
Arm B (Long Term Car Park Site Access) – Arm 2
Arm C (R132 Swords Road (North) – Arm 3

The results for a 120 second cycle for the 30th highest hour traffic flow for 2028 are summarised in Table 12.7. The turning movements are as illustrated in Diagram 12.3 above.

Turning Movement	Deg of Sat (%)	Max Queue	Practical Reserve Capacity (%)
A – B	1	0	8,135
A – C	70	11	28
B – C	73	4	24
B – A	11	1	744
C – A	88	20	3
C – B	14	2	541

Table 12.7 | *30th Highest Hour Car Park Site Access (assessment year 2028)*

The results of the assessment demonstrate that the junction at the R132 Swords Road to the Quickpark Car Park currently operates well within capacity and will continue to operate within capacity during the 10 year assessment period.

12.9 Internal Road Assessment

The main road within the Car Park is 6.5m wide and is being used as a one way shuttle bus route serving the car park. The internal road network allows for a one way traffic system.

The parking aisles around the car park are designed to a width of 6m to allow free movement and good visibility for both car users and pedestrians.

12.10 Avoidance, Mitigation or Remedial Measure

12.10.1 Construction Phase

The proposed development includes the relocation of the existing maintenance shed, demolition of the existing single-storey office and control building and canopy entrance structure, and the construction of a new three-storey car park entrance building with new car park barriers and ticket machines together with premium car parking offer, elevational signage to new entrance building, green roof, landscaping and revisions to the entrance layout to accommodate the new building. The construction programme is intended to be a 9-month programme.

The site access/egress is at the existing car park entrance from the R132 Swords Road, which has a high road capacity and provides a high level of service. The existing site entrance is signalised, and as such use of banksman to control exit of construction vehicles onto the public road is not deemed necessary. Construction traffic is anticipated to comprise a small percentage of the total traffic on the R132 at the existing car park access.

Nonetheless, appropriate traffic management measures should be taken. Management of construction traffic will include:

- The Contractor will prepare and implement a traffic management plan to ensure continued safe access and egress to and from the car park during the construction phase. This will require the segregation of construction traffic from the main Quickpark car park traffic along the car park entrance road. The contractor will also provide safe pedestrian access / egress to the car park and along the Swords Road at the car park entrance junction.
- Use of a properly designed access and egress point to minimise impact on both external traffic and amenity of residents.
- Check on each departing vehicle at exit from site to public road.
- Issue of instructions and maps on getting to site to each sub-contractor to avoid ‘lost’ HGV’s disrupting traffic.
- Establishment and maintenance of HGV holding areas within the site.
- Ongoing assessment of the most appropriate routes for construction traffic to and from the site.
- A detailed traffic management plan will be prepared by the Contractor and agreed with Fingal County Council, the Road Authority, prior to commencing works.

12.10.2 Operational Phase

The traffic impacts and the level of traffic generated at the R132 Junction by the use of the Car Park have been calculated and are considered relatively low. As a result, it is deemed that no new mitigation measures are required.

12.11 Monitoring

12.11.1 Construction Phase

As noted above, it is not anticipated that construction traffic will comprise a significant percentage of the total traffic on the upgraded R132. Ongoing assessment of traffic volumes at signalised intersections should be carried out to determine if construction traffic is having an adverse effect on traffic volumes, and the most appropriate routes for construction traffic to and from the site should be set accordingly.

12.11.2 Operational Phase

No specific monitoring proposals are considered necessary during the operation of this development other than normal monitoring undertaken by Quickpark and Fingal County Council.

Such normal monitoring would include:

- Traffic volumes at signalised intersections to determine if the phase settings and turnings are at their optimum.
- Adequacy of bus services to cater for passenger demand.

12.12 Conclusion

It is proposed to continue the use of the development of 6,122 car parking spaces of the Quickpark car park off R132 Swords Road.

Road access is provided from the upgraded R132 Swords Road. This road is linked to the N1 & M1 at the Airport interchange. Access to the M50 can also be achieved via the Ballymun interchange.

The signal controlled junction operates satisfactorily at the site entrance. The R132 Swords Road has a high road capacity and provides a high level of service as indicated by the spare capacity calculated through traffic modelling. The turning movements associated with the existing car park are a small percentage of the total traffic on the R132 at the existing car park access and therefore can be accommodated without impacting on the level of service by 2028.

With most of airport passengers travelling from outside of Dublin and with peak hour departing flights early morning, the requirement for this long tern car park remains, as outlined in the DAA's updated Mobility Management Plan. As such it is clear for the need to facilitate long term parking to ensure the efficient use of the airport.

Chapter 13 Material Assets, Archaeology, Cultural and Architectural Heritage

13.1 Introduction

This chapter of the EIAR considers and assesses the archaeological, cultural and heritage environment within the operating Quickpark car park site at Turnapin Great, Santry, County Dublin. It was produced by Courtney Deery Heritage Consultancy Ltd. The purpose of the study is to assess the possible significance of the receiving archaeological and cultural heritage environment and to identify and evaluate the significance of the impact of the development on this environment and to suggest any ameliorative measures that might be appropriate.

13.2 Research Methodology

13.2.1 Desk Study

The desk study availed of the following sources:

- *Record of Monuments and Places and Sites and Monuments Record*
  The primary source of information for the desk study is the Record of Monuments and Places (RMP) of the Department of Culture, Heritage and the Gaeltacht (DCHG). The Sites and Monuments Record (SMR), as revised in the light of fieldwork, formed the basis for the establishment of the statutory RMP pursuant to Section 12 of the National Monuments (Amendment) Act, 1994. The RMP records known upstanding archaeological monuments, their original location (in cases of destroyed monuments) and the position of possible sites identified as cropmarks on vertical aerial photographs. It is based on a comprehensive range of published and publicly available documentary and cartographic sources. The information held in the RMP files is read in conjunction with published constraint map. Archaeological sites identified since 1994 have been added to the non-statutory SMR database of the Archaeological Survey of Ireland (National Monuments Service, DCHG), which is available online at www.archaeology.ie and includes both RMP and SMR sites. Those sites designated as SMR sites have not yet been added to the statutory record, but are scheduled for inclusion in the next revision of the RMP.

- *The topographical files of the National Museum of Ireland*
  The topographical files of the National Museum of Ireland (NMI) identify recorded stray finds held in the museum's archive. The files, which are donated to the state in accordance with national monuments legislation, are provenanced to townland and sometimes include reports on excavations undertaken by NMI archaeologists earlier in the 20th century.

- *Fingal County Development Plan (2017-2023)*
  The current Fingal County Development Plan was consulted for a list of protected structures comprising schedules of buildings and items of architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest that are listed for protection in the study area.

- *Documentary and cartographic sources*
  Documentary and literary references were sourced in the National Library. The sources used are detailed in the bibliography at the end of the chapter

(Section 13.9). The 'Excavations' bulletin published by Wordwell and on the website www.excavations.ie, was consulted for any previous relevant archaeological surveys and excavations that have taken place on or in the vicinity of the proposed development. Historical maps sourced from the Trinity Map Library were examined to determine the changing nature of the land chosen for the proposed development. Cartographic sources consulted for this report include the Down Survey map of the Barony of Coolock, c. 1656; Rocque's map County Dublin, 1760; Taylor's map of the Environs of Dublin, 1816; and the first and revised editions Ordnance Survey maps of 1843, 1872 and 1910.

13.2.2 Site Inspection

A site inspection was undertaken on 14th June 2018 in order to assess the present topography and land use at the area where development is proposed to continue. This was carried out within the context of an assessment of the archaeological and cultural heritage potential of the Turnapin Great area, taking cognisance of the potential implications of the development on the surviving cultural heritage landscape. It also considered the setting of surviving architectural heritage in the vicinity.

13.2.3 Standards and Guidelines

The following legislation, standards and guidelines were consulted to inform the assessment:

- National Monuments (Amendments) Acts, 1930-2014;
- The Planning and Development Act 2000, as amended;
- Heritage Act, 1995;
- The UNESCO World Heritage Convention, 1972;
- ICOMOS Xi'an Declaration on the Conservation of the Setting of Heritage Structures, Sites and Areas, 2005;
- Council of Europe Convention for the Protection of the Architectural Heritage of Europe (Granada) 1985, ratified by Ireland in 1991;
- Council of Europe European Convention on the Protection of the Archaeological Heritage (Valletta) 1992, ratified by Ireland in 1997;
- The Burra Charter, the Australia ICOMOS Charter for Places of Cultural Significance 2013;
- The European Landscape Convention (ELC), ratified by Ireland 2002 European Landscapes Convention 2010. (The Department of the Environment, Heritage and Local Government 'Landscape and Landscape Assessment Guidelines' have been in draft form since 2000, however the Draft National Landscape Strategy (NLS) was launched in July 2014);
- Guidance on Heritage Impact Assessments for Cultural World Heritage Properties – A publication of the International Council on Monuments and Sites, January 2011;
- Guidelines on the information to be contained in Environmental Impact Statements, 2002, EPA;
- Advice Notes on Current Practice (in preparation of Environmental Impact Statements), 2003, EPA;
- EPA: Draft Revised Guidelines on The Information to be Contained in Environmental Impact Statements, September 2015;
- EPA: Advice Notes for Preparing Environmental Impact Statements, Draft, September 2015;

- Frameworks and Principles for the Protection of the Archaeological Heritage, 1999, (formerly) Department of Arts, Heritage, Gaeltacht and Islands;
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 2000 and the Planning and Development Act 2000;
- Code of Practice between the National Roads Authority (NRA) and the Minister for Arts, Heritage and the Gaeltacht, June 2000;
- Guidelines for the Assessment of Architectural Heritage Impact of National Road Schemes, 2006, NRA;
- Guidelines for the Assessment of Archaeological Heritage Impact of National Road Schemes, 2006, NRA;
- Guidelines for the Testing and Mitigation of the Wetland Archaeological Heritage for National Road Schemes, 2006, NRA; and
- National Landscape Strategy for Ireland 2015-2025, Department of Arts, Heritage and the Gaeltacht.
- Historic England (July 2015), Historic Environment Good Practice Advice in Planning, Note 3: The Setting of Heritage Assets;
- Historic Scotland (October 2010), Managing Change in the Historic Environment;
- The Heritage Council (2010), Proposals for Irelands Landscapes; and International Council on Monuments and Sites (2011), Guidance on Heritage Impact Assessments for Cultural World Heritage Properties.

Excerpts from the relevant legislation are contained in Appendix 13.1 of this chapter.

13.2.4 Rating of Impacts

Cultural heritage sites/landscapes are considered to be a non-renewable resource and cultural heritage material assets are generally considered to be location sensitive. In this context, any change to their environment, such as construction activity and ground disturbance works, could adversely affect these sites. The likely significance of all impacts is determined in consideration of the magnitude of the impact and the baseline rating upon which the impact has an effect (i.e. the sensitivity or value of the cultural heritage asset). Having assessed the magnitude of impact with respect to the sensitivity/value of the asset, the overall significance of the impact is then classified as imperceptible, slight, moderate, significant, or profound. A glossary of impact assessment terms, including the criteria for the assessment of impact significance, is contained in Appendix 13.2.

In accordance with the NRA 'Guidelines for the Assessment of Archaeological Heritage Impact of National Road Schemes' (2006) the significance (i.e. value) criteria used to evaluate an archaeological site, monument or complex are as follows: existing status (level of protection), condition or preservation, documentation or historical significance, group value, rarity, visibility in the landscape, fragility or vulnerability, and amenity value. The archaeological and cultural heritage environment is assigned a baseline rating, taking into account the importance, value and/or sensitivity of the receiving environment (Cf. Table 3, Appendix 13.2).

Architectural heritage sites include structures listed in the Record of Protected Structures (RPS), which have statutory protection. Architectural heritage sites also include structures listed in the National Inventory of Architectural Heritage (NIAH) Building Survey, demesne landscapes and historic gardens listed in the NIAH Garden Survey, and undesignated, newly identified sites such as examples of

vernacular architecture (e.g. a dry-stone wall or upstanding structure depicted on the first edition OS six-inch map). In this assessment each building or structure that is considered is assigned a rating in accordance with the NIAH system, or is stated to be not of special architectural interest (Cf. Appendix 13.2).

13.3 Archaeological, Cultural and Architectural Heritage

13.3.1 Archaeological Heritage

The proposed development site is located in the townland of Turnapin Great, in the barony of Coolock and civil parish of Santry.

There are no RMP / SMR sites within the proposed development and no stray finds are recorded in the National Museum of Ireland for this area.

The nearest recorded archaeological sites were identified during archaeological investigations in Ballystruan townland and added to the SMR for inclusion in the next revision of the RMP: a probable cluster of cremation pits (DU014-120) and a probable early medieval enclosure (DU014-121), c. 170m & c. 190m respectively from the western car park boundary (Figure 13.1).

13.3.1.1 Archaeological and Historical Background

Prehistoric Period

No prehistoric monuments or artefacts have been recorded within the proposed development site, though there is evidence for prehistoric activity in this area. Recent test excavations in Ballystruan townland, in the fields immediately west of the present car park site, identified a pit containing burnt mound material and a cluster of probable cremation burial pits (SMR DU014-120). Both sites are of Bronze Age date (c.2200–500BC). A burnt mound was also identified in Ballymun townland, c. 845m west (SMR DU014-119). A possible Bronze Age burial was identified to the east of the study area in the townland of Stockhole as part of the archaeological monitoring of works in advance of the Airport/Balbriggan by-pass (Licence No. 00E0376). The isolated prehistoric burial comprised a linear feature containing charcoal-enriched soil with cremated human bone. Several prehistoric stray finds have also been identified in Santry Demesne townland (*cf*. Stray Finds section below).

Early Medieval Period

There was an increase in settlement across north County Dublin during the early medieval period (*c*. AD 500–AD 1200), and the ringfort, otherwise known as the rath or fairy fort, is the best-known native monument of this period. There are no ringfort sites within a 1km radius of the site, however a probable early medieval enclosure site was identified in Ballystruan townland, in the fields immediately to the west of the car park site (SMR DU014-121; *cf.* sections 13.3.1.2 & 13.3.1.4).

This area would have fallen within the sphere of influence of the important early ecclesiastical settlement at Swords during the early medieval period (c. AD 500–1100), c. 4.7km to the northeast. During the early medieval period, the ecclesiastical site at Swords bore influence on the lands at Cloghran (c. 2km north) and this would have been further solidified with the arrival of the Anglo-Normans in 1169, to whom the origin of the church site and graveyard in Cloghran is attributed (DU014–009 RMP file). There was also an early ecclesiastical foundation at Santry, c. 1.5km south, reputedly founded by St Pappan in the 6th century AD (DU014-057). While

there are no known early church sites in the immediate vicinity of the proposed development site, there is a holy well recorded in Toberbunny townland (RMP DU014–023, RPS 602), located on the Cuckoo Stream c. 700m east of the proposed car park area (Figure 13.1).

While such sites are not, strictly speaking, 'official' church sites, they can be indicative of ecclesiastical activity in the area. Holy wells are a Christian adaptation of a pre-Christian tradition of sacred springs which, like their pagan predecessors, were often visited at certain times of the year (such as saints' or other holy days) and often had the reputation for effecting cures. The townland name Toberbunny is derived from the Irish for *tobar bainne* meaning 'well of milk'; it is said to have been named as such during the famine when the water flowing from the well turned to milk for a starving widow and her large family (Kilfeather, 1989). The well is now located within a golf course and is no longer venerated. Archaeological test excavation and monitoring in Toberbunny and Stockhole townlands, in advance of the development of the Dublin Airport Eastlands Compound, identified no archaeology there relating to the holy well (Frazer & Ryan 2007, Frazer, Eriksson & Ericsson 2007).

The area is within the bounds of Fingal, the regional name applied to the northern half of County Dublin. According to Ball (1920), the name Fingal is used to describe the district into which predatory excursions were made by the Vikings. In the 9th century, a colony of Ostmen, or Northmen, became established in Dublin, ultimately settling in the tract lying northwards along the coast, which became known as "Fine Gall", or the territory of the Galls, or strangers. According to the poet John O'Dugan, Fingal came under the rule of Mac Gillamocholmog, who controlled the lands south of Dublin before the arrival of the Anglo-Normans in the late 12th century. Before the battle of Clontarf, Brian Ború is said to have burned Fingal and the district of Howth. Some years later, during a raiding campaign into Fingal, the region is said to have been burned from Dublin to the River Delvin.

Viking rule and settlement influenced the region for over 250 years, from the 9th to the 12th century. Bradley suggests that settlement in Fingal should be looked upon as part of 'the rurally settled area of the Dublin Scandinavians', rather than as a number of successful trading settlements strategically located along the coast (Bradley in Simms & Fagan 1992).

Medieval Period

From the 12th century, the Anglo-Normans, with a keen eye for good agricultural land, superimposed the manorial system of landholding they had acquired from England and the Welsh borderlands onto their newly conquered territory in Fingal. They brought with them new military traditions and fortifications, a new language, and new social structures. Anglo-Norman fortifications include mottes and baileys and moated sites and some large stone castles. Most Irish 'castles', however, are tower houses, small fortified residences of the gentry in the 14th to 16th centuries. They often have very thick walls, with intra-mural staircases, small windows (the earliest have very thin arrow or musket loops), and a vaulted first storey, to prevent the spread of fire.

The medieval manor of Santry, c. 1.3km south, would have held considerable sway in this area. With the coming of the Normans, Hugh De Lacy, Lord of Meath, granted the lands around Santry to one his barons, Adam de Phepoe (or de Feypo). The manor consisted of a hall, chambers, stables, a bakery, 200 apple trees, 100 pear trees, 30,000 great ash trees and 1000 large alder trees. De Phepoe also erected a church in the late 12th century on the site of St Pappan's church, which was

subsequently granted to the Abbey of St Mary, in Dublin. The present day rectory, built in 1709, is reputed to lie c. 30 yards west of the earlier 12th century one.

A recorded castle site (RMP DU014–011) is located approximately 900m north of the proposed development. Early historical maps depict the location of a ruinous castle (a possible tower house) in the corner of a field. A variety of historical and cartographic evidence combines to suggest that the building may have been razed in 1641/2 by the Earl of Ormond's forces. The castle's occupant at that time was involved in the provisioning of Confederate troops besieging Drogheda late in 1641, and Ormond repaid such participation, in Fingal and parts of Counties Louth and Meath particularly, with targeted violence. The demise of the structure in the early 1640s is also implied by the discovery of re-used dressed medieval stones in the original, mid-17th century vernacular cottage at Corballis House (Frazer, 2007). Work in the vicinity of the former castle site—beneath tarmac, and modern concrete block and corrugated steel buildings—was monitored by an archaeologist in December 2007 and early 2008. The very bottom of a former late post-medieval boundary ditch was identified, but the ground across the area had been heavily truncated by airport works over the past 60-odd years—not least by the countless trenches for services feeding the terminal, the control tower and various neighbouring buildings. No archaeology was identified in the vicinity of the RMP site (Frazer, 2007).

Post-Medieval Period

The Barry family built Santry Court in 1703 on the site of the earlier medieval manor. The house was 'a stately mansion of brick, containing many spacious apartments, ornamented with numerous family portraits, a valuable collection of historical and scriptural paintings by the best masters and many items of fine arts'. The expansive demesne covered '140 acres laid out in pleasure grounds and richly embellished with trees' and is a prominent feature on the historic maps (its northern boundary is only c. 525m from the proposed development site). Sir Charles Compton William Domville embarked on a transformation of Santry Court in 1857; the 130 rooms were redecorated, the gardens and out offices restored, a water supply was laid on to the house from the river and ornamental gas lamps lit the avenue to a replica of the Phoenix monument erected in the grounds. On the night of the 24th October 1941 the house was destroyed by fire. It lay derelict until demolition in 1959. All that remains of the house are the front steps that lead up to a grassed platform where the house used to stand, and a walled garden. Plaster friezes (the imagery based on the Parthenon) are located in the rear of the walls of the entrance piers.

13.3.1.2 RMP / SMR Sites

There are no RMP / SMR sites recorded within the proposed development site.

Two sites were identified during archaeological investigations in Ballystruan townland in 2009 which have been added to the SMR for inclusion in the next revision of the RMP: a probable cluster of cremation pits (DU014-120) and a probable early medieval enclosure (DU014-121), c. 170m & c. 190m respectively from the western car park boundary (*cf*. section 13.3.1.4; Figure 13.1).

There are a further two RMP sites within a 1km radius of the proposed development site: a possible holy well in Toberbunny townland (DU014-023, c. 700m north) and a castle site in Corballis townland (DU014-011, c. 900m north), as described in the archaeological and historical background above (section 13.3.1.1). In addition, a burnt mound was identified during archaeological investigations in Ballymun

townland in 2011; it has been added to the SMR for inclusion in the next revision of the RMP (DU014-119, c. 845m west; *cf*. section 13.3.1.4).

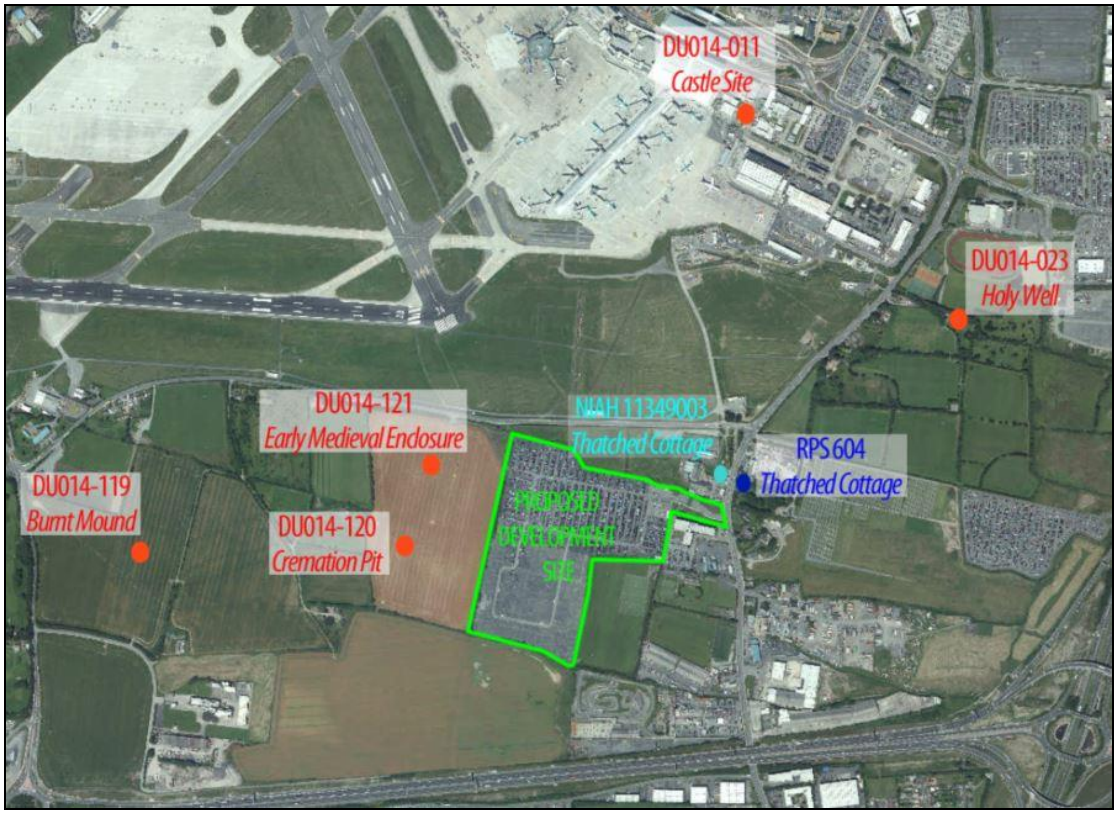


Figure 13.1 Aerial Photograph showing site location, with RMP, SMR, RPS & NIAH sites

13.3.1.3 Stray Finds

There are no stray finds recorded in the Topographical Files of the National Museum of Ireland in the townland of Turnapin Great or in the neighbouring townlands of Ballystruan, Dardistown, Toberbunny and Collinstown.

Further south in the townland of Santry there have been many stray finds recovered, predominantly prehistoric in date, including a stone axehead (NMI 1947:43) and a deposit consisting of a flint scraper (NMI 1969:58), flint flake (NMI 1969:59), flint Bann flake (NMI 1969:60), brass fragments (NMI 1969:61-2) and a bronze object (NMI 1969:58-63).

13.3.1.4 Previous Archaeological Investigations

Several development-related archaeological investigations have taken place in the area surrounding Turnapin Great in recent times, relating to the development of the airport and road network and advance archaeological work for the Metro North scheme. These excavations indicated that there is evidence for prehistoric and early medieval activity in the landscape surrounding the car park site.

In the field immediately west of the car park site, in the area proposed for Metro Construction Compound 8, advanced archaeological investigations in the form of test-trench excavations were carried out in 2009 (Licence No. 09E478). Within these test trenches five archaeological sites were identified in the field. These included the following: a pit containing burnt mound material of probable Bronze Age date; a

cluster of probable cremation burial pits, again of possible Bronze Age date (SMR DU014-120, Figure 13.1); a sub-rectangular enclosure (56m x 45m) of probable early medieval date (SMR DU014-121, Figure 13.1); a curvilinear ditch and associated pit features of uncertain date that may represent activity associated with the enclosure; and an isolated fire-pit of uncertain date. Features of archaeological potential noted in an earlier geophysical survey of these lands were identified either as variations in the natural subsoil or as the remains of late post-medieval and modern agricultural activity – namely plough furrows, field boundaries, land drains and stone sockets – and were therefore of no archaeological significance.

Monitoring of preliminary ground investigations was undertaken in 2010 for the route of Metro West, a twin-track light rail system which will serve approximately a 25km corridor from the junction of Belgard Road / Old Blessington Road in Tallaght to Dardistown in North County Dublin (Licence No. 10E0410; Excavations Bulletin Ref. 2010:235). The excavation of a total of twelve trial-pits and thirteen boreholes was subject to monitoring along the route.

A further ten trial-pits, five boreholes and five infiltration test-pits were monitored at the location of the Metro North depot in Dardistown. Nothing of archaeological significance was located in any of the pits or boreholes, however, subsequent geophysical survey and archaeological testing across the proposed Dardistown Depot site identified a burnt mound (Licence Nos 11R0017 & 11E0039). The proposed depot site straddled Ballystruan and Ballymun townlands, with the low level burnt mound located in the latter (SMR DU014-119, c. 845m west of the proposed development site, Figure 13.1).

An assessment was carried out in advance of the planned M50 Upgrade in the townland of Turnapin (Licence No. 05E0045). No features of archaeological significance were identified and no finds were recovered.

13.3.2 Cultural Heritage

13.3.2.1 Townland Boundaries

Townlands are land divisions that form a unique feature in the Irish landscape. Their origins are undoubtedly of great antiquity, most certainly pre-Anglo-Norman, and they existed well before the establishment of parishes or counties. Townlands can take the form of natural boundaries, such as rivers or routeways, as well as artificially constructed earthen banks and ditch divisions. They are predominantly formed by well-built boundaries that demarcate the townland and are usually distinguishable from standard field-division boundaries. Townland boundaries recorded by the 19th century Ordnance Survey may be aligned on older land divisions that date to early historic times and may physically overlie archaeological evidence for such early forms of land division. For this reason they are considered areas of archaeological potential.

The northern site boundary of the car park development runs along the townland boundary between Turnapin Great and Collinstown, while its western boundary forms the boundary between Ballystruan and Turnapin Great. The development site boundaries run parallel to these boundaries and do not impact them.

13.3.2.2 Townland Names

The townland names in this part of north Dublin provide reference to the historical heritage of the area. They are an invaluable source of information on the topography, on landownership and land use, the history and cultural heritage, archaeological monuments and folklore. Like most of the townlands in North County Dublin, the names in the area are a mix of both English and Irish names. Turnapin is a corruption of the Irish words *tor na binne* meaning the tower of the pinnacle or peak, though it is not known what the name refers to. Ballystruan is an Anglicisation of the Irish *baile sruáin*, meaning town of the streamlet. Toberbunny is derived from the Irish *tobar bainne* meaning 'well of milk', referring to the Holy Well (DU014-023). Collinstown is an English (or perhaps an Anglo-Norman) name and may represent a family that once occupied the area. The name Santry is derived from the Irish *Sean Triabh* or Old Tribe.

13.3.3 Architectural Heritage

13.3.3.1 General

The study area forms part of the northern urban fringe of the city. It is a landscape that is, in places, still somewhat rural in character (as for example the fields immediately west of the existing car park and surrounding the airport runways). Land use varies extensively from arable cultivation, residential, industrial and existing airport development. These processes have created a modern agricultural, residential and industrial landscape.

The landscape of north County Dublin has a rich and varied heritage of historic buildings ranging from estate houses to more modest vernacular architecture. The area is noted for its tillage and relative prosperity and stability throughout historic times. There are many rural buildings in the county that have served varied purposes—domestic, agricultural, educational, religious and industrial. In particular, the expansions of agriculture and population in the late 18th and early 19th centuries led to the construction of the familiar 'cottage' in farmyards along roadsides throughout the countryside (McCullough & Mulvin 1987).

The rural countryside is also full of secondary buildings or structures that would have been necessary and important for the daily workings of rural life. They include bridges, mills, schoolhouses, dispensaries, railway stations, creameries and forges or smithy's, typically of 18th and 19th century date. Few of the structures within the vicinity of the study area can be described as vernacular as the case would be elsewhere in Fingal, although two small thatched cottages survive c. 75m north of the proposed development site on either side of the Swords Road (see below, section 13.3.3.2).

The legacy of the stone manor house, or what became known in Ireland as the 'big house', were generally constructed by planter families in north County Dublin, as elsewhere in the country, roughly between the years 1670 and 1850, and they are often found near to or on the sites of older ruined castles or tower houses, churches or defunct administrative centres. Many are now in ruins; in many other cases, demesne woodland remains as a vestigial element in landscapes where all trace of the original house, its gate lodges and follies have vanished.

One such example is the former Santry House, the demesne of which was an expansive designed landscape (the northern demesne boundary was originally c. 525m south of the existing car park). The house platform and front steps survive (c. 1.3km south), as does the walled garden and some of the demesne (at least half has been given over to residential and industrial development).

13.3.3.2 Record of Protected Structures (RPS)

The nearest protected structure (RPS site) listed in the Fingal County Development Plan 2017-2023 is a single-storey thatched cottage off the Swords Road in Dardistown and Collinstown (RPS 604, Figure 13.1). It is located on the west side of the road, c. 75m northeast of the proposed development site. It is a late 18th / early 19th century three-bay single-storey thatched dwelling, with extension to north end. It is built on a L-shaped plan, with a gable-fronted projecting entrance porch. It has a double-pitched thatch roof, with decorative thatched ridging, two nap-rendered chimney stacks, and timber barge boards to porch. The walls are nap-rendered, pierced by square headed windows with nap-rendered reveals, stone cills and uPVC casements, and a round-headed door opening (Cf. NIAH Ref. 11349004; Regional Rating).

There are no other protected structures within 1km of the proposed development (Figure 13.1).

A second thatched cottage stands on the opposite side of the Swords Road to the protected structure (c. 75m north of the car park). The cottage was previously listed in the RPS (Fingal County Development Plan 2011-2017), but has since been deleted. The structure remains on the National Inventory of Architectural Heritage, on which it is given a regional rating;(NIAH Ref. 11349003; Figure 13.1). It is of similar date and construction to the protected structure, being a three-bay single-storey thatched house, c.1800, with central projecting entrance porch. A single-bay single-storey extension was added to the north side c.1980. The roof is a double-pitched thatched roof (no decorative detailing), with a red brick and a nap-rendered chimney stack; concrete tiles to extension also having rendered chimney stack. The walls are nap-rendered, with a pebble-dash finish to the extension. There are square-headed with stone cills, nap-rendered reveals and uPVC castments and door.

Two other structures / sites previously listed on the RPS (within 1km of the proposed development), have also been deleted: the holy well site in Toberbunny (this is an archaeological site, RMP DU014-023); and Corballis House, which was demolished under archaeological supervision in 2007 as part of the Terminal 2 construction programme at Dublin Airport.

13.3.3.3 Cartographic Sources

The area around Turnapin Great is far outside the environs of the medieval city of Dublin and is therefore not shown on the earliest maps of the city and county. It is, however, shown on several 18th and 19th century maps of north county Dublin.

Down Survey of the Barony of Coolock, c. 1656

On this early 17th century map (Figure 13.2), Corballis, Cloghran and Dardistown townlands are shown within the *'Parrish of Cloghran'.* A structure shown within Corballis is likely to represent the earliest phase of Corballis House. Turnapin Great townland is not shown on this map; the area appears to be located within a parish named *Dubber Finglas*. The parish map (not shown) is similarly lacking in detail, though it does name 'Tobber bonny', referencing either the holy well or perhaps the nearby bridge (which is so-named on Rocque's more detailed map a century later).

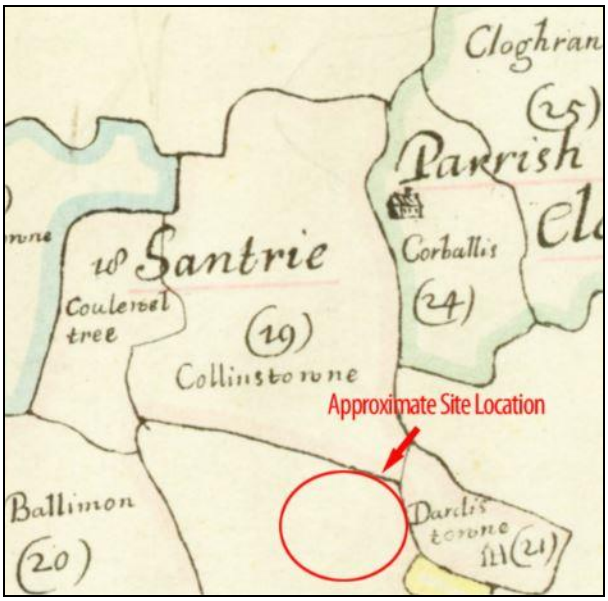


Figure 13.2 Down Survey map of the Barony of Coolock, c. 1656

Rocque's map of the County of Dublin, 1760

Turnapin Great is not named on this early map (Figure 13.3), though it is possible to approximate its location using other features on the map.

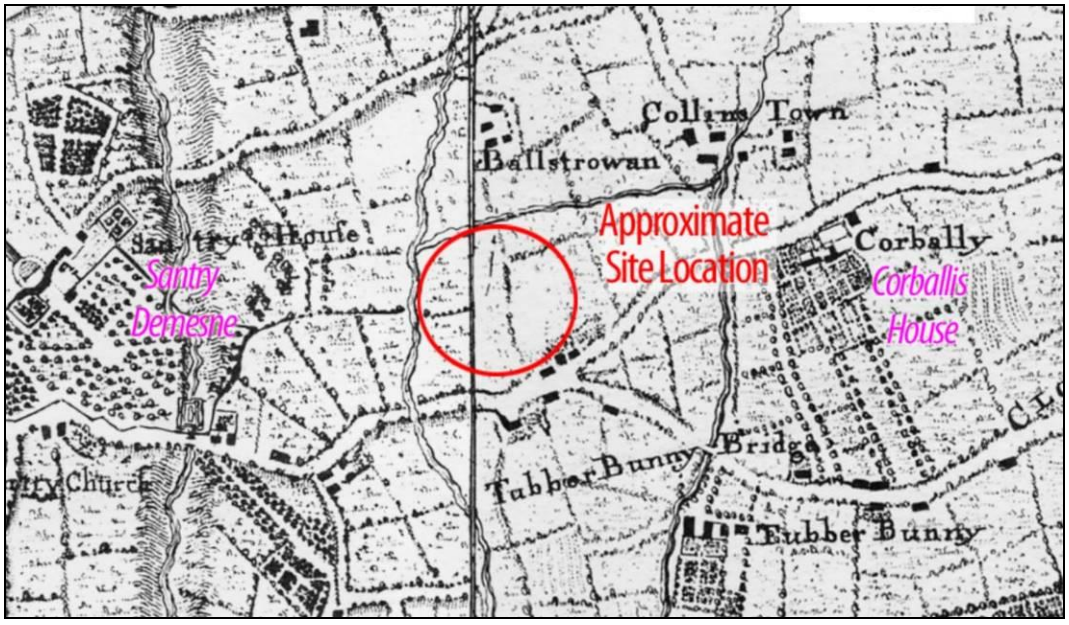


Figure 13.3 Rocque's map of County Dublin, 1760

Ballystruan ('*Ballstrowan*') townland is shown with a house and associated structures on its lands. Dardistown is not named but its location is shown by the small roadside settlement at the fork in the road. The designed landscape associated with Santry House is depicted to the south, with Corballis House to the east ('*Corbally*'). '*Tubber Bunny Bridge'* and '*Tubber Bunny'* are named to the north-east. The approximate site location are located in an area bounded to the west and south by watercourses; the lands are rural and subdivided into fields, there are no structures or features indicated within the lands. Several structures are depicted on either side of the road,

just south of the fork, two of which are likely to represent the thatched cottages still present on either side of the Swords Road.

Taylor's map of the Environs of Dublin, 1816

In Taylor's map of 1818 (not shown) *'Ballstrown'* and Dardistown are again shown. Turnapin is marked on the map to the east of the Great Northern Road, where Turnapin Little is today. The watercourses shown on the earlier map are indicated, there are no features in the study area.

Ordnance Survey six-inch map 1843 and revised editions

The 1843 Ordnance Survey map shows the site divided into several fields of irregular shapes and sizes (Figure 13.4).

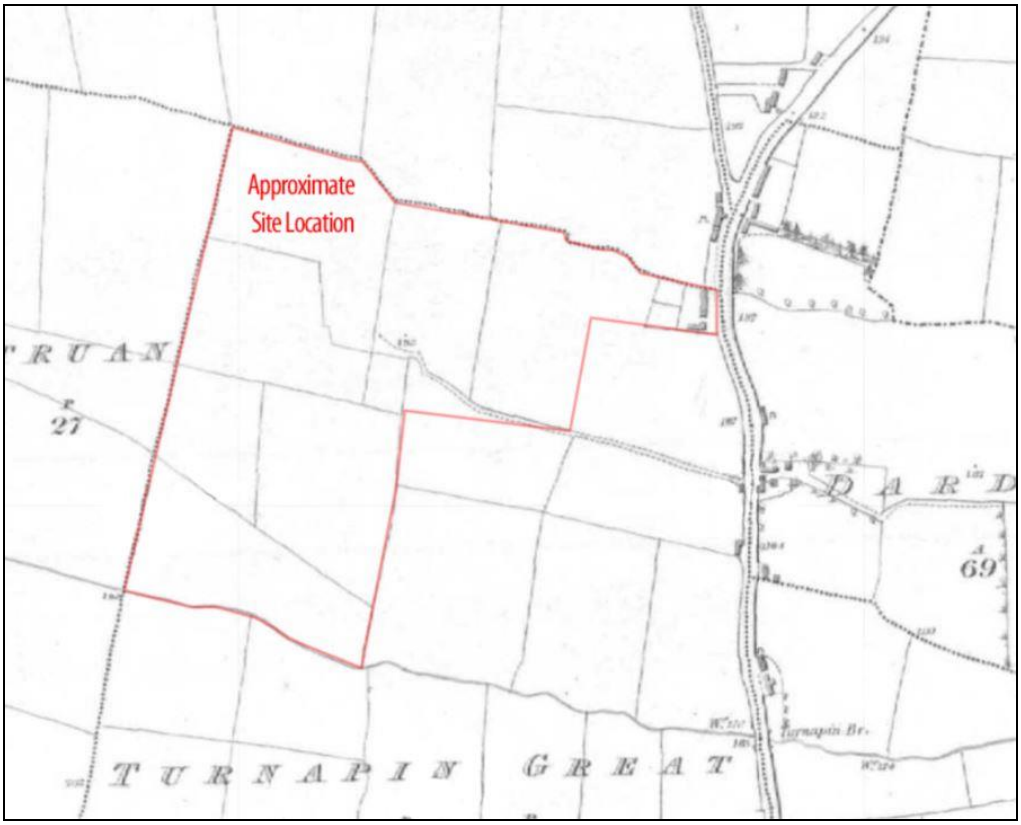


Figure 13.4 First edition Ordnance Survey six-inch map, 1843

The site is bounded to the west by the Ballystruan / Turnapin Great townland boundary; this was indicated on the earlier map as a stream and appears on this map as a simple field boundary indicating that some land improvements / drainage works have taken place. The site is bounded to the north by the Collinstown / Turnapin Great townland boundary; the irregular line of the boundary suggests that it is formed by a small watercourse. The site is bounded to the south by the Turnapin River and to the west by fields and the Swords Road. There is a roadside structure in the easternmost field, it is linear in plan and orientated north-south, with a smaller structure (possibly an outbuilding) to the south of it. Two small paddocks lie to the west of the structures. Further south of these structures, a field access path runs from the main road into the fields.

On the revised 1872 25-inch edition this path has been removed and a new access road runs along the same boundary that gives the site its shape today, possibly indicating a change in land ownership at this time. The small farmstead is still present, with a third, larger building now occupying the rear of the yard (Figure 13.5).

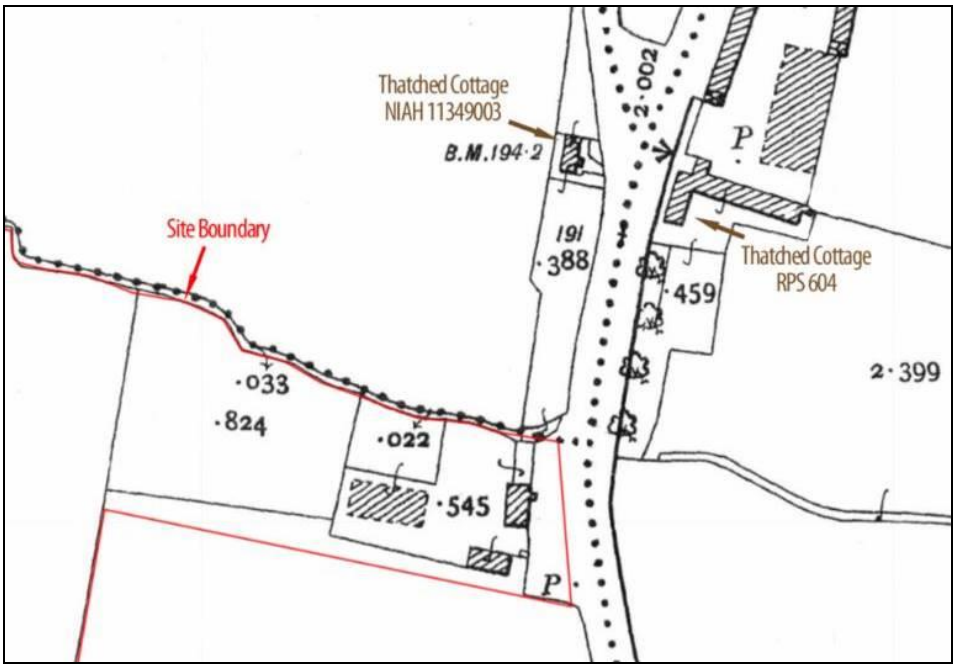


Figure 13.5 Revised edition Ordnance Survey 25-inch map, 1872

The two thatched cottages that still stand on either side of the Swords Road c. 75m north of the proposed development site are also depicted on the OS historic maps, two of several structures clustered around the fork in the road (Figure 13.5).

13.3.3.4 Field Inspection

The study area is a fully operational car park facility (Plates 13.1 & 13.2), the Quickpark Long Stay Carpark. To the north and west there are greenfields, to the east playing fields, a hotel and the Swords Road (the R132 or Old Airport Road). The entrance to the site is off the Swords Road, with a broad entrance road flanked by landscaped grass areas, a canopied access gates and single-storey office and service building.

Plate 13.1 View of existing car park, facing west

The site has an existing hardcore surface subdivided by stone kerbing with associated services. It is bounded on all sides by metal fencing on a concrete bank. The bank runs parallel to the Collinstown / Turnapin Great townland boundary,

which is formed by a deep ditch c. 3m in width and is overgrown with thorn and bramble. The western and southern boundaries are similar in make-up. No features of an archaeological, architectural or cultural heritage nature or potential were identified during the field inspection.

Plate 13.2 View towards canopied entrance structure and office, facing west

Plate 13.3 View southeast from protected structure (RPS 604), towards car park

Neither of the thatched cottages on the Swords Road has a clear line of sight to the entrance of the car park. The setting of both dwellings is immediate and constrained to their respective plots by the modern development alongside. Both cottages add significantly to the character of this part of the Swords Road, particularly the larger property on the east side of the road (RPS 604), with its well-maintained garden and boundary walls (Plates 13.4 to 13.7). They present a welcome contrast to the busy road and cluttered streetscape. The Carlton Hotel and Tyre Centre which stand to either side of the existing car park entrance dominate the view south-westwards

from the protected structure, with only a small segment of the existing bright green canopy visible (Plate 13.3). No part of the existing site is visible from the smaller thatched cottage on the west side of the road.

Plate 13.4 View northeast towards protected structure (RPS 604) from car park entrance

Plate 13.5 Protected structure (RPS 604)

Plate 13.6 View of thatched cottage on west side of Swords Road (NIAH 11349003)

Plate 13.7 Thatched cottage on west side of Swords Road (NIAH 11349003)

13.4 Characteristics of the Proposed Development

Permanent permission for the continuation of use of an at-grade long term car park (comprising c.6,122 car parking spaces - *reduced from the permitted 6,240 spaces to accommodate a new entrance building)*, demolition of existing single-storey office and canopy structure, relocation of existing maintenance shed and the construction of a new part three-storey car park entrance building comprising office space, with new car park barriers and ticket machines together with premium car parking on lands known as the Quickpark Car Park, Turnapin Great, Swords Road (Old Airport Road), Santry, Co. Dublin. The lands are currently used for the same purpose under and in accordance with temporary planning permissions.

The proposed development includes ancillary infrastructure and facilities, as follows: existing internal circulation road; hard-standing; lighting; boundary fencing; bus shelters; CCTV cameras; signage; culverts; landscaping works; and all ancillary works necessary to facilitate the development erected under and in accordance with temporary planning permissions. Minor revisions to the granted layout is sought to accommodate the new entrance building and retention permission is sought for the tarmacadam surface providing internal premium car park. Access to the car park is from a previously permitted signal controlled junction on the Swords Road (Old Airport Road) with turning lanes and directional signs with revisions to the entrance barriers proposed to accommodate the new entrance building. The total site area for the proposed development is 16.9 hectares (41.8 acres).

13.5 Potential Impact of the Proposed Development

There are no recorded archaeological sites (RMP / SMR sites), stray finds or protected structures (RPS sites) within the proposed development area. The nearest recorded archaeological sites were identified during archaeological investigations in the greenfields immediately west of the car park in Ballystruan townland and were added to the SMR for inclusion in the next revision of the RMP. They comprise a probable cluster of cremation pits (DU014-120) and a probable early medieval enclosure (DU014-121), situated c. 170m & c. 190m respectively from the western car park boundary.

The archaeological investigations yielded soils and features of archaeological interest dating to the Bronze Age and to the early medieval period; the sites remain in situ and have not yet been fully excavated. Their presence indicates the potential that similar features would have existed in the car park area. Crucially, however, the footprint of the proposed development site has been previously stripped of topsoil and developed as a car park, with an existing entrance canopy structure and single-storey office and maintenance shed. Historic mapping and aerial imagery also indicates that the easternmost part of the site (the present entrance off the Swords Road) was occupied by a farmstead from at least the early 19th century until the later 20th century. This degree of disturbance across the entire site considerably lowers the potential for archaeological discovery in the area as a result.

There are two late 18th / early 19th century thatched cottages, on either side of the Swords Road c. 75m from the entrance of the car park. The dwelling on the east side of the road is a protected structure (RPS 604) and the second is listed in the NIAH (Ref. 11349003), with a regional rating. Neither of these properties has been physically impacted by the operating car park. The proposed entrance building and landscaping will be an improvement over the existing situation, representing a

positive change in the wider environs of the protected structure and the smaller thatched cottage that stands opposite it.

13.6 Remedial and Reductive Measures

No remedial or reductive measures, either prior to or during construction, will be required, as no significant impacts on archaeology, architectural and cultural heritage are predicted.

All recommendations made regarding the site will be subject to approval from the National Monuments Service, DCHG who will advise on any further remedial action that it may consider necessary.

13.7 Predicted Impact of the Proposed Development

Archaeological techniques comprising documentary and cartographic research and site inspection were employed in order to predict with a greater certainty the potential to reveal previously unrecorded archaeological features within this car park area. The area has been stripped entirely of topsoil and it is highly unlikely that any archaeological soils, sites or features that may have existed subsurface have survived.

No predicted impacts on archaeological, architectural or cultural heritage are envisaged within the development footprint.

13.8 Monitoring

The disturbance on site has significantly reduced or negated the archaeological potential within the development footprint and as such no archaeological monitoring will be required.

13.9 Bibliography

Adams, B. W. 1881. 'Antiquarian Notes *etc*. of the Parishes of Santry and Cloghran, Co. Dublin' in *Journal of the Royal Society of Antiquaries of Ireland* 15, Part III, 482–98

Ball, F.E. (1902) *A History of the County of Dublin*, Volume I, Dublin.

Bence-Jones, M. (1978) *Burke's Guide to County Houses: Vol. 1, Ireland*, Burke's Peerage Ltd.

Lewis, S. ([1837] 1970) *A topographical dictionary of Ireland comprising the several counties, cities,* Kennikat Press, New York. Facsimile reprint of 1837 edition.

Joyce, W. S. (1912) *The neighbourhood of Dublin*, Hughes & Hughes, Dublin.

Department of Environment, Heritage and Local Government National Monuments Section, *Record of Monuments and Places Files*

Frazer, W.O., I. Ericsson and C. Eriksson. 2007. *Archaeological Monitoring: Eastlands Consolidation Compound, Dublin Airport, Toberbunny and Stockhole tds, Co. Dublin* (Licence 07E0132ext). Unpublished report, Margaret Gowen & Co. Ltd

Frazer, W.O. and J. Ryan. 2007. *Archaeological Test Excavation: Eastlands Consolidation Compound, Dublin Airport Terminal II, Toberbunny and Stockhole tds, County Dublin* (Licence 07E0132). Unpublished report, Margaret Gowen & Co. Ltd

Frazer , W.O. (2009) *Metro North, Assessment Report on the Results of Advance Archaeological Test Trenching, Testing Area 10, Ballystruan townland, Co. Dublin, RPA ref: (MN103) and (MN104) Metro North Alignment to Construction Compound 8 (South Portal Tunnel)*

http://www.rpa.ie/Documents/Archaeology/Metro_North/17.%20Advance_Archaeological_Testing_Area_10.pdf (accessed 12-03-2011)

Healy, P. (1975) *Third report on monuments and sites of archaeological interest in County Dublin*, An Foras Forbartha Teo.

Kilfeather, A. (1989) *The archaeology of Dublin Airport: a survey,* Aer Rianta (unpublished)

McCullough, N. and Mulvin, V. (1987) *A Lost Tradition: the nature of architecture in Ireland*. Dublin: Gandon Editions.

Nolan, D. (2000) *The Story of Corballis House*, Aer Rianta, Dublin

O'Donovan, E. (2006) Environmental Impact Statement: Archaeology, Dublin Airport Terminal 2, Co. Dublin, Margaret Gowen & Co. Ltd. (unpublished)

Oram, H. (1990) *Dublin Airport: A History*, privately published booklet.

Simms, A. and Fagan, P. (1992) 'Villages in county Dublin: their origins and inheritance' in *Dublin City and County: From Prehistory to Present*, ed. Aalen, F. H. A. and Whelan, K., Geography Publications, Dublin

13.9.1 Websites

www.archaeology.ie
www.excavations.ie
www.logainm.ie
www.maps.osi.ie
www.rpa.ie
www.buildingsofireland.ie
www.downsurvey.tcd.ie
www.map.geohive.ie

13.10 Figures

Figure 13.1 Site location map showing study area and RPS sites

Figure 13.2 Down Survey, The Barony of Coolock, c. 1656

Figure 13.3 Rocque's Map of the County of Dublin, 1760

Figure 13.4 First edition Ordnance Survey six-inch map, 1843

Figure 13.5 Revised edition Ordnance Survey 25-inch map, 1872

13.11 Plates

Plate 13.1 View of existing car park, facing west

Plate 13.2 View towards canopied entrance structure and office, facing west

Plate 13.3 View southeast from protected structure (RPS 604), towards car park

Plate 13.4 View northeast towards protected structure (RPS 604) from car park entrance

Plate 13.5 Protected structure (RPS 604)

Plate 13.6 View of thatched cottage on west side of Swords Road (NIAH 11349003)

Plate 13.7 Thatched cottage on west side of Swords Road (NIAH 11349003)

13.10 Appendices

Appendix 13.1 Summary of Relevant Legislation

Appendix 13.2 Glossary of Impact Assessment

Chapter 14 – Interactions

14.1 Introduction

The matrix incorporated in Table 14.1 below, inter-relates Chapters 3.0 to 13.0 of the Environmental Impact Assessment Report to the various impacts referred to in the relevant Environmental Impact Assessment Regulations.

14.2 Interactions

Listed below are the interactions between the various significant environmental impacts generated by the proposed development:

Table 14.1 Interactions Identified in the EIAR

No	Heading	Human Beings	Flora and Fauna	Land, Soil & Geology	Water	Air	Noise	Climate	Landscape	Transport	Cultural/ Heritage
3.0	Planning & Development Context										
4.0	Human Beings	✔		✔		✔	✔		✔	✔	
5.0	Flora & Fauna			✔	✔				✔		
6.0	Land, Soil & Geology	✔	✔		✔				✔		
7.0	Water		✔								
8.0	Air	✔					✔	✔		✔	
9.0	Noise	✔								✔	
10.0	Climate	✔	✔							✔	
11.0	Landscape and Visual Amenity	✔	✔								
12.0	Transportation	✔				✔	✔	✔			
13.0	Cultural, Archaeological and Architectural Heritage										

14.2.1 Human Beings/Human Beings

The human being content of this application will impact on the existing environment in terms of the provision of services facilities and employment.

Chapter 4 of this EIAR found that the impact on human beings as a result of the development will be positive or neutral in the general area of the proposed development. The Development will support the continued growth of Dublin Airport on lands that are in situ, serviced and easily accessible to the Airport. The continued use of the car park and a new entrance office building ancillary to the car park will help maintain current employment in the area.

14.2.2 Human Beings/Soil

The EIAR has found that provided appropriate protective measures are taken whilst construction and demolition works are ongoing and during transport of soil and spoil,

any potential impacts on soils and geology in the area will be temporary and limited in extent, and as such no significant adverse impacts on the soils and geology of the subject lands are envisaged. The proposed development provides for minor excavation works with the majority of the proposed development in situ.

There is potential for dust generation during demolition/site clearance and excavation, and construction works which under dry conditions could lead to localised dust impacts for the properties proximate to the subject site. However, the implementation of the planned on site management controls will ensure that no significant adverse impacts will accrue for adjoining local residents or occupants of the first phases of the development.

14.2.3 Human Beings/Air

Dust emissions may arise during the demolition/site clearance and excavation, and construction works phase. In order to ensure that any dust nuisance is minimised, a series of mitigation measures have been set out in Chapter 8.0. If the construction contractor adheres to good working practices and dust mitigation measures, the levels of dust generated will be minimal and are unlikely to cause an environmental nuisance.

No project specific mitigation measures have been identified for the operational phase of the development but emissions of pollutants from road traffic can be controlled by either controlling the number of road users or by controlling the flow of traffic. A mobility management strategy is being implemented for Dublin Airport which promotes a modal shift to more sustainable forms of transport. Notwithstanding this, the proposed development seeks a minor reduction in the number of car parking spaces provided on site which will have a positive impact on current conditions. In light of the above, emissions arising as a result of any traffic associated with the proposed development is unlikely to impact on air quality standards.

14.2.4 Human Beings/Noise

There will be some localised temporary adverse impacts in relation to noise during the demolition and construction phase of the development. However, these will be localised, intermittent and of limited duration and can be mitigated through the use of appropriate noise control procedures. The implementation of these noise control and best practice procedures will reduce noise impacts on the surrounding area.

The assessment of noise levels arising from operations at the subject site has shown that no mitigation is required for either noise or vibration at the site during the operational phase of the development. The proposed development seeks a minor reduction in the number of car parking spaces provided on site which will have a positive impact on current conditions.

14.2.5 Human Beings/Landscape and Visual Amenity

The subject lands are characterised as having ‘low lying agricultural type’ with low sensitivity to development, and the EIAR considered that the proposed development

has limited potential for significant landscape and visual impact. Chapter 11 indicates that the construction phase of the proposed development will have little or no impact on the local landscape character. No significant, negative visual impacts will arise.

During the operational phase, it is considered that the proposed development will generally be viewed in the landscape as being in-keeping with the trend and style of existing and future employment development in the area. The proposed development seeks to improve the visual aesthetic of Quickpark particularly when viewed by pedestrians and passing vehicles from the Swords Road (R132) and is considered a positive in the context of current conditions. There will be an imperceptible impact in the medium term on the local landscape.

Therefore, the significance of the landscape and visual impact of the proposed development will be positive as the landscape and environs matures over time.

14.2.6 Human Beings/Transport

The traffic impacts and the level of traffic generated at the R132 Junction by the use of the car park have been calculated and are considered relatively low. As a result, it is deemed that no mitigation measures are required.

No specific monitoring proposals are considered necessary during the operation of this development other than normal monitoring undertaken by Fingal County Council.

The transportation objectives of the development are based on the principle of providing parking facilities to serve the growth of Dublin Airport which are served by excellent bus services and cycle/pedestrian connectivity to the Airport. The existing shuttle bus services will connect to Dublin Airport and this will result in a positive interaction between Human Beings and Transportation, as the development will facilitate the use of sustainable forms of transportation.

14.2.7 Flora and Fauna/Soils

Minor movement of soils during the construction phase of the proposed development e.g. landscaping works, may result in minor temporary disruption to biodiversity. However, no disturbance to nesting birds, foraging bats, Irish Hare or other species found on the site will occur. No effects to any of the hedgerow habitats will occur as no works are planned. There will be no increase in the level of artificial noise or light on the site. All habitats are of hard standing or low value amenity grassland. There will be no effects to biodiversity from this aspect.

14.2.8 Flora and Fauna/Water

The drainage scheme proposed is based on Sustainable Urban Drainage Systems (SUDS) to improve the water quality of the surface water runoff ensuring that there is no impact on aquatic flora and fauna. Good site management practices will also ensure that pollution to existing watercourses, does not occur during the construction

and operation phases. No negative effects to biodiversity are predicted to occur due to the continuation of use of these lands.

14.2.9 Flora and Fauna/Landscape and Visual Amenity

The existing flora on the site is limited and not of any general merit. The body of the site is entirely composed of buildings and artificial surfaces. The provision of new landscape planting, together with the carefully planned use of the existing resources at the subject site and its future management will enhance the appearance of the landscape at this location and make an overall positive contribution.

14.2.10 Land, Soil & Geology/Water

Ground clearance works may give rise to accidental spillage/contamination of local watercourses. The removal of topsoil during earthworks and the construction of of a new building may expose subsoil to weathering and may result in the erosion of soils, particularly during adverse weather conditions. Storm water runoff from the surface of the excavated areas may result in silt discharges to local streams. Accidental oil or diesel spillages from construction plant and equipment, in particular at refuelling areas, may result in oil contamination of the soils and underlying geological structures. However, appropriate mitigation measures are specified in order to minimise and prevent the accidental release of hazardous material to soil and waters. Thus, no significant adverse impacts are envisaged.

14.2.11 Air/Transport

Emissions from motor vehicles accessing the proposed development and using the proposed new roads within the development are not anticipated to have a significant adverse impact on air quality in the area.

Traffic-related air emissions during the operation phase may generate higher quantities of air pollutants when compared to the existing traffic volumes. Construction related dust at these properties is likely to result in a ‘Temporary Slight Adverse’ impact. Where dust related impacts are anticipated avoidance and mitigation measures will be put in place to reduce the impact level.

14.2.12 Air/Climate

Construction activities have the potential for greenhouse gas emissions including the use of construction materials, materials transport and construction machinery. Greenhouse gas emissions from the operational phase of the scheme will most likely arise as a result of increased traffic volumes associated with the subject site in addition to space heating and energy use. The design of the construction phase can be proactive in mitigating potential greenhouse gas emissions. As a mitigation measure it is proposed that a carbon foot-printing exercise is carried out during construction to assist in the identification of low carbon products from local sources to minimise emissions of greenhouse gases. There will be no significant effect in this regard as a result of the proposed development.

14.2.13 Noise/Human Beings

Temporary minor increases in noise may be generated as a result of the construction of the new building and with construction traffic but it will be short term, temporary and transient in nature.

14.2.14 Noise/Transportation

Temporary minor increases in noise may be generated as a result of construction traffic but will be short term and transient in nature. The operation of the car park will be similar to the existing operation of same. The traffic associated with the proposed development scheme is therefore not expected to give rise to any significant noise nuisance in the area.

14.2.15 Climate/Flora and Fauna

The development will have no effect on climatic conditions that would be sufficient to affect animal populations on or in the vicinity of the site.

14.2.16 Transport/Flora and Fauna

While traffic associated with the construction and operation stages may disrupt fauna, impacts are unlikely to be significant.

14.2.17 Transport/Climate

The transport emissions from the proposed development are largely dependent on the vehicles employed by users and the distances travelled. Transport mitigation of GHG emissions are primarily delivered by EU legislation to ensure an ongoing reduction in emissions per car. Other national initiatives to reduce emissions include fiscal measures to promote the use of electric vehicles and the biofuels obligation scheme. During the construction phase mitigation measures to minimise CHG emissions will be implemented. No monitoring is deemed necessary due to the insignificant impact of the development on climate.

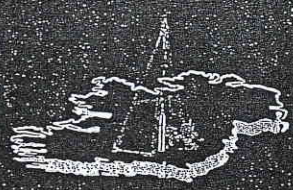
14.3 Summary

The EIAR has identified potential for interactions between a range of factors identified in Table 14.1. These interactions require the implementation of suitable mitigation measures to ameliorate the impact of the development on the environment. This EIAR has found that subject to the full implementation of the various mitigation measures specified by the EIAR team, the development will have no significant negative impact on the environment.

EIAR Appendices

Appendix 6.1

IGSL Report on Percolation Tests



IGSL

Irish Geotechnical Services Ltd.

Initial

Report on Percolation tests
at
Santry - Turnpin Great
on behalf of

Geotechnical Report

Industrial Estate, Newbridge, Co. Kildare.
Tel: 045-431088/433306 Fax: 045-433145
SITE INVESTIGATION & GEOTECHNICAL SPECIALISTS

Report on Percolation tests at Santry - Turnpin Great on behalf of John Moylan & Associates

Report on Percolation Tests
for
Effluent Treatment
at
Santry - Turnpin Great
(John Moylan and Associates)

Report No. 5704 Date. July, 1999

I Introduction

It is understood that a condition of planning permission for the proposed residential development is that effluent should be treated within the confines of the site. Tests have , therefore, been carried out to assess the percolation characteristics of the sub-soils in the vicinity of the proposed percolation area. Testing procedures were in accordance with NSAI SR6:1991.

This report describes the ground conditions and the testing procedures and relates the findings to percolation requirements.

II Fieldwork

A trial pit revealed 300 mm of topsoil overlying firm grey-brown very sandy gravelly clay

The pit was left open to obtain an accurate measurement of the standing water level. The pit remained dry.

Test holes were excavated for percolation testing in accordance with NSAI. SR 6:1991.

Test holes , 300 mm by 300mm , were excavated to a depth of 900 mm and water was poured into the holes to a depth of 300 mm to saturate the sub-soils prior to measurement of the percolation rate.

In the holes, the fall in water level was 15 mm and 25 mm over a period of 60 minutes.

Since these percolation rates are too slow for a conventional septic tank system, no further testing was carried out.

III Conclusions

To ensure adequate performance of a conventional septic tank in such ground conditions it is necessary to construct a percolation mound with soil which , when placed , will have a T-value in the range of 5 to 15. In accordance with Table 2 of SR6 this should be a fine or clayey sand or a very sandy clay. The minimum area of the mound should be 300 m2. and there should be at least a metre depth of material from the bottom of the lowest percolation trench to the original topsoil level.

Any existing topsoil should be retained.

As a precaution against mal-function of the artificial percolation area, a reserve percolation area should be provided . In addition , a natural outfall should be provided for the percolation area. With the approval of the local authority , discharge can be into a suitable water course.

Since the level of the dispersion pipes will be above natural ground level it will be necessary to raise the level of the houses to allow for gravity fall to the septic tank . Alternatively , the effluent can be pumped to the percolation area.

As an alternative to a conventional septic tank system consideration can be given to the use of an effluent treatment system such as Puraflo or Biocycle.

With the Puraflo system in low permeability soils , the treatment module is placed on a prepared mound of topsoil. This mound is generally 500 mm thick and 10 m2 in area. Stone drains are constructed under the mound to collect any residual effluent not dissipated within the mound. Collector drains carry the residual effluent to a suitable dispersion area or water course. Since this is treated effluent , discharge is generally approved by the local authority.

With the Biocycle system the treated effluent can also be pumped to a surface mound for dispersion through a system of drains or by surface irrigation through spray nozzles.

Since the exact requirements for these systems can vary depending on the ground conditions , ground water level and occupancy , the test results and house details should be forwarded to the manufacturers who will suggest a suitable design.

SEPTIC TANK - SITE SUITABILITY ASSESSMENT (SR6: 1991)

LOCATION: Old Airport Road, Santry - Turnpin Great
Date: 21/7/99

TRIAL PIT RECORD (2 metres deep or 1.5 metres below invert level of lowest pipe)

from	to	Soil Description
0	0.3	Topsoil
0.3		Grey-brown very sandy
	2.2	gravelly CLAY

Depth to water: None metres

Elapsed period: 2 hours

Percolation Tests

Weather conditions on day of test: Showery
Weather conditions in week preceding test: Showery

Test No. 1
Depth of test 900 mm
Saturation time: 60 mins
Depth of water: 300 mm

Fall in water level (mm)	Elapsed time
25	60
	test terminated

Time for 100 mm drop =

Time for 25 mm drop (mins) (T-value) =

Test No. 2
Depth of test 900 mm
Saturation time: 60 mins
Depth of water: 300 mm

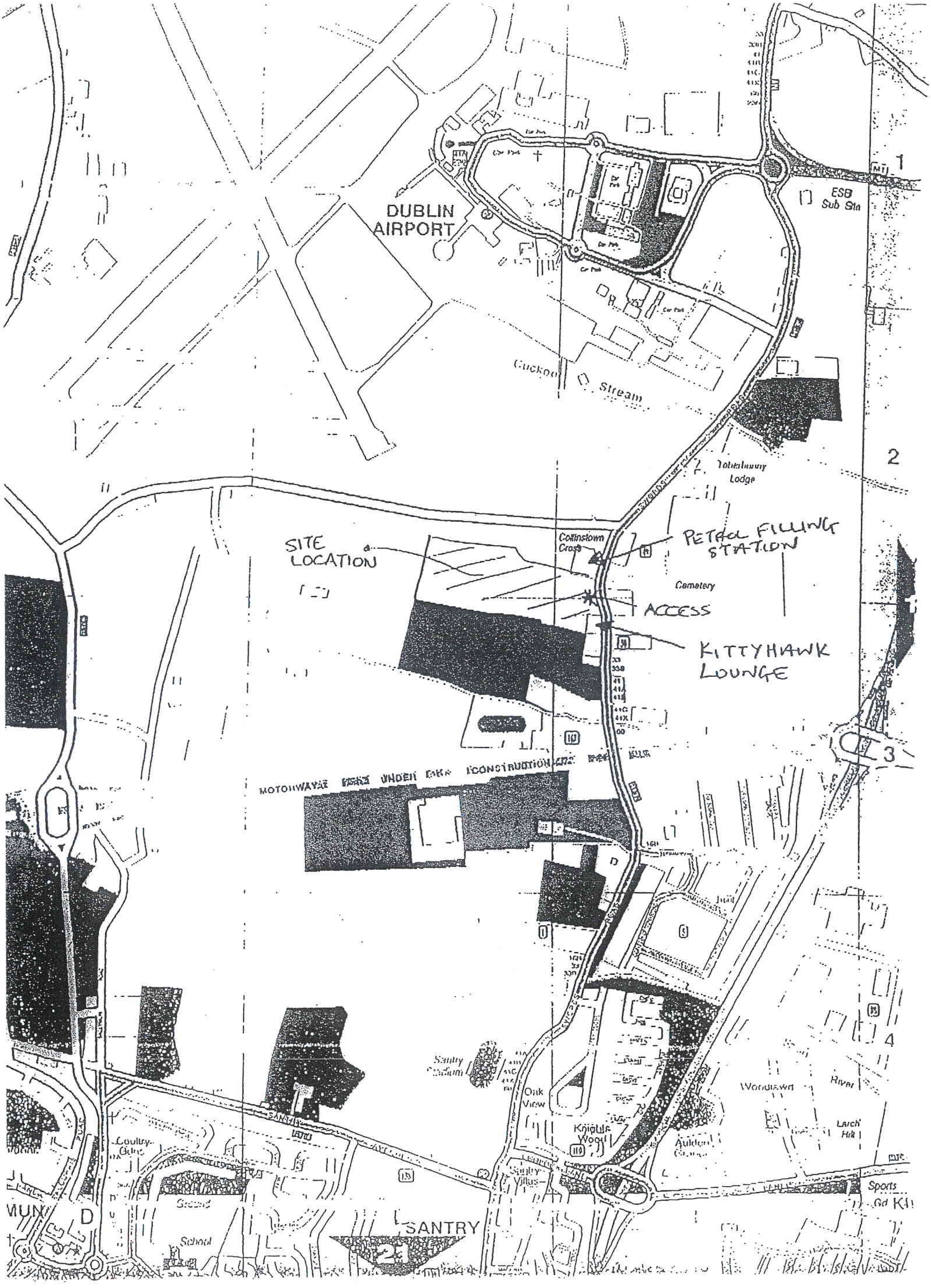
Fall in water level (mm)	Elapsed time
15	60
	Test terminated

Time for 100 mm drop =

Time for 25 mm drop (mins) (T-value) =

Av. T-value = 60 mins + Length of piping required = Failed

SR 6: 1991	T -value (mins)	Pipe Length (metres)	Certified by:
* T< 5	*5 to 10	30	IGSL
may be too fast	10 to 15	36	
** T > 30	15 to 30	48	
may be too slow	30** to 60	96	


DUBLIN AIRPORT
Cuckoo Stream
ESB Sub Stn
Collinstown Cross
Cemetery
SITE LOCATION
PETROL FILLING STATION
ACCESS
KITTYHAWK LOUNGE
Santry Stadium
Oak View
Knights Wood
Woodlawn
River
Larch Hill
Santry Villas
Coultry Gdns
School
SANTRY
Sports
1
2
3
4
21

Appendix 7.1

Water Quality Testing Report

Waterman Moylan
Engineering Consultants

Car Parking Facility at Turnapin Great, Swords Road, Co. Dublin

Water Quality Testing

September 2018

Waterman Moylan Consulting Engineers Limited
Block S, EastPoint Business Park, Alfie Byrne Road, Dublin D03 H3F4
www.waterman-moylan.ie

Waterman Moylan
Engineering Consultants

Client Name: Mr. Gerard Gannon
Document Reference: 15-194r.006
Project Number: 15-194

Quality Assurance – Approval Status

This document has been prepared and checked in accordance with
Waterman Group's IMS (BS EN ISO 9001: 2008, BS EN ISO 14001: 2004 and BS OHSAS 18001:2007)

Issue	Date	Prepared by	Checked by	Approved by
No. 1	21 September 2018	Stephen Dent-Neville	Mark Duignan	Mark Duignan

Comments

Waterman Moylan
Engineering Consultants

Disclaimer

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We disclaim any responsibility to the Client and others in respect of any matters outside the scope of the above.

This report is confidential to the Client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at its own risk.

Content

Figures

Tables

1. Introduction

1.1 Background of Development

This report has been prepared by Waterman Moylan on the instruction of Mr. Gerard Gannon, to investigate the quality of surface water runoff from the Quickpark car park at Turnapin Great, Swords Road. This report is being generated to accompany an Environmental Impact Assessment Report (EIAR) for the continued use of the car park as part of a permanent planning permission.

The car park is located approximately 1km south of Dublin Airport and is accessed from the R132 Swords Road.

The car park was designed in compliance with the 'Greater Dublin Strategic Drainage Study' (GDSDS); Sustainable Urban Drainage Systems (SUDS) were implemented to improve the water quality of the surface water runoff and to limit the discharge rate to a volume equivalent to its greenfield runoff.

In an attempt to replicate the original greenfield conditions, the car park was constructed using permeable gravel surfacing of 300mm of Clause 505 material on a layer of Teram 1000 geotextile. The permeable gravel surfacing also acts as a storage area for the retained surface water in storm conditions, and as a filter to improve the water quality of the discharges to the existing ditches.

1.2 Need for investigation

The car park drainage system has the potential to impact the quality of ground water and watercourses as a result of petrol, oil and other pollutant runoff from vehicles. This could have a detrimental effect on local ecology.

As such, it is important to periodically investigate the quality of surface runoff, to ensure that the Sustainable Urban Drainage Systems in place are adequately treating surface water entering the surrounding watercourses.

There are 6 no. outfalls from the car park that discharge to the surrounding ditch network. Each outfall has been provided with a silt-trap manhole, petrol interceptor and hydrobrake manhole to reduce hydrocarbon and other pollutant runoff, and to limit the surface water discharge rate to its natural Greenfield runoff rate.

2. Laboratory Testing Procedure

Test samples were taken on 24 April 2018 at eight separate locations: from five manholes within our site and three ditch locations surrounding the site, as illustrated in Figure 1, below.

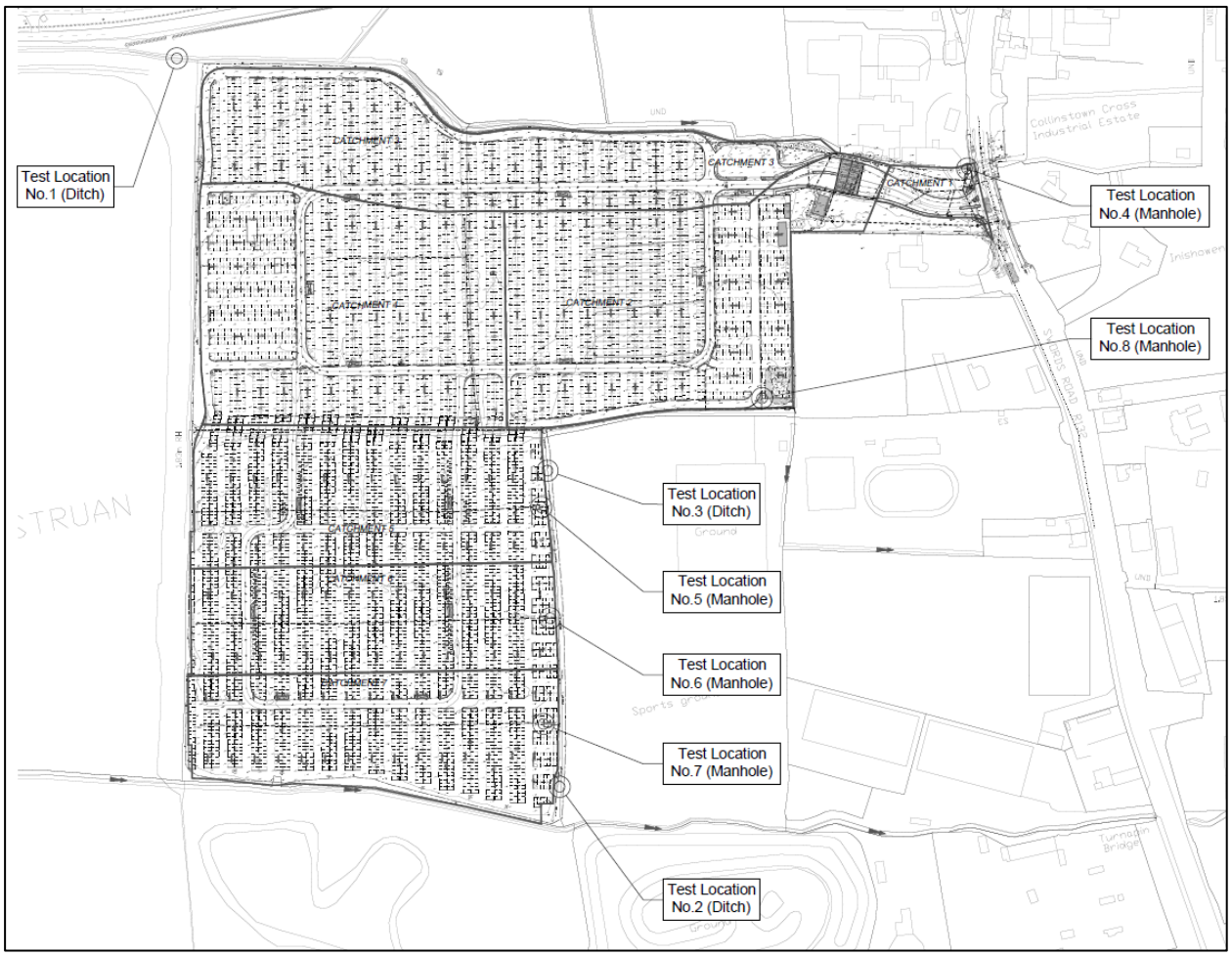


Figure 1 | *Sample Locations Map*

Each of the water samples taken were tested for a suite of water quality indicators, some of which are typical (such as B.O.D. and E. Coli) and others site specific (such as 6 split total petroleum hydrocarbons). The full range of parameters tested for were: total coliforms, E. coli, Biochemical Oxygen Demand (B.O.D.), Chemical Oxygen Demand (C.O.D.), pH, total suspended solids, conductivity, fats, oils and grease, anionic detergents and 6 split total petroleum hydrocarbons. The laboratory results for each of these parameters are discussed below.

All of the water samples taken are considered as Category A2 water, as defined in the *S.I. No. 294/1989 - European Communities (Quality of Surface Water Intended for the Abstraction of Drinking Water) Regulations, 1989*, hereafter referred to as the *European Communities Regulations (1989)*.

Categories are defined by the standard methods of treatment for transforming surface water into drinking water, as follows:

Category A1: Simple physical treatment and disinfection, e.g. rapid filtration and disinfection.

Category A2: Normal physical treatment, chemical treatment and disinfection, e.g. prechlorination, coagulation, flocculation, decantation, filtration, disinfection (final chlorination).

Category A3: Intensive physical and chemical treatment, extended treatment and disinfection, e.g. chlorination to break-point, coagulation, flocculation, decantation, filtration, adsorption (activated carbon), disinfection (ozone, final chlorination).

Limit values for each sample are based on Category A2 requirements.

3. Laboratory Testing Results

3.1 Parameter 1: Total Coliforms

Coliform bacteria can be found in the aquatic environment, in soil and on vegetation, and they are universally present in large numbers in the faeces of warm-blooded animals.

While coliforms themselves are not normally causes of serious illness, they are a commonly used indicator of the sanitary quality of water because they are easy to culture, and their presence is used to indicate that other pathogenic organisms of faecal origin may be present. Such pathogens include disease-causing bacteria, viruses, or protozoa and many multicellular parasites.

The EPA's *Parameters of Water Quality (2001)* and the *European Communities Regulations (1989)* each give a limit value of ≤25,000 MPN/100ml for Category A2 waters. All but one of the samples tested fell well below this limit. However, the total coliforms at sample location 8 were found to be in excess of 200,000 cfu/100ml. Note that the below graph is shown on a logarithmic scale (base 5).

Total Coliforms *Units: cfu/100ml Limit Value: 25,000 cfu/100ml*	
Testing Location	**Results**
1	397
2	446
3	3,000
4	387
5	50
6	90
7	149
8	>200,000

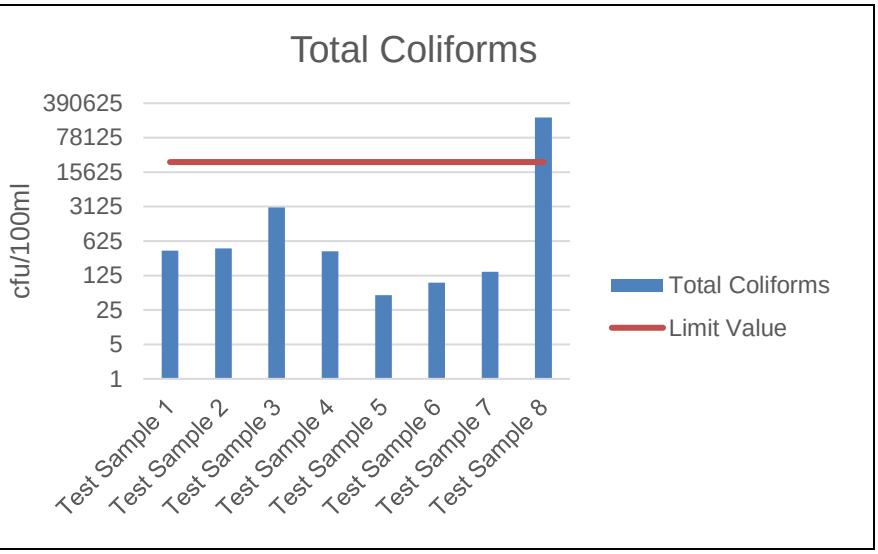


Figure 2 | *Total Coliforms Test Results*

The high levels of total coliforms identified at test location 8 may indicate that there may be a cross-connection directing foul water to this surface water manhole.

On foot of these results, a thorough foul water cross-connections investigation was conducted by Liffey Developments in August 2018. No cross connections were identified.

It is therefore considered more likely that the high result is due to animal faeces, and that the car park is not a likely cause.

Furthermore, with the proposed demolition of the existing buildings and the proposed construction of new entrance buildings, any foul water cross connection will be severed as part of the proposed development.

3.2 Parameter 2: Escherichia Coli (E. Coli)

Escherichia coli is a coliform bacterium that is commonly found in the lower intestine of warm-blooded organisms and is expelled into the environment within faecal matter. The bacterium grows massively in fresh faecal matter under aerobic conditions for 3 days, but its numbers decline slowly afterwards. E. coli is used as an indicator organism to test environmental samples for faecal matter due to this ability to survive outside the body for a limited amount of time.

Both the EPA's *Parameters of Water Quality (2001)* and the *European Communities Regulations (1989)* give a limit value of ≤5,000 MPN/100ml for Category A2 waters.

All of the samples tested indicated that E. coli presence is within acceptable limits, with none of the samples approaching the limit value.

E. Coli *Units: cfu/100ml Limit Value: 5,000 cfu/100ml*	
Testing Location	**Results**
1	40
2	367
3	1,921
4	0
5	10
6	40
7	20
8	0

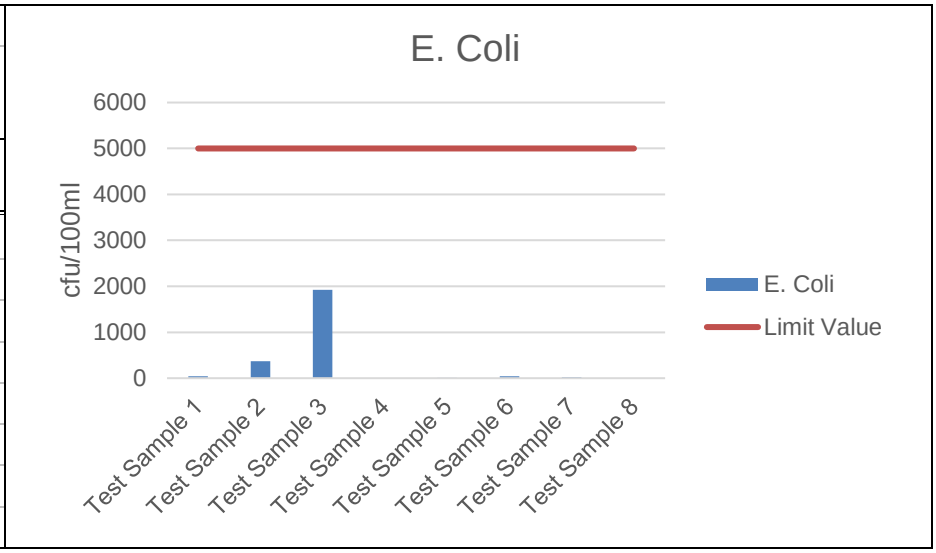


Figure 3 | *E. Coli Test Results*

As noted in Section 3.1, above, the low levels of E. coli indicate that any elevated coliform levels are not of faecal origin.

3.3 Parameter 3: Biochemical Oxygen Demand (B.O.D.)

Biochemical oxygen demand (B.O.D.) is the amount of dissolved oxygen needed by biological organisms to break down organic material. Bacteria present in water will break organic matter down to less complex organic substances and ultimately to simple compounds such as carbon dioxide and water. However, if the quantity of waste present is sufficiently large, the rate of bacterial uptake of oxygen will outstrip that at which the dissolved oxygen is replenished, and ultimately the receiving water will become anaerobic. Bacterial degradation of the waste will continue, but now the products will be offensive in nature – for example, hydrogen sulphide. Even if the uptake of oxygen is not sufficient to result in anaerobic conditions there will be other undesirable effects as the dissolved oxygen level falls, notably damage to fisheries and, ultimately, fish deaths.

The laboratory test results are expressed in milligrams of oxygen consumed per litre of sample during 5 days of incubation at 20°C. While there are no direct health implications, B.O.D. is used as an important indicator of overall water quality.

The *European Environmental Objectives (2009)* gives an acceptable 'Good Status' mean B.O.D. limit of ≤1.5 mg/l, with ≤1.3 mg/l classed as 'High Status' for river water bodies. However, both the EPA's *Parameters of Water Quality (2001)* and the *European Communities Regulations (1989)* allow for B.O.D. values of ≤5 mg/l for Category A2 waters.

Three of the samples tested were found to be above acceptable limits.

Total B.O.D.	
Units: mg/l O_2 *Limit Value: 5 mg/l O_2*	
Testing Location	**Results**
1	4.91
2	19.7
3	2.75
4	14.2
5	<2
6	<2
7	<2
8	11.8

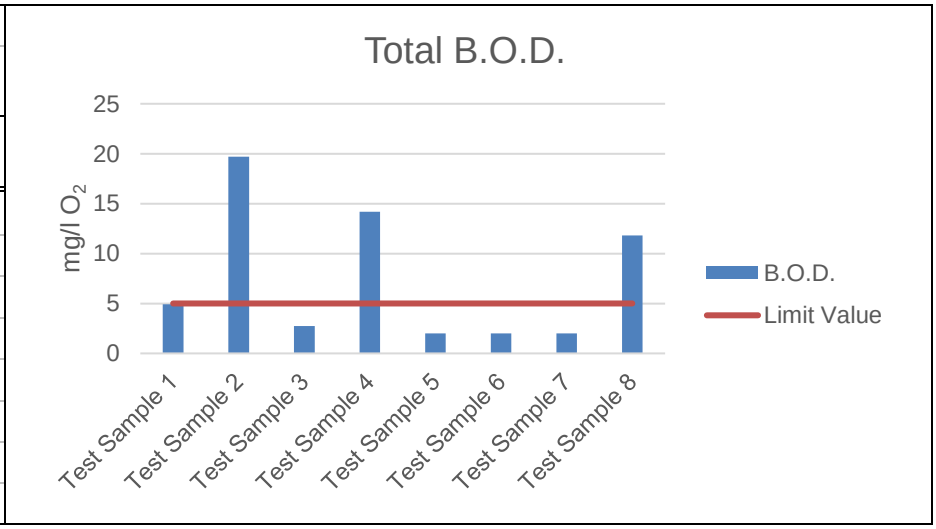


Figure 4 | *B.O.D. Test Results*

These results indicate high BOD in the outfall ditch to the south east of the car park, however all outfalls from the car park to this ditch has BOD levels below the allowable threshold.

The results also show high levels of BOD within the outfall manhole of catchment 1 (test location 4) which is the car park entrance road. Additional SuDS measures are proposed for this catchment so that the entrance road run off will drain to a filter drain or a swale before outfalling to the surrounding ditch network. The new entrance building will also be provided with a green roof and all down pipes will discharge to filter drains before connecting to the surface water network.

The results also show high levels of BOD at the Catchment 2 outfall which is the same outfall that had high levels of Total Coliforms. As noted above a thorough foul water cross-connections investigation was conducted by Liffey Developments in August 2018. No cross connections were identified.

It is therefore considered more likely that the high result is due to animal faeces or vegetation decay.

3.4 Parameter 4: Chemical Oxygen Demand (C.O.D.)

Chemical Oxygen Demand (C.O.D.) is not associated with any direct hazard implications; however, C.O.D. is an indicator of overall water quality. Neither the EPA's *Parameters of Water Quality (2001)* nor the *European Communities Regulations (1989)* provide limit values for A2 waters, though a limit value of 40 mg/l O_2 is given for A3 waters.

Laboratory test results taken at sample location 2 showed significantly elevated levels of C.O.D. The results generally correspond with those for B.O.D.

C.O.D.	
Units: mg/l O_2 *Limit Value: 5 mg/l O_2*	
Testing Location	**Results**
1	19
2	1,124
3	16
4	72
5	<15
6	<15
7	<15
8	52

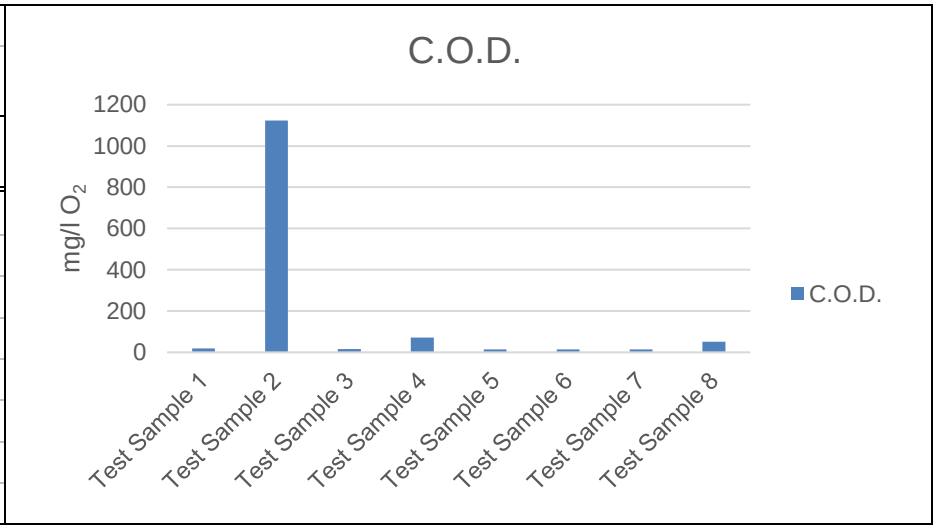


Figure 5 | *C.O.D. Test Results*

The results show high levels of COD at the Catchment 2 outfall which is the same outfall that had high levels of Total Coliforms and BOD. As noted above a thorough foul water cross-connections investigation was conducted by Liffey Developments in August 2018. No cross connections were identified.

It is therefore considered more likely that the high result is due to animal faeces or vegetation decay.

3.5 Parameter 5: pH

PH is the negative logarithm of the hydrogen ion concentration of a solution, and is thus a measure of whether the liquid is acidic or alkaline. The pH scale ranges from 0 (very acidic) to 14 (very alkaline). The range of natural pH in fresh waters extends from around 4.5, for acid, peaty upland waters, to over 10.0 in waters where there is intense photosynthetic activity by algae. While extremes of pH can affect the palatability of a water, the corrosive effect on distribution systems is a more urgent problem. The effect of pH on fish is also an important consideration and values which depart increasingly from the normally found levels will have a more and more marked effect on fish, leading ultimately to mortality. pH values also govern the behaviour of several other important parameters of water quality, including ammonia toxicity, chlorine disinfection efficiency, and metal solubility.

The *European Environmental Objectives (2009)* provides a lower limit pH value of 6.0 and an upper limit of 9.0 for hard water. The *Freshwater Fish Directive [78/659/EEC]* also provides a lower limit of 6.0 and an upper limit of 9.0, while the EPA's *Parameters of Water Quality (2001)* and the *European Communities Regulations (1989)* provide a guideline range of 5.5 - 9.0 for Category A2 waters.

Laboratory test results, illustrated in Figure 5, below, indicate that pH levels at all sample locations are within the normal range.

pH	
Units: pH Units *Limit Value: 6 - 9*	
Testing Location	**Results**
1	7.56
2	7.47
3	7.36
4	7.49
5	7.8
6	7.66
7	7.46
8	7.32

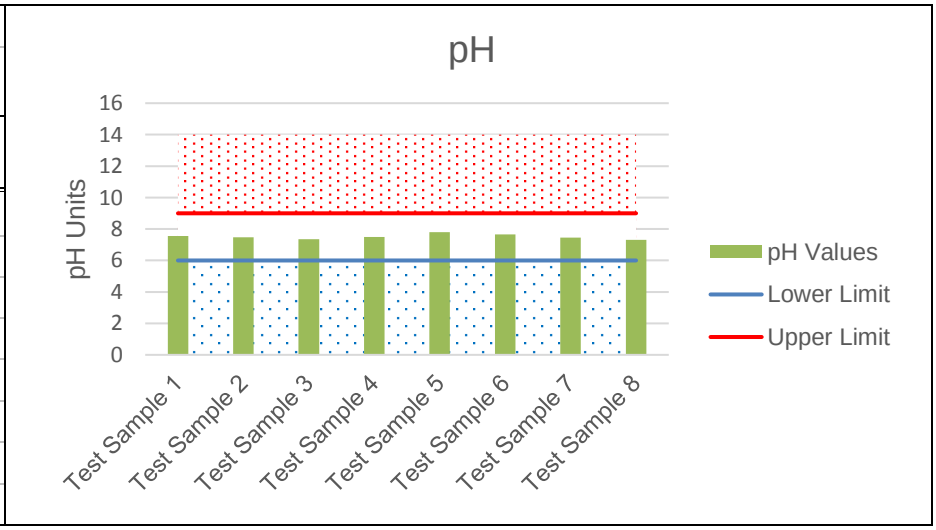


Figure 6 | *pH Test Results*

The pH levels are consistent, all falling within a narrow range from a low of 7.32 to a high of 7.8, with all samples found to be acceptable throughout the parking facility. The pH of surface water discharging from the site does not appear to be adversely impacted by the car parking facility.

3.6 Parameter 6: Total Suspended Solids

Matter which is suspended in quiescent water consists of finely divided light solids which may never settle or do so only very slowly. In flowing water, on the other hand, the solids which are kept in suspension by the turbulence may be settleable if the water is let stand. The significance of suspended solids in water is great: the solids may in fact consist of algal growths and hence be indicative of severely eutrophic conditions; they may indicate the discharge of washings from sandpits, quarries or mines; they will reduce light penetration in surface waters and interfere with aquatic plant life; they will seriously damage fishery waters and may affect fish life; they may form deposits on the bed of rivers and lakes which will in turn give rise to septic and offensive conditions; and they may indicate the presence of unsatisfactory sewage effluent discharges.

The EPA's *Parameters of Water Quality (2001)* and the *European Communities Regulations (1989)* give a limit value of ≤50 mg/l for Category A1 waters, but no limit for Category A2 waters.

The sample results show elevated levels of total suspended solids at sample locations 2 and 4, with all other samples within acceptable limits.

Total Suspended Solids	
Units: mg/l *Limit Value: N/A*	
Testing Location	**Results**
1	12
2	1,928
3	<8
4	152
5	<8
6	<8
7	<8
8	17

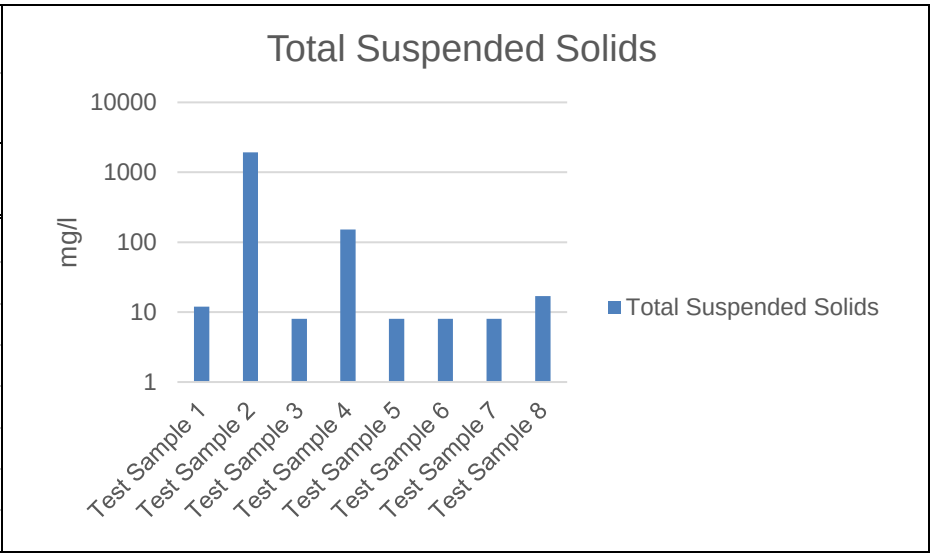


Figure 7 | *Total Suspended Solids Test Results*

The results indicate high suspended solids in the outfall ditch to the south east of the car park, however all outfalls from the car park to this ditch has low levels of suspended solids.

It should be noted that the water level in the ditch was low at the time of sampling. As such, the water samples taken were turbid with a high concentration of soil, and may not be an accurate representation of the typical runoff water quality from this location. It is expected that during times of higher runoff volumes the total suspended solids per unit of water in the ditch will be reduced.

3.7 Parameter 7: Fats, Oils and Grease

Fats, oils and grease (FOG) are frequently determined to be the cause of blockages in public drainage networks. These blockages often result in flooding of premises, environmental pollution of rivers and streams and can lead to excessive maintenance costs. When FOGs cool, they can congeal and accumulate in pipelines. Food preparation is the main source of FOGs in water systems, and the problem is most prevalent in areas where there are concentrations of food service establishments. However, lubricating oils, coolants and other automotive fluids can similarly affect water systems.

A guidance note published by the Environmental Protection Agency, relating to a European Union directive for "best available techniques not entailing excessive costs" (BATNEEC), recommends a limit value of 25mg/l for FOGs discharging to water. All of the water samples tested were found to be well below this threshold limit, as illustrated below.

Fats, Oils and Grease	
Units: mg/l *Limit Value: 25 mg/l*	
Testing Location	**Results**
1	<1
2	<1
3	<1
4	<1
5	<1
6	2
7	<1
8	6

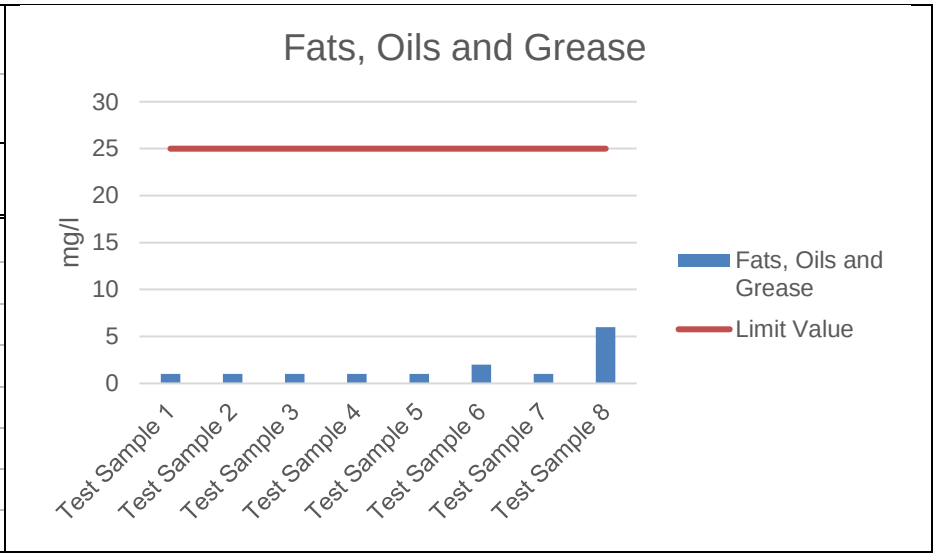


Figure 8 | *Fats, Oils and Grease Test Results*

The results indicate that fats, oils and grease are not an issue of concern in the surface water discharging from the site.

3.8 Parameter 8: Anionic Detergents

Anionic detergents are a major class of surfactants used in detergent formulations and are in widespread use. They are among the most widely disseminated foreign synthetic chemicals that may enter waste streams and the aquatic environment. They are harmful to humans, fish and vegetation, and can cause foams in rivers and effluent treatment plants, and can negatively impact aquatic ecosystems.

A limit of 0.5mg/l is typical for drinking water, with a limit value of 1mg/l for surface water runoff. All of the samples tested were found to be below this threshold limit, as illustrated in Figure 10, below.

Anionic Detergents	
Units: mg/l *Limit Value: 1 mg/l*	
Testing Location	**Results**
1	0.264
2	0.21
3	0.339
4	0.427
5	0.334
6	0.323
7	0.284
8	0.393

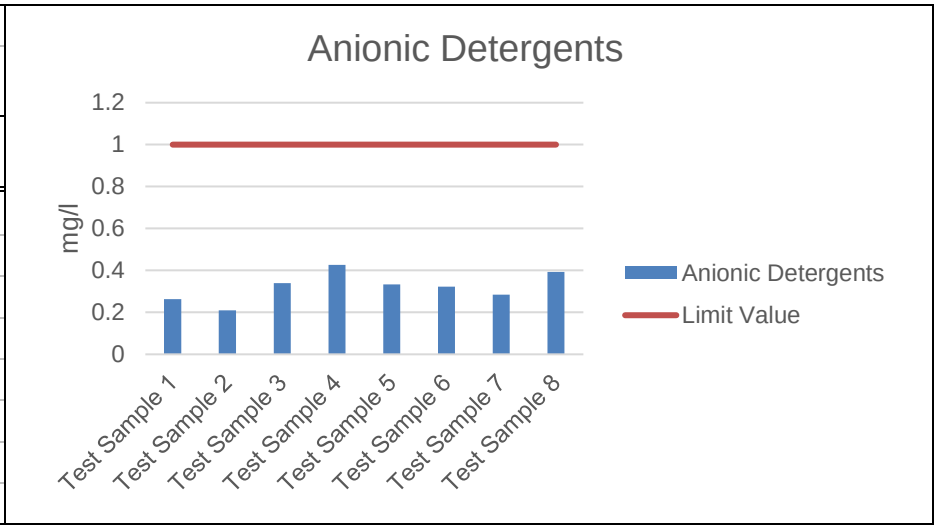


Figure 9 | *Anionic Detergents Test Results*

The above results indicate that anionic detergents are not a cause for concern at the site.

3.9 Parameter 9: 6 Split Total Petroleum Hydrocarbons

Hydrocarbon fuels are generally complex mixtures of compounds, including alkanes, alkenes and a range of aromatic compounds. Analysis of water samples for total petroleum hydrocarbons (TPH) measures the total concentration of all petroleum related hydrocarbons, expressing the results in terms of the concentration of hydrocarbon compounds within various carbon ranges. Petroleum hydrocarbons (PHC) are common site contaminants, but they are not generally regulated as hazardous wastes. Nonetheless, petroleum products must not form a visible film on the surface of the water or form coatings on the beds of watercourses and lakes, and must not impart a detectable 'hydrocarbon' taste to fish or produce harmful effects in fish.

A limit value of 200µg/l is given in the *European Communities Regulations (1989)* for dissolved or emulsified hydrocarbons (after extraction by petroleum ether). The World Health Organisation has set out a limit value for drinking water of 15,000µg/l for C6-C8 TPH and 300µg/l for C8-C16 TPH. The test results are tabulated overleaf in Table 2 and are illustrated below in Figure 11.

6 Split Total Petroleum Hydrocarbons (TPH6)								
Testing Location	**>C6-C8 Total** *µg/l*	**>C8-C10 Total** *µg/l*	**>C10-C12 Total** *µg/l*	**>C12-C16 Total** *µg/l*	**>C16-C21 Total** *µg/l*	**>C21-C40 Total** *µg/l*	**>C10-C40 Total EPH** *µg/l*	**C5-C10 Total GRO** *µg/l*
1	<10	<5	<5	<10	<20	<20	<20	<5
2	<10	<5	<5	<10	<20	<20	<20	<5
3	<10	<5	<5	<10	<20	<20	<20	<5
4	<10	7	7	16	32	76	138	7
5	<10	<5	<5	<10	<20	<20	<20	<5
6	<10	<5	<5	49	153	32	234	<5
7	<10	<5	<5	<10	<20	<20	<20	<5
8	<10	<5	<5	18	44	98	160	<5

Table 1 | *6 Split Total Petroleum Hydrocarbons Test Results*

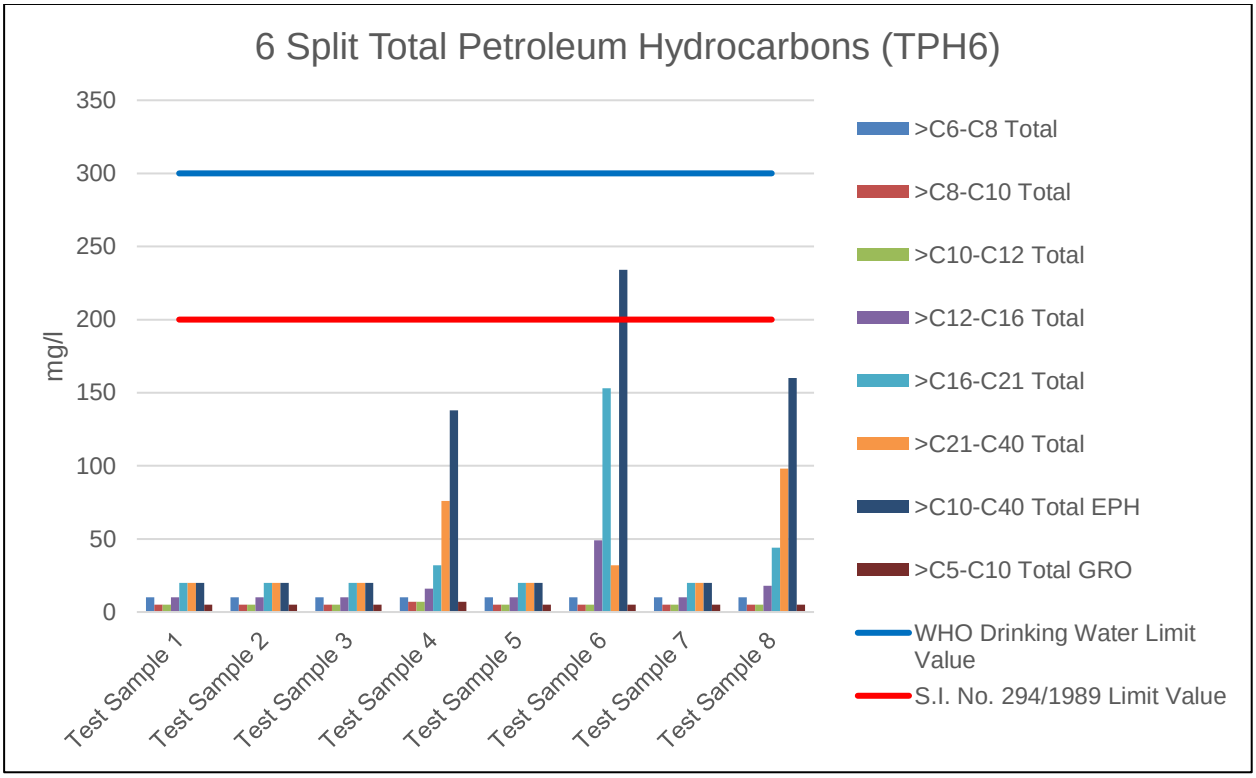


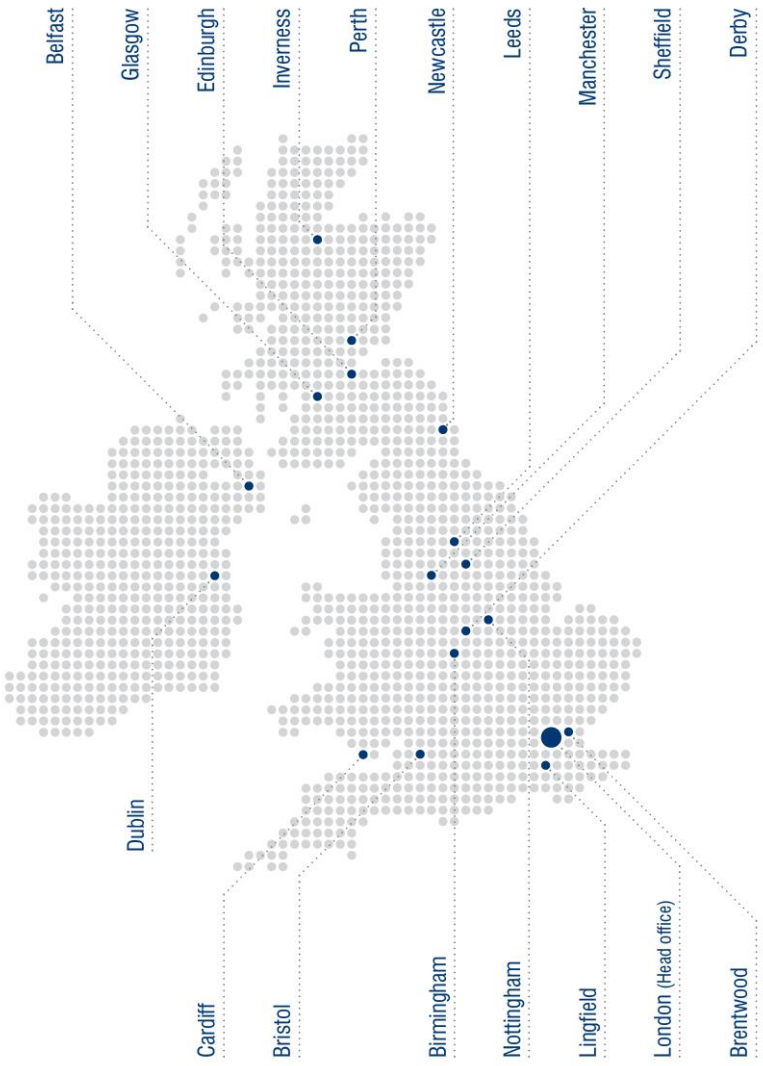
Figure 10 | *6 Split Total Petroleum Hydrocarbons Test Results*

All of the samples fell below the drinking water limit values, with one sample from testing location 6 exceeding the 200µg/l limit set out in the *European Communities Regulations (1989)*. Despite this slightly high result, there is no adverse effect to the surrounding water bodies as the downstream ditch was not affected. This is confirmed by the test results from test location 2, taken from the ditch immediately downstream of testing location 6. Results from within the ditch at test location 2 indicate that the TPHs are below the drinking water threshold limit. This indicates that the vegetation and dilution provided within the local ditch is further treating and breaking down hydrocarbons to below the drinking water threshold limit before discharging to the local watercourse (tributary of Mayne Stream).

Petrol interceptors should be inspected every six months, and a log should be maintained detailing the depth of oil found, any oil volume removed and any silt removal or cleaning carried out.

The petrol interceptors were last inspected and cleaned out on 5 September 2018 by McBreen Environmental Drain Services Ltd., who confirmed that all interceptors are in good working order – refer to the letter from McBreen Environmental included in Appendix 7.2 of the Engineering Impact Assessment Report.

UK and Ireland Office Locations



Appendix 7.2

Letter from McBreen Environmental

To whom it may concern.

I can confirm that McBreen Environmental serviced 6 no interceptor @ Quickpark Dublin on the 05/09/2018.

The interceptors were in good condition and had only very small traces of oil which was skimmed off all 6 interceptors and all interceptors are in good working order. The outfall line was washed and the waste was removed to licensed disposal facility for destruction.

Please see below pictures and job report.

Lismagratty, Cootehill Road, Cavan, Co Cavan
Lo-Call: 1890 66 33 33 | **Fax:** 049 438 00 39
Email: info@mcbreenenvironmental.ie
Web: www.mcbreenenvironmental.ie
Company Reg. No. 432184 | **VAT Reg. No.** IE9643687H

Lismagratty, Cootehill Road, Cavan, Co Cavan
Lo-Call: 1890 66 33 33 | **Fax:** 049 438 00 39
Email: info@mcbreenenvironmental.ie
Web: www.mcbreenenvironmental.ie
Company Reg. No. 432184 | **VAT Reg. No.** IE9643687H

McBreen Environmental Drain Services Ltd
Lismagratty, Cootehill Road, Co Cavan
Tel: 1890 66 33 33
Email: info@mcbreenenvironmental.ie
VAT No. IE9643687H
Permit No. NWCPO-14-11283-01

Drain Jetting Job Report

Customer Details	
Company Name: Liffey Developments	Site Contact & Phone No. Pete Waters - 086 8386979
Company Address:	Site Address: Dublin AirportLong term Parking

Job Details	
Job Name: 6 Interceptors to be skimmed Quickpark DAA	McBreen Environmental employees on site: Stephen Fannin, Pete Waters
Job ID: 122-41076	
Description of work carried out: skimmed of 6 interceptor in long term car park, Removed waste to enva Dublin for disposal,All interceptors are in good condition and only had very small traces of oil. jetting outlet to drain	McBreen Environmental Vehicles on site: 171CN999
Job Start Time 2018-09-05 11:08:42	Job End Time 2018-09-05 13:53:42
Work fully complete this visit?	Recommendation to Client:
If not reason work incomplete:	
Have all covers/lids been safely put back in place?	Yes

Details			
Waste Quantity Removed/Tankered?		Metres Washed:	
EWC Code:		Oil from oil/water interceptors (13.05.06*)	
Waste Destination:		Enva Dublin (W0196-01)	

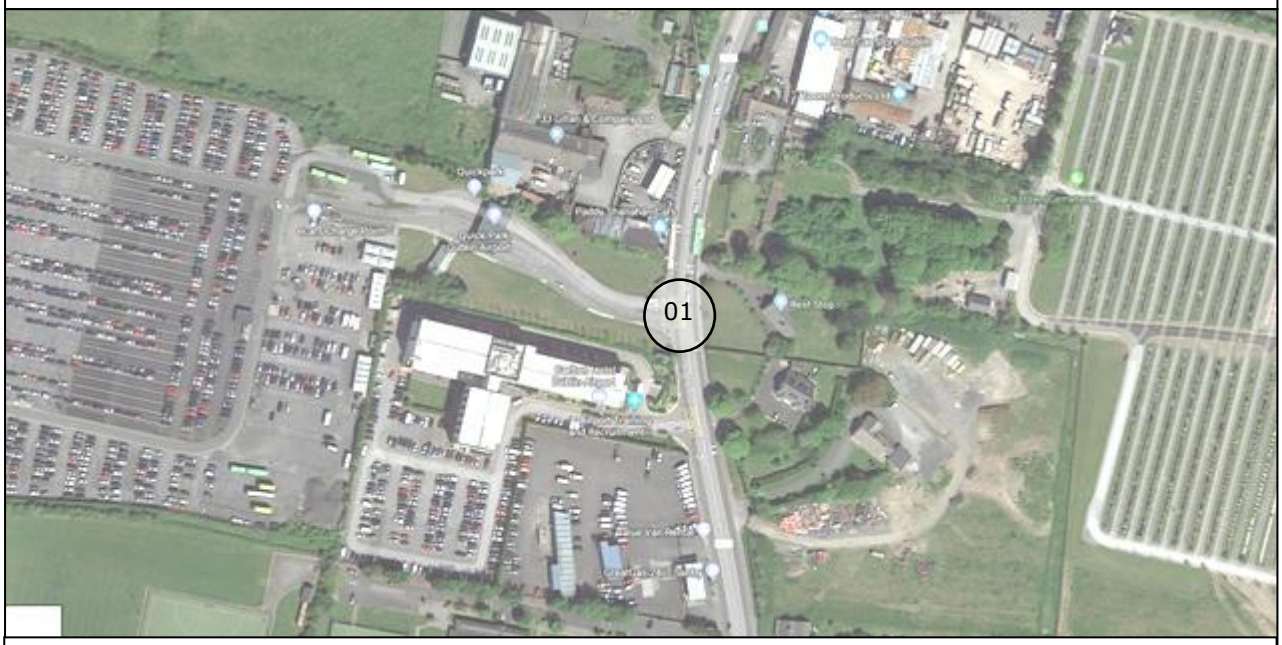
Customer Signature :

Driver Signature:

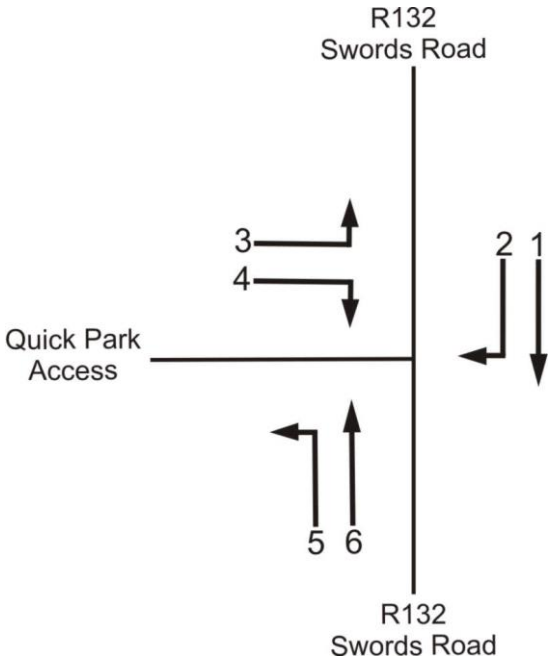
Appendix 12.1

Junction Turning Counts

Site Location



Movement Numbering



Job number: Ath/18/009	Job Date: 7th February 2018	Drawing No: Ath/18/009-01	abacus Transportation Surveys
Client: Waterman-Moylan	Job Day: Wednesday	Author: SPW	

ABACUS TRANSPORTATION SURVEYS

QUICK PARK TRAFFIC COUNT **FEBRUARY 2018**
MANUAL CLASSIFIED JUNCTION TURNING COUNT **ATH/18/009**

SITE: 01 DATE: 7th February 2018

LOCATION: R132 Swords Road/Quick Park Access DAY: Wednesday

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3							MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	**CARS**	**LGV**	**OGV1**	**OGV2**	**BUS**	**TOT**	**PCU**	**CARS**	**LGV**	**OGV1**	**OGV2**	**BUS**	**TOT**	**PCU**	**CARS**	**LGV**	**OGV1**	**OGV2**	**BUS**	**TOT**	**PCU**	**CARS**	**LGV**	**OGV1**	**OGV2**	**BUS**	**TOT**	**PCU**	**CARS**	**LGV**	**OGV1**	**OGV2**	**BUS**	**TOT**	**PCU**	**CARS**	**LGV**	**OGV1**	**OGV2**	**BUS**	**TOT**	**PCU**
00:00	16	0	1	1	0	18	20	0	0	0	0	1	1	2	5	0	0	0	1	6	7	00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	2	0	0	1	18	19
00:15	24	0	0	2	1	27	31	0	0	0	0	3	3	6	4	0	0	0	1	5	6	00:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	1	0	1	13	15
00:30	14	0	0	2	2	18	23	0	0	0	0	1	1	2	5	0	0	0	1	6	7	00:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8	8
00:45	12	1	0	1	0	14	15	0	0	0	0	2	2	4	6	1	0	0	1	8	9	00:45	1	0	0	0	0	1	1	0	0	0	0	0	0	0	6	0	0	0	0	6	6
H/TOT	66	1	1	6	3	77	88	0	0	0	0	7	7	14	20	1	0	0	4	25	29	**H/TOT**	1	0	0	0	0	1	1	0	0	0	0	0	0	0	40	2	1	0	2	45	48
01:00	10	1	1	0	0	12	13	0	0	0	0	1	1	2	9	0	0	0	1	10	11	01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	1	1	0	10	12
01:15	11	0	0	0	0	11	11	2	0	0	0	2	4	6	4	0	0	0	2	6	8	01:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	2	1	0	8	10
01:30	7	1	1	0	0	9	10	0	0	0	0	1	1	2	1	0	0	0	0	1	1	01:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0	5	5
01:45	4	2	1	1	0	8	10	1	0	0	0	1	2	3	0	0	0	0	1	1	2	01:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	3	0	1	9	12
H/TOT	32	4	3	1	0	40	43	3	0	0	0	5	8	13	14	0	0	0	4	18	22	**H/TOT**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	4	6	2	1	32	39
02:00	4	1	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	3	3
02:15	2	3	0	0	0	5	5	0	0	0	0	1	1	2	0	0	0	0	1	1	2	02:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	2	1	1	0	9	11
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H/TOT	10	7	0	1	0	18	19	5	0	0	0	3	8	11	2	0	0	0	2	4	6	**H/TOT**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	7	3	1	0	24	27
03:00	2	1	0	2	1	6	10	2	0	0	0	0	2	2	0	0	0	0	1	1	2	03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	4	4
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H/TOT	19	6	4	3	1	33	40	23	0	0	0	4	27	31	0	0	0	0	6	6	12	**H/TOT**	0	0	0	0	0	0	0	3	0	0	0	0	3	3	37	2	4	3	1	47	54
04:00	16	3	0	1	0	20	21	8	0	0	0	0	8	8	0	0	0	0	2	2	4	04:00	0	0	0	0	0	0	0	2	0	0	0	0	2	2	8	2	1	1	1	13	16
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H/TOT	66	4	2	5	5	82	95	86	4	0	0	5	95	100	6	0	0	0	9	15	24	**H/TOT**	0	0	0	0	0	0	0	10	1	0	0	0	11	11	61	12	4	4	5	86	98
05:00	28	3	0	0	2	33	35	28	2	0	0	2	32	34	1	0	0	0	3	4	7	05:00	0	0	0	0	0	0	0	7	0	0	0	0	7	7	15	1	5	0	3	24	30
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H/TOT	143	22	4	5	6	180	195	77	6	0	0	9	92	101	8	0	0	0	9	17	26	**H/TOT**	0	0	0	0	0	0	0	10	0	0	0	0	10	10	80	9	16	17	10	132	172
06:00	47	4	2	6	3	62	74	8	0	0	0	2	10	12	3	0	0	0	3	6	9	06:00	1	0	0	0	0	1	1	1	0	0	0	0	1	1	13	6	8	4	2	33	44
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H/TOT	241	42	7	10	16	316	349	47	2	0	0	6	55	61	3	0	0	0	7	10	17	**H/TOT**	2	0	0	0	0	2	2	8	0	0	0	0	8	8	92	22	17	28	18	177	240
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07:15	162	24	3	8	10	207	229	16	2	0	0	2	20	22	0	0	0	0	1	1	2	07:15	4	0	1	0	0	5	6	2	0	0	0	0	2	2	43	4	7	7	4	65	82
07:30	136	24	5	4	7	176	191	16	0	0	0	1	17	18	2	0	0	0	2	4	6	07:30	3	0	0	0	0	3	3	5	0	0	0	0	5	5	52	6	6	2	8	74	88
07:45	201	16	11	5	10	243	265	13	0	0	0	2	15	17	1	0	0	0	1	2	3	07:45	3	0	0	0	0	3	3	3	0	0	0	0	3	3	52	16	4	5	6	83	98
H/TOT	609	81	24	19	35	768	840	56	3	1	0	7	67	75	3	0	0	0	6	9	15	**H/TOT**	11	0	1	0	0	12	13	12	0	0	0	0	12	12	184	35	33	23	27	302	375

ABACUS TRANSPORTATION SURVEYS

QUICK PARK TRAFFIC COUNT **FEBRUARY 2018**
MANUAL CLASSIFIED JUNCTION TURNING COUNT **ATH/18/009**

SITE: 01 DATE: 7th February 2018

LOCATION: R132 Swords Road/Quick Park Access DAY: Wednesday

ABACUS TRANSPORTATION SURVEYS

QUICK PARK TRAFFIC COUNT **FEBRUARY 2018**
MANUAL CLASSIFIED JUNCTION TURNING COUNT **ATH/18/009**

SITE: 01 DATE: 7th February 2018

LOCATION: R132 Swords Road/Quick Park Access DAY: Wednesday

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3							MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CARS	LGV	OGV1	OGV2	BUS	TOT	PCU	CARS	LGV	OGV1	OGV2	BUS	TOT	PCU	CARS	LGV	OGV1	OGV2	BUS	TOT	PCU	CARS	LGV	OGV1	OGV2	BUS	TOT	PCU	CARS	LGV	OGV1	OGV2	BUS	TOT	PCU	CARS	LGV	OGV1	OGV2	BUS	TOT	PCU
08:00	218	32	4	6	11	271	292	13	1	0	0	1	15	16	1	0	0	0	2	3	5	08:00	0	0	0	0	0	0	0	1	0	0	0	0	1	1	48	10	7	6	7	78	96
08:15	236	19	7	2	9	273	288	11	0	0	0	2	13	15	2	0	0	0	1	3	4	08:15	0	0	0	0	0	0	0	5	0	0	0	0	5	5	66	17	6	3	7	99	113
08:30	240	26	5	3	4	278	288	19	0	0	0	1	20	21	3	0	0	0	2	5	7	08:30	1	0	0	0	0	1	1	1	0	0	0	0	1	1	64	21	6	3	5	99	111
08:45	276	24	11	3	10	324	343	12	0	0	0	2	14	16	1	1	0	0	1	3	4	08:45	3	0	0	0	0	3	3	0	1	0	0	0	1	1	67	18	9	1	6	101	113
H/TOT	970	101	27	14	34	1146	1212	55	1	0	0	6	62	68	7	1	0	0	6	14	20	**H/TOT**	4	0	0	0	0	4	4	7	1	0	0	0	8	8	245	66	28	13	25	377	433
09:00	221	24	12	7	12	276	303	11	0	0	0	1	12	13	1	0	0	0	2	3	5	09:00	1	0	0	0	0	1	1	1	0	0	0	0	1	1	49	18	10	7	8	92	114
09:15	166	46	12	3	10	237	257	15	0	0	0	2	17	19	1	0	0	0	1	2	3	09:15	0	0	1	0	0	1	2	2	0	0	1	0	3	4	113	22	12	2	9	158	176
09:30	139	20	11	2	12	184	204	13	1	0	0	1	15	16	3	0	0	0	2	5	7	09:30	2	0	0	0	0	2	2	2	0	0	0	0	2	2	86	25	9	3	8	131	147
09:45	147	25	9	4	10	195	215	11	1	0	0	2	14	16	3	0	0	0	2	5	7	09:45	2	0	0	0	0	2	2	0	0	0	0	0	0	0	72	21	6	5	6	110	126
H/TOT	673	115	44	16	44	892	979	50	2	0	0	6	58	64	8	0	0	0	7	15	22	**H/TOT**	5	0	1	0	0	6	7	5	0	0	1	0	6	7	320	86	37	17	31	491	563
10:00	90	34	11	5	6	146	164	10	1	0	0	2	13	15	4	0	0	0	1	5	6	10:00	0	0	0	0	0	0	0	1	0	0	0	0	1	1	79	20	12	5	8	124	145
10:15	102	23	8	7	8	148	169	10	0	0	0	1	11	12	2	0	0	0	2	4	6	10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58	21	12	5	7	103	123
10:30	93	21	10	5	3	132	147	4	0	0	0	2	6	8	3	0	0	0	1	4	5	10:30	0	0	0	0	0	0	0	1	0	0	0	0	1	1	70	21	5	5	10	111	130
10:45	102	28	9	5	6	150	167	10	0	0	0	1	11	12	6	2	0	0	2	10	12	10:45	1	0	0	0	0	1	1	1	1	0	0	0	2	2	78	24	8	7	5	122	140
H/TOT	387	106	38	22	23	576	647	34	1	0	0	6	41	47	15	2	0	0	6	23	29	**H/TOT**	1	0	0	0	0	1	1	3	1	0	0	0	4	4	285	86	37	22	30	460	537
11:00	110	34	13	5	5	167	185	9	0	0	0	2	11	13	8	1	0	0	1	10	11	11:00	2	0	0	0	0	2	2	0	0	0	0	0	0	0	99	15	14	6	5	139	159
11:15	107	22	14	5	4	152	170	14	0	0	0	1	15	16	2	0	0	0	2	4	6	11:15	1	0	0	0	0	1	1	0	0	0	0	0	0	0	105	19	7	2	7	140	153
11:30	103	24	8	5	8	148	167	6	0	0	0	2	8	10	3	0	0	0	2	5	7	11:30	1	0	0	0	0	1	1	1	0	0	0	0	1	1	125	22	7	5	8	167	185
11:45	96	23	8	4	5	136	150	2	1	0	0	2	5	7	4	1	0	0	1	6	7	11:45	1	0	0	0	0	1	1	0	1	0	0	0	1	1	86	12	7	14	6	125	153
H/TOT	416	103	43	19	22	603	671	31	1	0	0	7	39	46	17	2	0	0	6	25	31	**H/TOT**	5	0	0	0	0	5	5	1	1	0	0	0	2	2	415	68	35	27	26	571	650
12:00	140	28	10	6	6	190	209	6	0	0	0	1	7	8	15	0	0	1	2	18	21	12:00	2	1	0	0	0	3	3	0	0	0	1	0	1	2	121	21	8	8	4	162	180
12:15	124	25	10	5	7	171	190	5	0	0	0	2	7	9	3	0	0	0	2	5	7	12:15	2	0	0	0	0	2	2	1	0	0	0	0	1	1	85	19	7	6	9	126	146
12:30	101	26	8	6	7	148	167	8	0	0	0	3	11	14	3	0	0	0	1	4	5	12:30	0	0	0	0	0	0	0	1	0	0	0	0	1	1	104	18	8	3	10	143	161
12:45	101	20	10	4	4	139	153	6	0	0	0	1	7	8	2	1	0	0	2	5	7	12:45	2	0	0	0	0	2	2	0	0	0	0	0	0	0	96	20	6	3	7	132	146
H/TOT	466	99	38	21	24	648	718	25	0	0	0	7	32	39	23	1	0	1	7	32	40	**H/TOT**	6	1	0	0	0	7	7	2	0	0	1	0	3	4	406	78	29	20	30	563	634
13:00	113	21	11	3	8	156	173	9	3	0	0	2	14	16	6	1	0	0	1	8	9	13:00	2	1	0	0	0	3	3	1	0	0	0	0	1	1	107	19	6	4	4	140	152
13:15	123	28	11	3	7	172	188	7	1	0	0	1	9	10	5	1	0	0	3	9	12	13:15	1	0	0	0	0	1	1	0	0	0	0	0	0	0	83	23	12	6	8	132	154
13:30	119	33	8	8	9	177	200	7	0	0	0	2	9	11	1	0	0	0	1	2	3	13:30	1	0	0	0	0	1	1	0	0	0	0	0	0	0	104	18	4	3	5	134	145
13:45	120	20	6	4	6	156	170	6	0	0	0	2	8	10	13	0	0	0	1	14	15	13:45	1	0	0	0	0	1	1	0	0	0	0	0	0	0	119	9	12	3	7	150	167
H/TOT	475	102	36	18	30	661	732	29	4	0	0	7	40	47	25	2	0	0	6	33	39	**H/TOT**	5	1	0	0	0	6	6	1	0	0	0	0	1	1	413	69	34	16	24	556	618
14:00	110	15	8	2	7	142	156	5	1	0	0	1	7	8	4	0	0	0	2	6	8	14:00	2	0	0	0	0	2	2	0	0	0	0	0	0	0	98	21	10	4	10	143	163
14:15	115	28	9	4	8	164	182	14	0	0	0	2	16	18	3	0	0	0	3	6	9	14:15	0	0	0	0	0	0	0	1	0	0	0	0	1	1	107	21	15	2	10	155	175
14:30	93	19	11	4	8	135	154	8	0	0	0	2	10	12	6	0	0	0	1	7	8	14:30	2	0	0	0	0	2	2	1	0	0	0	0	1	1	77	31	10	4	6	128	144
14:45	102	25	12	5	9	153	175	9	0	0	0	1	10	11	8	0	0	0	2	10	12	14:45	1	0	0	0	0	1	1	1	0	0	0	0	1	1	80	22	6	5	7	120	137
H/TOT	420	87	40	15	32	594	666	36	1	0	0	6	43	49	21	0	0	0	8	29	37	**H/TOT**	5	0	0	0	0	5	5	3	0	0	0	0	3	3	362	95	41	15	33	546	619
15:00	114	19	14	5	5	157	176	9	0	0	0	2	11	13	7	1	0	0	1	9	10	15:00	0	0	0	0	0	0	0	0	1	0	0	0	1	1	90	18	6	2	6	122	134
15:15	111	30	10	4	11	166	187	6	0	0	0	1	7	8	7	0	0	0	2	9	11	15:15	1	0	0	0	0	1	1	0	0	0	0	0	0	0	116	26	12	6	10	170	194
15:30	118	24	10	5	8	165	185	7	0	0	0	2	9	11	10	0	0	0	2	12	14	15:30	0	0	0	0	0	0	0	1	0	0	0	0	1	1	114	21	6	1	5	147	156
15:45	131	33	7	1	7	179	191	11	0	0	0	3	14	17	10	1	0	0	1	12	13	15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	97	27	1	7	5	137	152
H/TOT	474	106	41	15	31	667	738	33	0	0	0	8	41	49	34	2	0	0	6	42	48	**H/TOT**	1	0	0	0	0	1	1	1	1	0	0	0	2	2	417	92	25	16	26	576	635

ABACUS TRANSPORTATION SURVEYS

QUICK PARK TRAFFIC COUNT **FEBRUARY 2018**
MANUAL CLASSIFIED JUNCTION TURNING COUNT **ATH/18/009**

SITE: 01 DATE: 7th February 2018

LOCATION: R132 Swords Road/Quick Park Access DAY: Wednesday

ABACUS TRANSPORTATION SURVEYS

QUICK PARK TRAFFIC COUNT **FEBRUARY 2018**
MANUAL CLASSIFIED JUNCTION TURNING COUNT **ATH/18/009**

SITE: 01 DATE: 7th February 2018

LOCATION: R132 Swords Road/Quick Park Access DAY: Wednesday

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3							MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CARS	LGV	OGV1	OGV2	BUS	TOT	PCU	CARS	LGV	OGV1	OGV2	BUS	TOT	PCU	CARS	LGV	OGV1	OGV2	BUS	TOT	PCU	TIME	CARS	LGV	OGV1	OGV2	BUS	TOT	PCU	CARS	LGV	OGV1	OGV2	BUS	TOT	PCU	CARS	LGV	OGV1	OGV2	BUS	TOT	PCU
16:00	159	34	17	8	4	222	245	3	0	0	0	2	5	7	3	2	0	0	3	8	11	16:00	2	0	0	0	0	2	2	0	0	0	0	0	0	0	133	17	3	7	11	171	193
16:15	118	16	7	7	9	157	179	5	1	0	0	1	7	8	5	0	0	0	2	7	9	16:15	2	0	0	0	0	2	2	1	0	0	0	0	1	1	111	25	7	4	8	155	172
16:30	106	17	7	5	5	140	155	5	0	0	0	1	6	7	13	1	0	0	1	15	16	16:30	0	0	0	0	0	0	0	1	1	0	0	0	2	2	160	25	5	2	9	201	215
16:45	135	19	9	8	9	180	204	5	0	0	0	3	8	11	19	1	0	0	1	21	22	16:45	1	0	0	0	0	1	1	2	0	0	0	0	2	2	146	24	9	0	4	183	192
H/TOT	518	86	40	28	27	699	782	18	1	0	0	7	26	33	40	4	0	0	7	51	58	**H/TOT**	5	0	0	0	0	5	5	4	1	0	0	0	5	5	550	91	24	13	32	710	771
17:00	126	26	11	8	5	176	197	4	0	0	0	2	6	8	17	2	0	0	3	22	25	17:00	3	1	0	0	0	4	4	1	0	0	0	0	1	1	226	23	7	2	8	266	280
17:15	134	15	6	10	7	172	195	4	0	0	0	2	6	8	19	1	0	0	1	21	22	17:15	3	0	0	0	0	3	3	1	0	0	0	0	1	1	136	13	6	2	7	164	177
17:30	122	14	11	5	9	161	182	3	1	0	0	1	5	6	21	1	1	0	2	25	28	17:30	1	0	0	0	0	1	1	0	0	0	0	0	0	0	156	17	2	5	9	189	206
17:45	133	12	6	4	4	159	171	2	0	0	0	3	5	8	11	0	0	0	2	13	15	17:45	2	0	0	0	0	2	2	1	0	0	0	0	1	1	116	11	1	3	4	135	143
H/TOT	515	67	34	27	25	668	745	13	1	0	0	8	22	30	68	4	1	0	8	81	90	**H/TOT**	9	1	0	0	0	10	10	3	0	0	0	0	3	3	634	64	16	12	28	754	806
18:00	122	7	5	7	8	149	169	2	0	0	0	1	3	4	8	0	0	0	1	9	10	18:00	1	0	0	0	0	1	1	0	0	0	0	0	0	0	130	13	2	2	9	156	169
18:15	112	13	3	6	5	139	153	1	0	0	0	2	3	5	14	0	0	0	3	17	20	18:15	2	0	0	0	0	2	2	0	0	0	0	0	0	0	116	7	4	0	6	133	141
18:30	78	11	3	1	6	99	108	1	0	0	0	1	2	3	22	3	0	0	1	26	27	18:30	5	0	0	0	0	5	5	0	0	0	0	0	0	0	94	10	2	2	5	113	122
18:45	84	6	1	4	8	103	117	4	0	0	0	1	5	6	20	0	0	0	2	22	24	18:45	2	0	0	0	0	2	2	0	0	0	0	0	0	0	80	4	1	0	9	94	104
H/TOT	396	37	12	18	27	490	546	8	0	0	0	5	13	18	64	3	0	0	7	74	81	**H/TOT**	10	0	0	0	0	10	10	0	0	0	0	0	0	0	420	34	9	4	29	496	535
19:00	120	12	2	2	6	142	152	3	0	0	0	2	5	7	13	0	0	0	1	14	15	19:00	2	0	0	0	0	2	2	1	0	0	0	0	1	1	102	6	1	4	6	119	131
19:15	169	8	2	1	6	186	194	1	0	0	0	1	2	3	11	0	0	0	2	13	15	19:15	2	0	0	0	0	2	2	0	0	0	0	0	0	0	78	2	1	2	7	90	100
19:30	140	2	2	1	6	151	159	1	0	0	0	2	3	5	12	1	0	0	1	14	15	19:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	78	6	0	1	4	89	94
19:45	64	5	2	0	6	77	84	0	1	0	0	2	3	5	13	1	0	0	2	16	18	19:45	1	0	0	0	0	1	1	1	0	0	0	0	1	1	60	2	0	1	4	67	72
H/TOT	493	27	8	4	24	556	589	5	1	0	0	7	13	20	49	2	0	0	6	57	63	**H/TOT**	5	0	0	0	0	5	5	2	0	0	0	0	2	2	318	16	2	8	21	365	397
20:00	49	7	1	1	7	65	74	2	0	0	0	2	4	6	4	0	0	0	1	5	6	20:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	93	7	0	2	6	108	117
20:15	57	3	1	1	6	68	76	1	0	0	0	1	2	3	12	0	0	0	2	14	16	20:15	1	0	0	0	0	1	1	1	0	0	0	0	1	1	56	6	0	0	4	66	70
20:30	35	5	0	0	5	45	50	0	0	0	0	2	2	4	15	1	0	0	2	18	20	20:30	2	0	0	0	0	2	2	0	0	0	0	0	0	0	83	7	0	0	3	93	96
20:45	42	4	1	1	3	51	56	2	0	0	0	1	3	4	9	2	0	0	1	12	13	20:45	4	0	0	0	0	4	4	0	0	0	0	0	0	0	71	3	1	1	5	81	88
H/TOT	183	19	3	3	21	229	255	5	0	0	0	6	11	17	40	3	0	0	6	49	55	**H/TOT**	7	0	0	0	0	7	7	1	0	0	0	0	1	1	303	23	1	3	18	348	370
21:00	62	2	0	2	4	70	77	0	1	0	0	2	3	5	14	1	1	0	2	18	21	21:00	0	0	0	0	0	0	0	1	0	1	0	0	2	3	46	4	1	0	4	55	60
21:15	36	2	0	4	2	44	51	2	0	0	0	1	3	4	22	1	0	0	1	24	25	21:15	4	0	0	0	0	4	4	0	0	0	0	0	0	0	47	3	1	0	4	55	60
21:30	40	2	0	1	4	47	52	0	0	0	0	2	2	4	32	0	0	0	2	34	36	21:30	2	0	0	0	0	2	2	0	0	0	0	0	0	0	64	8	1	1	3	77	82
21:45	34	2	0	0	6	42	48	0	0	0	0	1	1	2	17	1	0	0	1	19	20	21:45	1	0	0	0	0	1	1	0	0	0	0	0	0	0	41	1	1	2	3	48	54
H/TOT	172	8	0	7	16	203	228	2	1	0	0	6	9	15	85	3	1	0	6	95	102	**H/TOT**	7	0	0	0	0	7	7	1	0	1	0	0	2	3	198	16	4	3	14	235	255
22:00	34	2	1	1	2	40	44	1	0	0	0	1	2	3	24	1	0	0	1	26	27	22:00	1	0	0	0	0	1	1	0	0	0	0	0	0	0	49	0	0	0	4	53	57
22:15	34	1	0	1	3	39	43	0	0	0	0	2	2	4	10	1	0	0	2	13	15	22:15	2	0	0	0	0	2	2	0	0	0	0	0	0	0	32	0	2	2	5	41	50
22:30	24	2	0	0	3	29	32	0	0	0	0	2	2	4	11	0	0	0	2	13	15	22:30	2	0	0	0	0	2	2	0	0	0	0	0	0	0	41	1	0	1	4	47	52
22:45	21	0	1	0	2	24	27	0	0	0	0	1	1	2	12	0	0	0	1	13	14	22:45	0	0	0	0	0	0	0	1	0	0	0	0	1	1	18	0	0	0	4	22	26
H/TOT	113	5	2	2	10	132	146	1	0	0	0	6	7	13	57	2	0	0	6	65	71	**H/TOT**	5	0	0	0	0	5	5	1	0	0	0	0	1	1	140	1	2	3	17	163	185
23:00	18	1	0	1	2	22	25	0	0	0	0	0	0	0	3	0	0	0	2	5	7	23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	0	0	0	2	25	27
23:15	16	1	2	0	2	21	24	0	0	0	0	1	1	2	15	1	0	0	2	18	20	23:15	1	0	0	0	0	1	1	0	0	0	0	0	0	0	18	0	1	0	6	25	32
23:30	21	2	0	0	5	28	33	1	0	0	0	4	5	9	6	0	0	0	0	6	6	23:30	4	0	0	0	0	4	4	0	0	0	0	0	0	0	13	0	0	0	3	16	19
23:45	16	2	1	0	1	20	22	0	0	0	0	1	1	2	8	1	0	0	1	10	11	23:45	3	1	0	0	0	4	4	0	0	0	0	0	0	0	11	0	1	0	3	15	19
H/TOT	71	6	3	1	10	91	104	1	0	0	0	6	7	13	32	2	0	0	5	39	44	**H/TOT**	8	1	0	0	0	9	9	0	0	0	0	0	0	0	65	0	2	0	14	81	96
00:00 - 00:00	7928	1241	454	280	466	###	###	643	29	1	0	150	823	974	641	34	2	1	150	828	980	**00:00 - 00:00**	102	4	2	0	0	108	109	78	6	1	2	0	87	90	6017	978	410	270	462	8137	9155
06:00 - 22:00	7408	1186	435	256	431	9716	###	447	19	1	0	105	572	678	502	29	2	1	105	639	746	**06:00 - 22:00**	88	3	2	0	0	93	94	54	5	1	2	0	62	65	5562	941	372	240	412	7527	8437
07:00 - 19:00	6319	1090	417	232	354	8412	9276	388	15	1	0	80	484	565	325	21	1	1	80	428	510	**07:00 - 19:00**	67	3	2	0	0	72	73	42	5	0	2	0	49	52	4651	864	348	198	341	6402	7174

ABACUS TRANSPORTATION SURVEYS

QUICK PARK TRAFFIC COUNT **FEBRUARY 2018**
MANUAL CLASSIFIED JUNCTION TURNING COUNT **ATH/18/009**

SITE: 01 DATE: 7th February 2018

LOCATION: R132 Swords Road/Quick Park Access DAY: Wednesday

Appendix 12.2

Traffic Counts

NDC
NATIONWIDE DATA COLLECTION

Ireland

6 Bridge Court,
City Gate,
St. Augustine Street,
Dublin 8

Tel: 01 633 4725
Fax: 01 633 4562

MOYLAN CONSULTING ENGINEERS
QUICK PARK CAR PARK
TRAFFIC SURVEY

SURVEY REPORT
MARCH 2011

PROJECT NO.	1196
CHECKED	P. MURRAY
DATE	16/03/2011
CONTACT	A.CHAMBERS
REVISION	

Email: enquiries@nationwidedatacollection.ie
Website: www.nationwidedatacollection.ie

Registered Office:
6 Bridge Court, City Gate,
St. Augustine Street, Dublin 8
Company Reg. No. 444096
VAT Reg. No. IE 9664307L

CONTENTS

INTRODUCTION

Nationwide Data Collection (NDC) was instructed by Moylan Consulting Engineers to undertake a Junction Turning Count at the Quick Park Car Park in Co Dublin.

A general location plan is given in Diagram 1196-01.

JUNCTION TURNING COUNT

A Junction Turning Count was undertaken at the following site:

Site No.	Location.	Day / Date
1	R132(N)/Car Park Access/R132(S)	Tuesday 15th March 2011

The site was surveyed using a telescopically mounted video camera from which the information was subsequently extracted. Details of the observed movements are given in Drawing 1196-01.

The survey was carried out with survey hours of 06:00 to 21:00. All information was collected in 15 minute intervals and has been tabulated with both hourly and period totals.

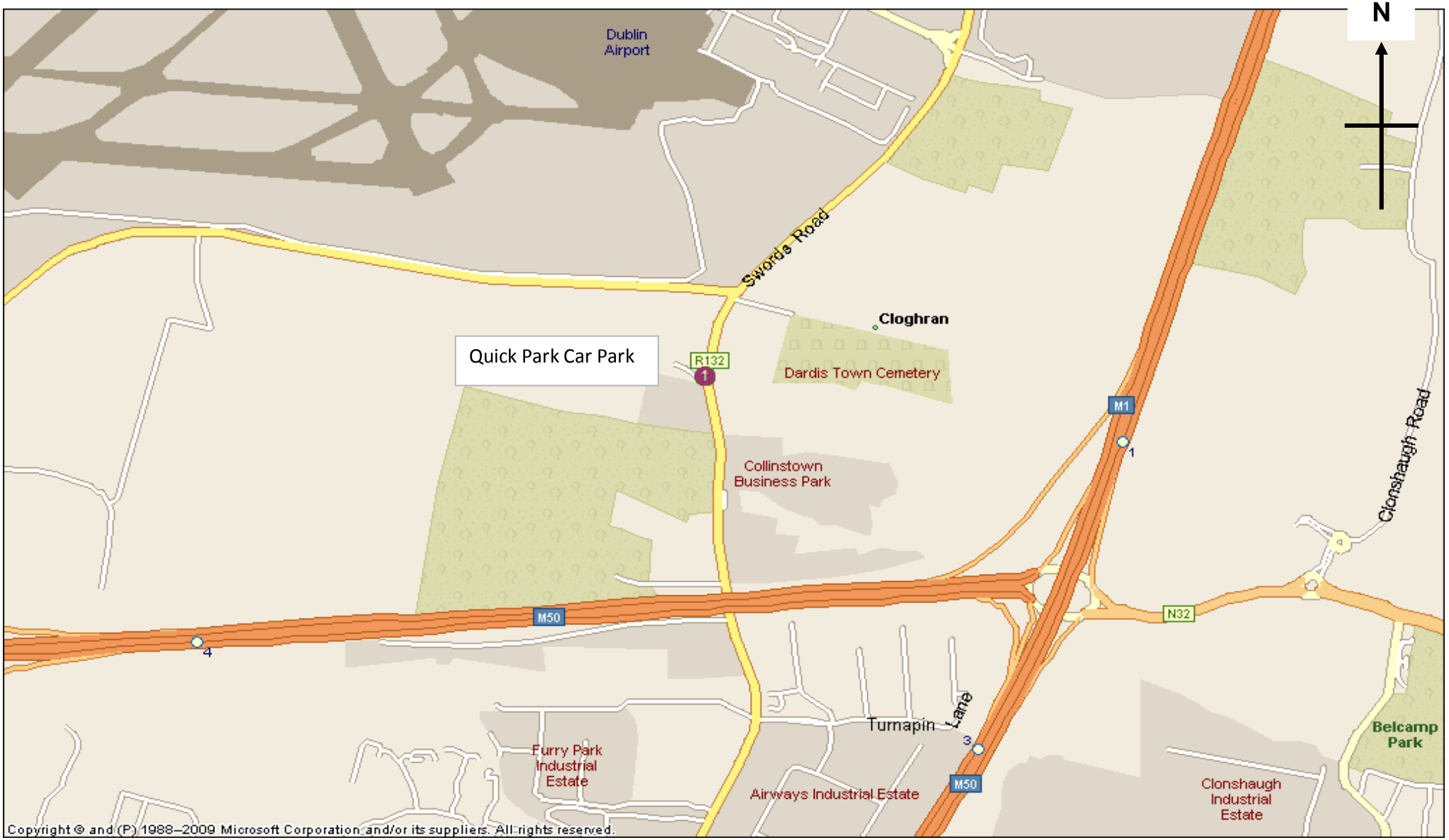
Vehicles were classified into the following categories:

- Cars and Taxis (**CAR**),
- Light Goods Vehicles (**LGV**),
- Other Goods Vehicles - type 1 (**OGV1**),
- Other Goods Vehicles - type 2 (**OGV2**),
- Buses (**PSV**) and
- Motorcycles (**M/C**).

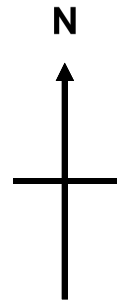
A detailed description of the vehicles included in each category is provided in Appendix A.

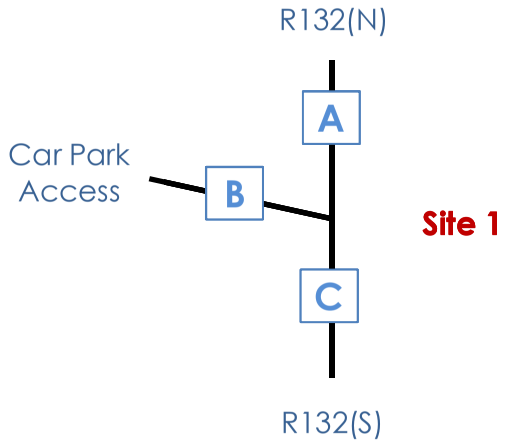
SITE REPORT

Weather	Tuesday 15th March 2011 – Overcast with some rainy spells.
Accidents	None.
Roadworks	None.
Queues	Not recorded.
Pedestrians	Not recorded.
General Site Notes.	None.



NDC NATIONWIDE DATA COLLECTION	**Site - Location:**	1 - R132(N) / Car Park Access / R132(S)	**Project No:**	1196	**Diagram No:**	1196-01	**Drawn By:** AC
	Survey Date:	Tuesday 15th March 2011	**Project Name:**	QUICK PARK CAR PARK			
	Survey Times:	06:00 - 21:00	**Diagram Title:**	General Location Plan			



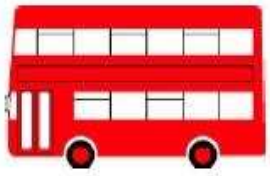
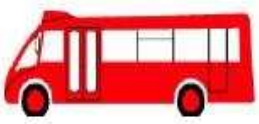


NDC NATIONWIDE DATA COLLECTION	**Site - Location:**	1 - R132(N) / Car Park Access / R132(S)	**Project No:**	1196	**Drawing No:**	1196-01	**Drawn By:**	AC
	Survey Date:	Tuesday 15th March 2011	**Project Name:**	QUICK PARK CAR PARK				
	Survey Times:	06:00 - 21:00	**Drawing Title:**	Site Layout and Observed Movements				

APPENDIX A

VEHICLE CATEGORIES

COBA VEHICLE CATEGORIES

CAR	 SALOON  ESTATE  PEOPLE CARRIER  CAR TOWING CARAVAN / TRAILER
LIGHT GOODS VEHICLE (LGV)	 VAN  <3.5 TONNES – single rear tyres  PICK-UP
OTHER GOODS VEHICLE (OGV1)	 > 3.5 TONNES – twin rear tyres  2-AXLES RIGID  2-AXLES RIGID  3 AXLES-RIGID
OTHER GOODS VEHICLE (OGV2)	 4 OR MORE AXLES RIGID  3-AXLES ARTIC  4 OR MORE AXLES ARTIC  OTHER GOODS VEHICLE WITH TRAILER
BUSES & COACHES (PSV)	 DOUBLE DECK BUS  SINGLE DECK BUS OR COACH

COBA VEHICLE CATEGORIES

Definition of Categories

The various components of traffic have different characteristics in terms of operating costs, growth and occupancy. The most common categories into which the traffic is split in COBA; these are defined as:

Cars (CARS)

Including taxis, estate cars, 'people carriers' and other passenger vehicles (for example, minibuses and camper vans) with a gross vehicle weight of less than 3.5 tonnes, normally ones which can accommodate not more than 15 seats. Three-wheeled cars, motor invalid carriages, Land Rovers, Range Rovers and Jeeps and smaller ambulances are included. Cars towing caravans or trailers are counted as one vehicle unless included as a separate class.

Light Goods Vehicles (LGV)

Includes all goods vehicles up to 3.5 tonnes gross vehicle weight (goods vehicles over 3.5 tonnes have sideguards fitted between axles), including those towing a trailer or caravan. This includes all car delivery vans and those of the next larger carrying capacity such as transit vans. Included here are small pickup vans, three-wheeled goods vehicles, milk floats and pedestrian controlled motor vehicles. Most of this group is delivery vans of one type or another.

Other Goods Vehicles (OGV 1)

Includes all rigid vehicles over 3.5 tonnes gross vehicle weight with two or three axles Includes larger ambulances, tractors (without trailers), road rollers for tarmac pressing, box vans and similar large vans. A two or three axle motor tractive unit without a trailer is also included.

Other Goods Vehicles (OGV 2)

This category includes all rigid vehicles with four or more axles and all articulated vehicles. Also included in this class are OGV1 goods vehicles towing a caravan or trailer.

Buses and Coaches (PSV)

Includes all public service vehicles and works buses with a gross vehicle weight of 3.5 tonnes or more, usually vehicles with more than 16 seats.

APPENDIX B

SURVEY RESULTS
Junction Turning Count

Site No. 1
Location R132(N) / Car Park Access / R132(S)
Date Tuesday 15 March 2011

Time	A to C - R132(N) to R132(S)						Veh. Total	A to B - R132(N) to Car Park Access						Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C		CAR	LGV	OGV1	OGV2	PSV	M/C	
06:00	38	8	5	2	1	0	54	15	0	0	0	1	0	16
06:15	45	6	3	8	3	0	65	22	0	0	0	1	0	23
06:30	42	8	0	0	3	0	53	24	1	0	0	2	0	27
06:45	57	16	2	7	4	1	87	19	0	0	0	1	0	20
Hour	182	38	10	17	11	1	259	80	1	0	0	5	0	86
07:00	66	17	5	7	7	0	102	16	0	0	0	1	0	17
07:15	89	10	9	2	8	2	120	17	1	0	0	2	0	20
07:30	84	20	5	4	5	2	120	13	1	0	0	1	0	15
07:45	153	16	6	1	8	3	187	13	0	0	0	2	0	15
Hour	392	63	25	14	28	7	529	59	2	0	0	6	0	67
08:00	161	19	5	0	9	2	196	12	2	0	0	2	0	16
08:15	181	18	8	5	4	0	216	9	0	0	0	1	0	10
08:30	195	24	7	1	6	1	234	9	0	0	0	1	0	10
08:45	210	26	9	7	6	1	259	6	0	0	0	2	0	8
Hour	747	87	29	13	25	4	905	36	2	0	0	6	0	44
09:00	182	21	11	3	5	0	222	10	0	0	0	1	0	11
09:15	125	23	7	3	6	2	166	5	0	0	0	1	0	6
09:30	95	19	6	1	5	0	126	12	0	0	0	2	0	14
09:45	101	23	8	3	5	0	140	9	1	0	0	1	0	11
Hour	503	86	32	10	21	2	654	36	1	0	0	5	0	42
10:00	88	20	12	3	3	2	128	9	0	0	0	1	0	10
10:15	87	27	8	2	5	1	130	8	0	0	0	2	0	10
10:30	75	21	8	8	5	0	117	5	2	0	0	2	0	9
10:45	94	17	8	2	5	1	127	4	0	0	0	1	0	5
Hour	344	85	36	15	18	4	502	26	2	0	0	6	0	34
11:00	87	16	5	7	2	0	117	5	0	0	0	2	0	7
11:15	94	18	8	1	4	1	126	9	0	0	0	2	0	11
11:30	111	27	13	4	7	1	163	8	0	0	0	1	0	9
11:45	76	18	7	6	4	3	114	5	0	0	0	2	0	7
Hour	368	79	33	18	17	5	520	27	0	0	0	7	0	34
12:00	102	14	11	7	5	2	141	6	0	0	0	1	0	7
12:15	125	24	5	5	5	1	165	3	0	0	0	2	0	5
12:30	100	21	11	4	6	1	143	5	0	0	0	1	0	6
12:45	98	20	5	3	3	0	129	11	0	0	0	2	0	13
Hour	425	79	32	19	19	4	578	25	0	0	0	6	0	31
13:00	87	19	10	2	6	0	124	4	0	0	0	2	0	6
13:15	120	22	7	7	5	0	161	9	1	0	0	1	0	11
13:30	109	16	7	6	6	2	146	9	0	0	0	2	0	11
13:45	88	17	10	3	4	0	122	7	1	0	0	1	0	9
Hour	404	74	34	18	21	2	553	29	2	0	0	6	0	37
14:00	116	22	8	3	3	1	153	6	1	0	0	1	0	8
14:15	114	19	12	3	4	3	155	7	0	0	0	2	0	9
14:30	103	23	10	5	5	0	146	7	0	0	0	2	0	9
14:45	88	18	6	2	3	1	118	2	0	0	0	1	0	3
Hour	421	82	36	13	15	5	572	22	1	0	0	6	0	29
15:00	106	23	7	4	8	1	149	4	0	0	0	2	0	6
15:15	102	20	15	7	1	0	145	5	0	0	0	2	0	7
15:30	111	15	8	9	6	1	150	8	0	0	0	2	0	10
15:45	112	22	17	5	5	2	163	12	0	0	0	2	0	14
Hour	431	80	47	25	20	4	607	29	0	0	0	8	0	37
16:00	98	14	7	4	4	1	128	4	1	0	0	1	0	6
16:15	104	20	11	3	6	1	145	3	0	0	0	2	0	5
16:30	102	17	8	6	8	1	142	10	0	0	0	1	0	11
16:45	102	12	4	5	4	2	129	5	0	0	0	2	0	7
Hour	406	63	30	18	22	5	544	22	1	0	0	6	0	29
17:00	100	10	7	5	6	1	129	8	0	0	0	1	0	9
17:15	112	14	7	4	7	1	145	3	0	0	0	2	0	5
17:30	121	12	5	10	7	1	156	11	0	0	0	2	0	13
17:45	127	13	6	5	2	0	153	2	0	0	0	2	0	4
Hour	460	49	25	24	22	3	583	24	0	0	0	7	0	31
18:00	95	6	14	4	5	0	124	5	0	0	0	2	0	7
18:15	81	5	6	4	4	2	102	2	0	0	0	2	0	4
18:30	70	5	5	3	4	0	87	0	1	0	0	2	0	3
18:45	103	3	5	3	3	1	118	3	0	0	0	2	0	5
Hour	349	19	30	14	16	3	431	10	1	0	0	8	0	19
19:00	99	9	2	6	4	2	122	1	0	0	0	2	0	3
19:15	74	7	2	3	3	1	90	2	0	0	0	1	0	3
19:30	60	1	1	1	6	0	69	0	0	0	0	2	0	2
19:45	64	2	2	1	3	1	73	0	0	0	0	3	0	3
Hour	297	19	7	11	16	4	354	3	0	0	0	8	0	11
20:00	55	6	0	4	5	0	70	0	0	0	0	1	0	1
20:15	52	4	2	1	6	1	66	3	0	0	0	2	0	5
20:30	45	1	2	1	5	0	54	1	0	0	0	2	0	3
20:45	56	4	1	1	3	1	66	1	0	0	0	2	0	3
Hour	208	15	5	7	19	2	256	5	0	0	0	7	0	12
Total	5937	918	411	236	290	55	7847	433	13	0	0	97	0	543

Site No. 1
Location R132(N) / Car Park Access / R132(S)
Date Tuesday 15 March 2011

Time	B to A - Car Park Access to R132(N)						Veh. Total	B to C - Car Park Access to R132(S)						Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C		CAR	LGV	OGV1	OGV2	PSV	M/C	
06:00	3	0	0	0	1	0	4	0	0	0	0	0	0	0
06:15	2	0	0	0	0	0	2	0	0	0	0	0	0	0
06:30	6	0	0	0	2	0	8	0	0	0	0	0	0	0
06:45	1	0	0	0	1	0	2	0	0	0	0	0	0	0
Hour	12	0	0	0	4	0	16	0	0	0	0	0	0	0
07:00	0	0	0	0	3	0	3	0	0	0	0	0	0	0
07:15	1	0	0	0	1	0	2	0	0	0	0	0	0	0
07:30	0	1	0	0	2	0	3	0	0	0	0	0	0	0
07:45	0	0	0	0	1	0	1	0	0	0	0	0	0	0
Hour	1	1	0	0	7	0	9	0	0	0	0	0	0	0
08:00	2	0	0	0	1	0	3	0	0	0	0	0	0	0
08:15	3	0	0	0	2	0	5	0	0	0	0	0	0	0
08:30	3	0	0	0	1	0	4	0	0	0	0	0	0	0
08:45	0	0	0	0	1	0	1	0	0	0	0	0	0	0
Hour	8	0	0	0	5	0	13	0	0	0	0	0	0	0
09:00	2	1	0	0	1	0	4	2	0	0	0	0	0	2
09:15	4	1	0	0	2	0	7	0	0	0	0	0	0	0
09:30	1	1	0	0	1	0	3	1	0	0	0	0	0	1
09:45	3	0	0	0	2	0	5	1	0	0	0	0	0	1
Hour	10	3	0	0	6	0	19	4	0	0	0	0	0	4
10:00	4	2	0	0	1	0	7	0	0	0	0	0	0	0
10:15	3	1	0	0	2	0	6	0	0	0	0	0	0	0
10:30	1	0	1	0	2	0	4	2	0	0	0	0	0	2
10:45	0	0	0	0	1	0	1	0	0	0	0	0	0	0
Hour	8	3	1	0	6	0	18	2	0	0	0	0	0	2
11:00	1	0	0	0	2	0	3	0	0	0	0	0	0	0
11:15	2	0	0	0	1	0	3	3	0	0	0	0	0	3
11:30	2	0	0	0	2	0	4	0	0	0	0	0	0	0
11:45	3	0	0	0	2	0	5	1	0	0	0	0	0	1
Hour	8	0	0	0	7	0	15	4	0	0	0	0	0	4
12:00	2	1	0	0	1	0	4	0	0	0	0	0	0	0
12:15	4	0	0	0	1	0	5	0	0	0	0	0	0	0
12:30	6	1	0	0	2	0	9	1	0	0	0	0	0	1
12:45	8	0	0	0	1	0	9	2	0	0	0	0	0	2
Hour	20	2	0	0	5	0	27	3	0	0	0	0	0	3
13:00	3	0	0	0	2	0	5	1	0	0	0	0	0	1
13:15	5	0	0	0	2	0	7	0	0	0	0	0	0	0
13:30	7	1	0	0	1	0	9	1	1	0	0	0	0	2
13:45	1	0	0	0	1	0	2	1	0	0	0	0	0	1
Hour	16	1	0	0	6	0	23	3	1	0	0	0	0	4
14:00	8	0	0	0	2	0	10	2	0	0	0	0	0	2
14:15	11	0	0	0	1	0	12	0	0	0	0	0	0	0
14:30	5	0	0	0	2	0	7	2	0	0	0	0	0	2
14:45	3	0	0	0	2	0	5	1	0	0	0	0	0	1
Hour	27	0	0	0	7	0	34	5	0	0	0	0	0	5
15:00	10	0	0	0	2	0	12	1	0	0	0	0	0	1
15:15	7	1	0	0	1	0	9	1	2	0	0	0	0	3
15:30	7	0	0	0	2	0	9	2	0	0	0	0	0	2
15:45	5	0	0	0	1	0	6	0	0	0	0	0	0	0
Hour	29	1	0	0	6	0	36	4	2	0	0	0	0	6
16:00	3	1	0	0	2	0	6	1	0	0	0	0	0	1
16:15	3	0	0	0	1	0	4	2	0	0	0	0	0	2
16:30	7	0	0	0	2	0	9	1	0	0	0	0	0	1
16:45	6	1	0	0	1	0	8	1	0	0	0	0	0	1
Hour	19	2	0	0	6	0	27	5	0	0	0	0	0	5
17:00	15	0	0	0	3	0	18	1	0	0	0	0	0	1
17:15	13	2	0	0	2	0	17	1	0	0	0	0	0	1
17:30	17	0	0	0	2	0	19	0	0	0	0	0	0	0
17:45	9	1	0	0	1	0	11	0	0	0	0	0	0	0
Hour	54	3	0	0	8	0	65	2	0	0	0	0	0	2
18:00	4	0	0	0	3	0	7	3	0	0	0	0	0	3
18:15	5	0	0	0	2	0	7	1	0	0	0	0	0	1
18:30	3	0	0	0	2	0	5	0	0	0	0	0	0	0
18:45	5	0	0	0	2	0	7	1	0	0	0	0	0	1
Hour	17	0	0	0	9	0	26	5	0	0	0	0	0	5
19:00	2	0	0	0	1	0	3	2	0	0	0	0	0	2
19:15	9	1	0	0	2	0	12	0	0	0	0	0	0	0
19:30	10	1	0	0	2	0	13	2	0	0	0	0	0	2
19:45	11	1	0	0	2	0	14	2	0	0	0	0	0	2
Hour	32	3	0	0	7	0	42	6	0	0	0	0	0	6
20:00	6	0	0	0	1	0	7	0	0	0	0	0	0	0
20:15	9	0	0	0	2	0	11	1	0	0	0	0	0	1
20:30	17	1	0	0	4	0	22	3	0	0	0	0	0	3
20:45	13	1	0	0	2	0	16	5	0	0	0	0	0	5
Hour	45	2	0	0	9	0	56	9	0	0	0	0	0	9
Total	306	21	1	0	98	0	426	52	3	0	0	0	0	55

Site No. 1
Location R132(N) / Car Park Access / R132(S)
Date Tuesday 15 March 2011

Time	C to B - R132(S) to Car Park Access						Veh. Total	C to A - R132(S) to R132(N)						Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C		CAR	LGV	OGV1	OGV2	PSV	M/C	
06:00	5	0	0	0	0	0	5	21	6	3	6	0	0	36
06:15	7	0	0	0	1	0	8	20	3	4	7	4	0	38
06:30	5	0	0	0	0	0	5	31	10	5	6	2	1	55
06:45	1	0	0	0	0	0	1	24	3	2	4	3	0	36
Hour	18	0	0	0	1	0	19	96	22	14	23	9	1	165
07:00	1	0	0	0	0	0	1	27	11	3	8	5	0	54
07:15	3	0	0	0	0	0	3	36	8	8	7	5	0	64
07:30	1	0	0	0	0	0	1	44	5	9	6	3	0	67
07:45	1	0	0	0	0	0	1	47	13	8	3	5	0	76
Hour	6	0	0	0	0	0	6	154	37	28	24	18	0	261
08:00	1	0	0	0	0	0	1	55	15	4	3	3	0	80
08:15	0	0	0	0	0	0	0	46	23	8	4	7	1	89
08:30	1	0	0	0	0	0	1	74	27	14	4	8	0	127
08:45	0	0	0	0	0	0	0	58	25	9	3	4	0	99
Hour	2	0	0	0	0	0	2	233	90	35	14	22	1	395
09:00	2	1	0	0	0	0	3	59	22	9	3	8	0	101
09:15	0	0	0	0	0	0	0	57	16	10	3	6	0	92
09:30	0	0	0	0	0	0	0	70	10	10	3	4	0	97
09:45	0	0	0	0	0	0	0	54	17	11	4	6	0	92
Hour	2	1	0	0	0	0	3	240	65	40	13	24	0	382
10:00	3	1	0	0	0	0	4	63	27	6	5	6	0	107
10:15	1	0	1	0	0	0	2	79	18	6	7	4	0	114
10:30	2	0	0	0	0	0	2	61	16	8	1	7	0	93
10:45	1	0	0	0	0	0	1	80	20	8	6	3	1	118
Hour	7	1	1	0	0	0	9	283	81	28	19	20	1	432
11:00	1	0	0	0	0	0	1	79	28	11	4	9	0	131
11:15	3	0	0	0	0	0	3	88	20	6	3	4	0	121
11:30	3	0	0	0	0	0	3	69	21	11	2	7	0	110
11:45	4	0	0	0	0	0	4	79	23	11	4	5	2	124
Hour	11	0	0	0	0	0	11	315	92	39	13	25	2	486
12:00	0	1	0	0	0	0	1	85	19	2	4	5	0	115
12:15	1	0	0	0	0	0	1	95	21	11	7	5	0	139
12:30	1	1	0	0	0	0	2	99	22	4	7	4	0	136
12:45	4	0	0	0	0	0	4	108	15	12	4	3	0	142
Hour	6	2	0	0	0	0	8	387	77	29	22	17	0	532
13:00	0	0	0	0	0	0	0	99	21	8	2	4	1	135
13:15	1	0	0	0	0	0	1	96	21	5	4	6	0	132
13:30	1	0	0	0	0	0	1	96	23	10	4	3	1	137
13:45	2	0	0	0	0	0	2	106	18	3	1	6	0	134
Hour	4	0	0	0	0	0	4	397	83	26	11	19	2	538
14:00	1	0	0	0	0	0	1	123	23	9	3	5	0	163
14:15	3	0	0	0	0	0	3	103	15	8	1	4	1	132
14:30	0	0	0	0	0	0	0	82	20	6	5	2	2	117
14:45	3	0	0	0	0	0	3	93	26	4	1	6	2	132
Hour	7	0	0	0	0	0	7	401	84	27	10	17	5	544
15:00	1	0	0	0	0	0	1	88	16	7	1	3	0	115
15:15	1	2	0	0	0	0	3	101	22	9	2	5	2	141
15:30	2	0	0	0	0	0	2	109	27	6	5	5	1	153
15:45	2	0	0	0	0	0	2	103	16	9	2	3	1	134
Hour	6	2	0	0	0	0	8	401	81	31	10	16	4	543
16:00	3	0	0	0	0	0	3	93	22	9	6	8	1	139
16:15	0	0	0	0	0	0	0	77	12	14	3	3	2	111
16:30	0	1	0	0	0	0	1	112	18	3	5	6	2	146
16:45	1	0	0	0	0	0	1	118	19	11	3	6	0	157
Hour	4	1	0	0	0	0	5	400	71	37	17	23	5	553
17:00	0	0	0	0	0	0	0	181	21	2	1	6	3	214
17:15	1	0	0	0	0	0	1	157	20	5	2	6	1	191
17:30	0	0	0	0	0	0	0	184	16	3	2	5	1	211
17:45	1	0	0	0	0	0	1	134	9	3	2	7	2	157
Hour	2	0	0	0	0	0	2	656	66	13	7	24	7	773
18:00	0	0	0	0	0	0	0	146	12	4	3	5	4	174
18:15	1	0	0	0	0	0	1	157	9	10	2	4	0	182
18:30	0	0	0	0	0	0	0	108	6	2	3	6	2	127
18:45	2	0	0	0	0	0	2	92	8	3	4	6	2	115
Hour	3	0	0	0	0	0	3	503	35	19	12	21	8	598
19:00	1	0	0	0	0	0	1	115	10	4	3	7	1	140
19:15	0	0	0	0	0	0	0	76	9	2	2	7	1	97
19:30	0	0	0	0	0	0	0	78	6	1	1	4	0	90
19:45	0	0	0	0	0	0	0	70	3	1	2	0	1	77
Hour	1	0	0	0	0	0	1	339	28	8	8	18	3	404
20:00	1	0	0	0	0	0	1	72	6	3	2	5	0	88
20:15	0	0	0	0	0	0	0	53	1	2	2	4	0	62
20:30	0	0	0	0	0	0	0	71	5	0	0	4	1	81
20:45	0	0	0	0	0	0	0	64	4	1	1	2	0	72
Hour	1	0	0	0	0	0	1	260	16	6	5	15	1	303
Total	80	7	1	0	1	0	89	5065	928	380	208	288	40	6909

Site No. 1
Location R132(N) / Car Park Access / R132(S)
Date Tuesday 15 March 2011

Time	To Arm A - R132(N)						Veh. Total	From Arm A - R132(N)						Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C		CAR	LGV	OGV1	OGV2	PSV	M/C	
06:00	24	6	3	6	1	0	40	53	8	5	2	2	0	70
06:15	22	3	4	7	4	0	40	67	6	3	8	4	0	88
06:30	37	10	5	6	4	1	63	66	9	0	0	5	0	80
06:45	25	3	2	4	4	0	38	76	16	2	7	5	1	107
Hour	108	22	14	23	13	1	181	262	39	10	17	16	1	345
07:00	27	11	3	8	8	0	57	82	17	5	7	8	0	119
07:15	37	8	8	7	6	0	66	106	11	9	2	10	2	140
07:30	44	6	9	6	5	0	70	97	21	5	4	6	2	135
07:45	47	13	8	3	6	0	77	166	16	6	1	10	3	202
Hour	155	38	28	24	25	0	270	451	65	25	14	34	7	596
08:00	57	15	4	3	4	0	83	173	21	5	0	11	2	212
08:15	49	23	8	4	9	1	94	190	18	8	5	5	0	226
08:30	77	27	14	4	9	0	131	204	24	7	1	7	1	244
08:45	58	25	9	3	5	0	100	216	26	9	7	8	1	267
Hour	241	90	35	14	27	1	408	783	89	29	13	31	4	949
09:00	61	23	9	3	9	0	105	192	21	11	3	6	0	233
09:15	61	17	10	3	8	0	99	130	23	7	3	7	2	172
09:30	71	11	10	3	5	0	100	107	19	6	1	7	0	140
09:45	57	17	11	4	8	0	97	110	24	8	3	6	0	151
Hour	250	68	40	13	30	0	401	539	87	32	10	26	2	696
10:00	67	29	6	5	7	0	114	97	20	12	3	4	2	138
10:15	82	19	6	7	6	0	120	95	27	8	2	7	1	140
10:30	62	16	9	1	9	0	97	80	23	8	8	7	0	126
10:45	80	20	8	6	4	1	119	98	17	8	2	6	1	132
Hour	291	84	29	19	26	1	450	370	87	36	15	24	4	536
11:00	80	28	11	4	11	0	134	92	16	5	7	4	0	124
11:15	90	20	6	3	5	0	124	103	18	8	1	6	1	137
11:30	71	21	11	2	9	0	114	119	27	13	4	8	1	172
11:45	82	23	11	4	7	2	129	81	18	7	6	6	3	121
Hour	323	92	39	13	32	2	501	395	79	33	18	24	5	554
12:00	87	20	2	4	6	0	119	108	14	11	7	6	2	148
12:15	99	21	11	7	6	0	144	128	24	5	5	7	1	170
12:30	105	23	4	7	6	0	145	105	21	11	4	7	1	149
12:45	116	15	12	4	4	0	151	109	20	5	3	5	0	142
Hour	407	79	29	22	22	0	559	450	79	32	19	25	4	609
13:00	102	21	8	2	6	1	140	91	19	10	2	8	0	130
13:15	101	21	5	4	8	0	139	129	23	7	7	6	0	172
13:30	103	24	10	4	4	1	146	118	16	7	6	8	2	157
13:45	107	18	3	1	7	0	136	95	18	10	3	5	0	131
Hour	413	84	26	11	25	2	561	433	76	34	18	27	2	590
14:00	131	23	9	3	7	0	173	122	23	8	3	4	1	161
14:15	114	15	8	1	5	1	144	121	19	12	3	6	3	164
14:30	87	20	6	5	4	2	124	110	23	10	5	7	0	155
14:45	96	26	4	1	8	2	137	90	18	6	2	4	1	121
Hour	428	84	27	10	24	5	578	443	83	36	13	21	5	601
15:00	98	16	7	1	5	0	127	110	23	7	4	10	1	155
15:15	108	23	9	2	6	2	150	107	20	15	7	3	0	152
15:30	116	27	6	5	7	1	162	119	15	8	9	8	1	160
15:45	108	16	9	2	4	1	140	124	22	17	5	7	2	177
Hour	430	82	31	10	22	4	579	460	80	47	25	28	4	644
16:00	96	23	9	6	10	1	145	102	15	7	4	5	1	134
16:15	80	12	14	3	4	2	115	107	20	11	3	8	1	150
16:30	119	18	3	5	8	2	155	112	17	8	6	9	1	153
16:45	124	20	11	3	7	0	165	107	12	4	5	6	2	136
Hour	419	73	37	17	29	5	580	428	64	30	18	28	5	573
17:00	196	21	2	1	9	3	232	108	10	7	5	7	1	138
17:15	170	22	5	2	8	1	208	115	14	7	4	9	1	150
17:30	201	16	3	2	7	1	230	132	12	5	10	9	1	169
17:45	143	10	3	2	8	2	168	129	13	6	5	4	0	157
Hour	710	69	13	7	32	7	838	484	49	25	24	29	3	614
18:00	150	12	4	3	8	4	181	100	6	14	4	7	0	131
18:15	162	9	10	2	6	0	189	83	5	6	4	6	2	106
18:30	111	6	2	3	8	2	132	70	6	5	3	6	0	90
18:45	97	8	3	4	8	2	122	106	3	5	3	5	1	123
Hour	520	35	19	12	30	8	624	359	20	30	14	24	3	450
19:00	117	10	4	3	8	1	143	100	9	2	6	6	2	125
19:15	85	10	2	2	9	1	109	76	7	2	3	4	1	93
19:30	88	7	1	1	6	0	103	60	1	1	1	8	0	71
19:45	81	4	1	2	2	1	91	64	2	2	1	6	1	76
Hour	371	31	8	8	25	3	446	300	19	7	11	24	4	365
20:00	78	6	3	2	6	0	95	55	6	0	4	6	0	71
20:15	62	1	2	2	6	0	73	55	4	2	1	8	1	71
20:30	88	6	0	0	8	1	103	46	1	2	1	7	0	57
20:45	77	5	1	1	4	0	88	57	4	1	1	5	1	69
Hour	305	18	6	5	24	1	359	213	15	5	7	26	2	268
Total	5371	949	381	208	386	40	7335	6370	931	411	236	387	55	8390

Site No. 1
Location R132(N) / Car Park Access / R132(S)
Date Tuesday 15 March 2011

Time	To Arm B - Car Park Access						Veh. Total	From Arm B - Car Park Access						Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C		CAR	LGV	OGV1	OGV2	PSV	M/C	
06:00	20	0	0	0	1	0	21	3	0	0	0	1	0	4
06:15	29	0	0	0	2	0	31	2	0	0	0	0	0	2
06:30	29	1	0	0	2	0	32	6	0	0	0	2	0	8
06:45	20	0	0	0	1	0	21	1	0	0	0	1	0	2
Hour	98	1	0	0	6	0	105	12	0	0	0	4	0	16
07:00	17	0	0	0	1	0	18	0	0	0	0	3	0	3
07:15	20	1	0	0	2	0	23	1	0	0	0	1	0	2
07:30	14	1	0	0	1	0	16	0	1	0	0	2	0	3
07:45	14	0	0	0	2	0	16	0	0	0	0	1	0	1
Hour	65	2	0	0	6	0	73	1	1	0	0	7	0	9
08:00	13	2	0	0	2	0	17	2	0	0	0	1	0	3
08:15	9	0	0	0	1	0	10	3	0	0	0	2	0	5
08:30	10	0	0	0	1	0	11	3	0	0	0	1	0	4
08:45	6	0	0	0	2	0	8	0	0	0	0	1	0	1
Hour	38	2	0	0	6	0	46	8	0	0	0	5	0	13
09:00	12	1	0	0	1	0	14	4	1	0	0	1	0	6
09:15	5	0	0	0	1	0	6	4	1	0	0	2	0	7
09:30	12	0	0	0	2	0	14	2	1	0	0	1	0	4
09:45	9	1	0	0	1	0	11	4	0	0	0	2	0	6
Hour	38	2	0	0	5	0	45	14	3	0	0	6	0	23
10:00	12	1	0	0	1	0	14	4	2	0	0	1	0	7
10:15	9	0	1	0	2	0	12	3	1	0	0	2	0	6
10:30	7	2	0	0	2	0	11	3	0	1	0	2	0	6
10:45	5	0	0	0	1	0	6	0	0	0	0	1	0	1
Hour	33	3	1	0	6	0	43	10	3	1	0	6	0	20
11:00	6	0	0	0	2	0	8	1	0	0	0	2	0	3
11:15	12	0	0	0	2	0	14	5	0	0	0	1	0	6
11:30	11	0	0	0	1	0	12	2	0	0	0	2	0	4
11:45	9	0	0	0	2	0	11	4	0	0	0	2	0	6
Hour	38	0	0	0	7	0	45	12	0	0	0	7	0	19
12:00	6	1	0	0	1	0	8	2	1	0	0	1	0	4
12:15	4	0	0	0	2	0	6	4	0	0	0	1	0	5
12:30	6	1	0	0	1	0	8	7	1	0	0	2	0	10
12:45	15	0	0	0	2	0	17	10	0	0	0	1	0	11
Hour	31	2	0	0	6	0	39	23	2	0	0	5	0	30
13:00	4	0	0	0	2	0	6	4	0	0	0	2	0	6
13:15	10	1	0	0	1	0	12	5	0	0	0	2	0	7
13:30	10	0	0	0	2	0	12	8	2	0	0	1	0	11
13:45	9	1	0	0	1	0	11	2	0	0	0	1	0	3
Hour	33	2	0	0	6	0	41	19	2	0	0	6	0	27
14:00	7	1	0	0	1	0	9	10	0	0	0	2	0	12
14:15	10	0	0	0	2	0	12	11	0	0	0	1	0	12
14:30	7	0	0	0	2	0	9	7	0	0	0	2	0	9
14:45	5	0	0	0	1	0	6	4	0	0	0	2	0	6
Hour	29	1	0	0	6	0	36	32	0	0	0	7	0	39
15:00	5	0	0	0	2	0	7	11	0	0	0	2	0	13
15:15	6	2	0	0	2	0	10	8	3	0	0	1	0	12
15:30	10	0	0	0	2	0	12	9	0	0	0	2	0	11
15:45	14	0	0	0	2	0	16	5	0	0	0	1	0	6
Hour	35	2	0	0	8	0	45	33	3	0	0	6	0	42
16:00	7	1	0	0	1	0	9	4	1	0	0	2	0	7
16:15	3	0	0	0	2	0	5	5	0	0	0	1	0	6
16:30	10	1	0	0	1	0	12	8	0	0	0	2	0	10
16:45	6	0	0	0	2	0	8	7	1	0	0	1	0	9
Hour	26	2	0	0	6	0	34	24	2	0	0	6	0	32
17:00	8	0	0	0	1	0	9	16	0	0	0	3	0	19
17:15	4	0	0	0	2	0	6	14	2	0	0	2	0	18
17:30	11	0	0	0	2	0	13	17	0	0	0	2	0	19
17:45	3	0	0	0	2	0	5	9	1	0	0	1	0	11
Hour	26	0	0	0	7	0	33	56	3	0	0	8	0	67
18:00	5	0	0	0	2	0	7	7	0	0	0	3	0	10
18:15	3	0	0	0	2	0	5	6	0	0	0	2	0	8
18:30	0	1	0	0	2	0	3	3	0	0	0	2	0	5
18:45	5	0	0	0	2	0	7	6	0	0	0	2	0	8
Hour	13	1	0	0	8	0	22	22	0	0	0	9	0	31
19:00	2	0	0	0	2	0	4	4	0	0	0	1	0	5
19:15	2	0	0	0	1	0	3	9	1	0	0	2	0	12
19:30	0	0	0	0	2	0	2	12	1	0	0	2	0	15
19:45	0	0	0	0	3	0	3	13	1	0	0	2	0	16
Hour	4	0	0	0	8	0	12	38	3	0	0	7	0	48
20:00	1	0	0	0	1	0	2	6	0	0	0	1	0	7
20:15	3	0	0	0	2	0	5	10	0	0	0	2	0	12
20:30	1	0	0	0	2	0	3	20	1	0	0	4	0	25
20:45	1	0	0	0	2	0	3	18	1	0	0	2	0	21
Hour	6	0	0	0	7	0	13	54	2	0	0	9	0	65
Total	513	20	1	0	98	0	632	358	24	1	0	98	0	481

Site No. 1
Location R132(N) / Car Park Access / R132(S)
Date Tuesday 15 March 2011

Time	To Arm C - R132(S)						Veh. Total	From Arm C - R132(S)						Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C		CAR	LGV	OGV1	OGV2	PSV	M/C	
06:00	38	8	5	2	1	0	54	26	6	3	6	0	0	41
06:15	45	6	3	8	3	0	65	27	3	4	7	5	0	46
06:30	42	8	0	0	3	0	53	36	10	5	6	2	1	60
06:45	57	16	2	7	4	1	87	25	3	2	4	3	0	37
Hour	182	38	10	17	11	1	259	114	22	14	23	10	1	184
07:00	66	17	5	7	7	0	102	28	11	3	8	5	0	55
07:15	89	10	9	2	8	2	120	39	8	8	7	5	0	67
07:30	84	20	5	4	5	2	120	45	5	9	6	3	0	68
07:45	153	16	6	1	8	3	187	48	13	8	3	5	0	77
Hour	392	63	25	14	28	7	529	160	37	28	24	18	0	267
08:00	161	19	5	0	9	2	196	56	15	4	3	3	0	81
08:15	181	18	8	5	4	0	216	46	23	8	4	7	1	89
08:30	195	24	7	1	6	1	234	75	27	14	4	8	0	128
08:45	210	26	9	7	6	1	259	58	25	9	3	4	0	99
Hour	747	87	29	13	25	4	905	235	90	35	14	22	1	397
09:00	184	21	11	3	5	0	224	61	23	9	3	8	0	104
09:15	125	23	7	3	6	2	166	57	16	10	3	6	0	92
09:30	96	19	6	1	5	0	127	70	10	10	3	4	0	97
09:45	102	23	8	3	5	0	141	54	17	11	4	6	0	92
Hour	507	86	32	10	21	2	658	242	66	40	13	24	0	385
10:00	88	20	12	3	3	2	128	66	28	6	5	6	0	111
10:15	87	27	8	2	5	1	130	80	18	7	7	4	0	116
10:30	77	21	8	8	5	0	119	63	16	8	1	7	0	95
10:45	94	17	8	2	5	1	127	81	20	8	6	3	1	119
Hour	346	85	36	15	18	4	504	290	82	29	19	20	1	441
11:00	87	16	5	7	2	0	117	80	28	11	4	9	0	132
11:15	97	18	8	1	4	1	129	91	20	6	3	4	0	124
11:30	111	27	13	4	7	1	163	72	21	11	2	7	0	113
11:45	77	18	7	6	4	3	115	83	23	11	4	5	2	128
Hour	372	79	33	18	17	5	524	326	92	39	13	25	2	497
12:00	102	14	11	7	5	2	141	85	20	2	4	5	0	116
12:15	125	24	5	5	5	1	165	96	21	11	7	5	0	140
12:30	101	21	11	4	6	1	144	100	23	4	7	4	0	138
12:45	100	20	5	3	3	0	131	112	15	12	4	3	0	146
Hour	428	79	32	19	19	4	581	393	79	29	22	17	0	540
13:00	88	19	10	2	6	0	125	99	21	8	2	4	1	135
13:15	120	22	7	7	5	0	161	97	21	5	4	6	0	133
13:30	110	17	7	6	6	2	148	97	23	10	4	3	1	138
13:45	89	17	10	3	4	0	123	108	18	3	1	6	0	136
Hour	407	75	34	18	21	2	557	401	83	26	11	19	2	542
14:00	118	22	8	3	3	1	155	124	23	9	3	5	0	164
14:15	114	19	12	3	4	3	155	106	15	8	1	4	1	135
14:30	105	23	10	5	5	0	148	82	20	6	5	2	2	117
14:45	89	18	6	2	3	1	119	96	26	4	1	6	2	135
Hour	426	82	36	13	15	5	577	408	84	27	10	17	5	551
15:00	107	23	7	4	8	1	150	89	16	7	1	3	0	116
15:15	103	22	15	7	1	0	148	102	24	9	2	5	2	144
15:30	113	15	8	9	6	1	152	111	27	6	5	5	1	155
15:45	112	22	17	5	5	2	163	105	16	9	2	3	1	136
Hour	435	82	47	25	20	4	613	407	83	31	10	16	4	551
16:00	99	14	7	4	4	1	129	96	22	9	6	8	1	142
16:15	106	20	11	3	6	1	147	77	12	14	3	3	2	111
16:30	103	17	8	6	8	1	143	112	19	3	5	6	2	147
16:45	103	12	4	5	4	2	130	119	19	11	3	6	0	158
Hour	411	63	30	18	22	5	549	404	72	37	17	23	5	558
17:00	101	10	7	5	6	1	130	181	21	2	1	6	3	214
17:15	113	14	7	4	7	1	146	158	20	5	2	6	1	192
17:30	121	12	5	10	7	1	156	184	16	3	2	5	1	211
17:45	127	13	6	5	2	0	153	135	9	3	2	7	2	158
Hour	462	49	25	24	22	3	585	658	66	13	7	24	7	775
18:00	98	6	14	4	5	0	127	146	12	4	3	5	4	174
18:15	82	5	6	4	4	2	103	158	9	10	2	4	0	183
18:30	70	5	5	3	4	0	87	108	6	2	3	6	2	127
18:45	104	3	5	3	3	1	119	94	8	3	4	6	2	117
Hour	354	19	30	14	16	3	436	506	35	19	12	21	8	601
19:00	101	9	2	6	4	2	124	116	10	4	3	7	1	141
19:15	74	7	2	3	3	1	90	76	9	2	2	7	1	97
19:30	62	1	1	1	6	0	71	78	6	1	1	4	0	90
19:45	66	2	2	1	3	1	75	70	3	1	2	0	1	77
Hour	303	19	7	11	16	4	360	340	28	8	8	18	3	405
20:00	55	6	0	4	5	0	70	73	6	3	2	5	0	89
20:15	53	4	2	1	6	1	67	53	1	2	2	4	0	62
20:30	48	1	2	1	5	0	57	71	5	0	0	4	1	81
20:45	61	4	1	1	3	1	71	64	4	1	1	2	0	72
Hour	217	15	5	7	19	2	265	261	16	6	5	15	1	304
Total	5989	921	411	236	290	55	7902	5145	935	381	208	289	40	6998

Appendix 13.1

Summary of Relevant Legislation

APPENDIX 13.1: SUMMARY OF RELEVANT LEGISLATION

National Monuments (Amendment) Act (1930-2014)

All archaeological sites have the full protection of the national monuments legislation (Principal Act 1930; Amendments 1954, 1987, 1994, 2004 and 2014). In the 1987 Amendment of Section 2 of the Principal Act (1930), the definition of a national monument is specified as:

> *any artificial or partly artificial building, structure or erection or group of such buildings, structures or erections;*
>
> *any artificial cave, stone or natural product, whether forming part of the ground, that has been artificially carved, sculptured or worked upon or which (where it does not form part of the place where it is) appears to have been purposely put or arranged in position;*
>
> *any, or any part of any, prehistoric or ancient tomb, grave or burial deposit, or*
>
> *(ii) ritual, industrial or habitation site*
>
> *and*
>
> *any place comprising the remains or traces of any such building, structure or erection, any cave, stone or natural product or any such tomb, grave, burial deposit or ritual, industrial or habitation site...*

Under Section 14 of the Principal Act (1930):

It shall be unlawful...

> *to demolish or remove wholly or in part or to disfigure, deface, alter, or in any manner injure or interfere with any such national monument without or otherwise than in accordance with the consent hereinafter mentioned (a licence issued by the Office of Public Works National Monuments Branch),*
>
> or
>
> *to excavate, dig, plough or otherwise disturb the ground within, around, or in the proximity to any such national monument without or otherwise than in accordance...*

Under Amendment to Section 23 of the Principal Act (1930),

> *A person who finds an archaeological object shall, within four days after the finding, make a report of it to a member of the Garda Síochána...or the Director of the National Museum...*

The latter is of relevance to any finds made during a watching brief.

In the 1994 Amendment of Section 12 of the Principal Act (1930), all the sites and 'places' recorded by the Sites and Monuments Record of the Office of Public Works are provided with a new status in law. This new status provides a level of protection to the listed sites that is equivalent to that accorded to 'registered' sites [Section 8(1), National Monuments Amendment Act 1954] as follows.

The Commissioners shall establish and maintain a record of monuments and places where they believe there are monuments and the record shall be comprised of a list of monuments

and such places and a map or maps showing each monument and such place in respect of each county in the State.

The Commissioners shall cause to be exhibited in a prescribed manner in each county the list and map or maps of the county drawn up and publish in a prescribed manner information about when and where the lists and maps may be consulted.

In addition, when the owner or occupier (not being the Commissioners) of a monument or place which has been recorded, or any person proposes to carry out, or to cause or permit the carrying out of, any work at or in relation to such monument or place, he shall give notice in writing of his proposal to carry out the work to the Commissioners and shall not, except in the case of urgent necessity and with the consent of the Commissioners, commence the work for a period of two months after having given the notice.

Under the National Monuments Amendment Act (2004), the Minister of Environment, Heritage and Local Government will issue directions relating to archaeological works and will be advised by the National Monuments Section and the National Museum of Ireland. The Act sets out the circumstances whereby the Minister of Environment, Heritage and Local Government may grant consent (i.e. In respect of a national monument of which the Minister or a local authority are the owners or the guardians or in respect of which a preservation order is in force) or issue directions (i.e. in relation to approved road developments—being road development approved under either or both sections 49 and 51 of the Roads Act 1993).

14A. (1) The consent of the Minister under section 14 of this Act and any further consent or licence under any other provision of the National Monuments Acts 1930 to 2004 shall not be required where the works involved are connected with an approved road development.

14A. (2) Any works of an archaeological nature that are carried out in respect of an approved road development shall be carried out in accordance with the directions of the Minister, which directions shall be issued following consultation by the minister with the Director of the National Museum of Ireland.

14A (4) Where a national monument has been discovered to which subsection (3) of this section relates, then the road authority carrying out the road development shall report the discovery to the Minister subject to subsection (7) of this section, and pending any directions by the minister under paragraph (d) of this subsection, no works which would interfere with the monument shall be carried out, except works urgently required to secure its preservation carried out in accordance with such measures as may be specified by the Minister

The Minister will consult with the Director of the National Museum of Ireland for a period not longer than 14 days before issuing further directions in relation to the national monument.

The Minister will not be restricted to archaeological considerations alone, but will also consider the wider public interest.

Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999

This Act provides for the establishment of a national inventory of architectural heritage and historic monuments.

Section 1 of the act defines “architectural heritage” as:-

(a) all structures and buildings together with their settings and attendant grounds, fixtures and fittings,

(b) groups of such structures and buildings, and,

(c) sites

which are of architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest.

Section 2 of the Act states that the Minister (for Arts, Heritage, Gaeltacht and the Islands) shall establish the NIAH, determining its form and content, defining the categories of architectural heritage, and specifying to which category each entry belongs. The information contained within the inventory will be made available to planning authorities, having regard to the security and privacy of both property and persons involved.

Section 3 of the Act states that the minister may appoint officers, who may in turn request access to premises listed in the inventory from the occupiers of these buildings. The officer is required to inform the occupier of the building why entry is necessary, and in the event of a refusal, can apply for a warrant to enter the premises.

Section 4 of the Act states that obstruction of an officer or a refusal to comply with requirements of entry will result in the owner or occupier being guilty of an offence.

Section 5 of the Act states that sanitary authorities who carry out works on a monument covered by this Act will as far as possible preserve the monument with the proviso that its condition is not a danger to any person or property, and that the sanitation authority will inform the Minister that the works have been carried out.

The provisions in the Act are in addition to and not a substitution for provisions of the National Monument Act (1930–94), and the protection of monuments in the National Monuments Act is extended to the monuments covered by the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act (1999).

Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 2000 and the Local Government (Planning and Development) Act 2000

The Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act provides for the establishment of a national inventory of architectural heritage and historic monuments.

Section 1 of the act defines “architectural heritage” as:

(a) all structures and buildings together with their settings and attendant grounds, fixtures and fittings,

(b) groups of such structures and buildings, and,

(c) sites, which are of architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest.

The Local Government (Planning and Development) Act, 1999, which came into force on 1st January 2000, provides for the inclusion of protected structures into the planning authorities’

development plans and sets out statutory regulations regarding works affecting such structures, thereby giving greater statutory protection to buildings. All structures listed in the development plan are now referred to as Protected Structures and enjoy equal statutory protection. Under the 1999 Act the entire structure is protected, including a structures interior, exterior, the land lying within the curtilage of the protected structure and other structures within that curtilage. This Act was subsequently repealed and replaced by the Planning and Development Act, 2000, where the conditions relating to the protection of architectural heritage are set out in Part IV of the Act.

The main features of the 2000 Act are:

a) planning authorities have a clear obligation to create a record of protected structures (RPS) which includes all structures or parts of structures in their functional areas which, in their opinion, are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. This record forms part of a planning authority's development plan.

b) planning authorities are also obliged to preserve the character of places and townscapes which are of special architectural, historic, archaeological, artistic, cultural, scientific, social or technical interest or that contribute to the appreciation of protected structures, by designating them architectural conservation areas (ACAs) in their development plan.

c) development plans must include objectives for the protection of such structures and the preservation of the character of such areas to ensure proper and sustainable planning and development.

d) new responsibilities are given to the owners and occupiers of protected structures to maintain them and planning authorities have additional powers to ensure that buildings are not endangered either directly or through neglect.5 Financial assistance, in the form of conservation grants, is available from planning authorities to assist in this process.

e) the owner or occupier of a protected structure may seek a declaration from the relevant planning authority to determine the works to the structure that would materially affect its character and therefore require planning permission, and those works which may be carried out as exempted development.

f) where a structure is protected, the protection includes the structure, its interior and the land within its curtilage and other structures within that curtilage (including their interiors) and all fixtures and features which form part of the interior or exterior of all these structures. All works which would materially affect the character of a protected structure, or a proposed protected structure, will require planning permission.

Appendix 13.2

Glossary of Impact Assessment

APPENDIX 13.2: GLOSSARY OF IMPACT ASSESSMENT

Significance Criteria (NRA Guidelines 2006)

The significance criteria can be used to evaluate the significance of an archaeological site, monument or complex. It should not, however, be regarded as definitive, rather it is an indicator which contributes to a wider judgment based on the individual circumstances of a feature. Different archaeological heritage asset types lend themselves more easily to assessment and it should be borne in mind that this can create a bias in the record, for example an upstanding stone monument such as a fortified house is easier to examine with a view to significance than a degraded enclosure site.

Table 1: Significance Criteria, NRA Guidelines 2006 (Archaeological Heritage)

Criteria	Explanation
Existing Status	The level of protection associated with an archaeological site / monument is an important consideration.
Condition /Preservation	The survival of a monument's archaeological potential both above and below ground is an important consideration and should be assessed in relation to its present condition and surviving features. Well-preserved sites should be highighted, this assessment can only be based on a field inspection.
Documentation /Historical Significance	The significance of a monument may be enhanced by the existence of records of previous investigations or contemporary documentation supported by written evidence or historic maps. Sites with a definite historical association or an example of a notable event or person should be highlighted.
Group Value	The value of a single monument may be greatly enhanced by its association with related contemporary monuments or with monuments from different periods indicating an extended time presence in any specific area. In some cases it may be preferable to protect the complete group, including associated and adjacent land, rather than to protect isolated monuments within that group.
Rarity	The rarity of some monument types can be a central factor affecting response strategies for development, whatever the condition of the individual feature. It is important to recognise sites that have a limited distribution.
Visibility in the Landscape	Monuments that are highly visible in the landscape have a heightened physical presence. The inter-visibility between monuments may also be explored in this category.
Fragility/ Vulnerability	It is important to assess the level of threat to archaeological monuments from erosion, natural degradation, agricultural activity, land clearance, neglect, careless treatment or development. The nature of the archaeological evidence cannot always be specified precisely but it may still be possible to document reasons to justify the significance of the feature. This category relates to the probability of monuments producing material of archaeological significance as a result of future investigative work.
Amenity Value	Regard should be taken of the existing and potential amenity value of a monument.

Determining Significance of Architectural Heritage Assets

The significance of perceived impact on structures and sites of architectural merit is determined by a combination of the architectural heritage importance of the structure and the degree of impact. In each case the structure is given a rating as to its importance and, if higher

than “Record only”, the nature of its special interest is given. The rating definitions are in accordance with those given by the National Inventory of Architectural Heritage (NIAH):

- *International:* Structures or sites of sufficient architectural heritage importance to be considered in an international context. Examples include St Fin Barre's Cathedral, Cork. These are exceptional structures that can be compared to and contrasted with the finest architectural heritage in other countries.
- *National:* Structures or sites that make a significant contribution to the architectural heritage of Ireland. These are structures and sites that are considered to be of great architectural heritage significance in an Irish context. Examples include Ardnacrusha Power Station, Co. Clare; the Ford Factory, Cork; Carroll's Factory, Dundalk; Lismore Castle, Co. Waterford; Sligo Courthouse, Sligo; and Emo Court, Co. Laois.
- *Regional:* Structures or sites that make a significant contribution to the architectural heritage within their region or area. They also stand in comparison with similar structures or sites in other regions or areas within Ireland. Examples would include many Georgian terraces; Nenagh Courthouse, Co. Tipperary; or the Bailey Lighthouse, Howth. Increasingly, structures that need to be protected include structures or sites that make a significant contribution to the architectural heritage within their own locality. Examples of these would include modest terraces and timber shop fronts.
- *Local:* These are structures or sites of some vintage that make a contribution to the architectural heritage but may not merit being placed in the RPS separately. Such structures may have lost much of their original fabric.
- *Record only:* These are structures or sites that are not deemed to have sufficient presence or inherent architectural or other importance at the time of recording to warrant a higher rating. It is acknowledged, however, that they might be considered further at a future time.

Where the rating is deemed to be higher than “Record only” the category of special interest is noted. It should be noted that the term “special architectural interest” applies only in the context of this assessment of architectural heritage and does not imply that those buildings and other structures that are not considered to be of special architectural interest are in any way inferior or are of lower value.

The special interest is based on the categories set down in the Planning and Development Act, 2000. While that Act gives no criteria for assigning a special interest to a structure, the National Inventory of Architectural Heritage (NIAH) offers guidelines to its field-workers. This offers guidance by example rather than by definition, and is the system adopted for the present assessment. There are eight categories set down in the Act, viz. archaeological, architectural, historical, technical, cultural, scientific, social and artistic, and the NIAH guidance for each is as follows:

Archaeological

It is to be noted that the NIAH is biased towards post-1700 structures. Structures that have archaeological features may be recorded, providing the archaeological features are incorporated within post-1700 elements. Industrial fabric is considered to have technical significance, and should only be attributed archaeological significance if the structure has pre-1700 features.

Architectural

A structure may be considered of special architectural interest under the following criteria:-

- An aspiration of aesthetic appeal to its design.
- Good quality or well executed architectural design
- The work of a known and distinguished architect, engineer, designer, craftsman
- Modest or vernacular structures may be considered to be of architectural interest, as they are part of the history of the built heritage of Ireland.
- Well-designed decorative features, externally and/or internally.

Historical

A structure may be considered of special historical interest under the following criteria:

- A significant historical event associated with the structure
- An association with a significant historical figure
- Has a known interesting and/or unusual change of use, e.g. a former workhouse now in use as a hotel
- A memorial to a historical event.

Technical

A structure may be considered of special technical interest under the following criteria:

- Incorporates building materials of particular interest, i.e. the materials or the technology used for construction
- Incorporates innovative engineering design, e.g. bridges, canals or mill weirs
- A structure which has an architectural interest may also merit a technical interest due to the structural techniques used in its construction, e.g. a curvilinear glasshouse, early use of concrete, cast-iron prefabrication.
- Mechanical fixtures relating to a structure may be considered of technical significance.

Cultural

A structure may be considered of special cultural interest where there is an association with a known fictitious character or event, e.g., Sandycove Martello Tower which featured in Ulysses.

Scientific

A structure may be considered of special scientific interest where it is considered to be an extraordinary or pioneering scientific or technical achievement in the Irish context, e.g., Mizen Head Bridge, Birr Telescope.

Social

A structure may be considered of special social interest under the following criteria:

- A focal point of spiritual, political, national or other cultural sentiment to a group of people, e.g. a place of worship, a meeting point, assembly rooms.
- Developed or constructed by a community or organisation, e.g. the construction of the railways or the building of a church through the patronage of the local community

- Illustrates a particular lifestyle, philosophy, or social condition of the past, e.g. the hierarchical accommodation in a country house, philanthropic housing, vernacular structures.

Artistic

A structure may be considered of special artistic interest under the following criteria:

- Work of a skilled craftsman or artist, e.g. plasterwork, wrought-iron work, carved elements or details, stained glass, stations of the cross.
- Well-designed mass produced structures or elements may also be considered of artistic interest.
- In the evaluation of the special interest of a structure it is possible for the structure to have a special interest under more than one of the above categories.

Assessment of Material Assets, as Defined by the EPA (2002)

Context Describe the location and extent of the asset. Does it extend beyond the site boundary?

Character Describe the nature and use of the asset. It is exploited, used or accessible? Is it renewable or non-renewable and if so over what period?

Significance Describe the significance of the asset. Is the material asset unique, scarce or common in the region? Is its use controlled by known plans, priorities or policies? What trends are evident or may reasonably be inferred?

Sensitivity Describe the changes in the existing environment which could limit the access to, or the use of, the material asset.

Glossary of Impacts as defined by the NRA Guidelines 2006, with reference to the EPA (2002 & 2015)

Impacts are generally categorised as either being a direct impact, an indirect impact or as having no predicted impact. A glossary of impacts as defined by the EPA are as follows: -

- A **direct impact** occurs when a cultural heritage asset is located within the proposed development area and entails the removal of part, or the entire asset.

- **Indirect impacts** may be caused due to the close proximity of a development to a cultural heritage asset. Mitigation strategies and knowledge of detail design can often ameliorate any adverse indirect impact. Indirect impacts may include severance of linked features, degradation of setting and amenity or provide a visual intrusion.

- **No predicted** impact occurs when the proposed development does not adversely or positively affect a cultural heritage asset.

The impacts of the proposed scheme on the cultural heritage environment are first assessed in terms of their quality i.e. positive, negative, neutral (or direct and indirect):

Negative Impact A change that will detract from or permanently remove a cultural heritage asset from the landscape.

Neutral Impact A change that does not affect the cultural heritage asset.

Positive Impact A change that improves or enhances the setting of a cultural heritage asset.

Duration of Impacts:

Temporary Impact	Impact lasting for one year or less.
Short-term Impacts	Impact lasting one to seven years.
Medium-term Impact	Impact lasting seven to fifteen years.
Long-term Impact	Impact lasting fifteen to sixty years.
Permanent Impact	Impact lasting over sixty years.

Types of Impacts:

Cumulative Impact	The addition of many small impacts to create one larger, more significant, impact.
Do Nothing Impact	The environment as it would be in the future should no development of any kind be carried out.
Indeterminable Impact	When the full consequences of a change in the environment cannot be described.
Irreversible Impact	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
Residual Impact	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
'*Worst case' Impact*	The impacts arising from a development in the case where mitigation measures substantially fail.

Magnitude of Impact

- *Extent* – size, scale and spatial distributions of the effect
- *Duration* – period of time over which the effect will occur
- *Frequency* – how often the effect will occur
- *Context* – how will the extent, duration and frequency contrast with the accepted baseline conditions.

Table 2: Magnitude Criteria

Magnitude of Impact	Criteria
Very High	Applies where mitigation would be unlikely to remove adverse effects. Reserved for adverse, negative effects only. These effects arise where a cultural heritage asset is completely and irreversibly destroyed by a proposed development.
High	An impact which, by its magnitude, duration or intensity alters an important aspect of the environment. An impact like this would be where part of a cultural heritage asset would be permanently impacted upon leading to a loss

Magnitude of Impact	Criteria
	of character, integrity and data about the archaeological / cultural heritage feature/site.
Medium	A moderate direct impact arises where a change to the site is proposed which though noticeable is not such that the archaeological / cultural heritage integrity of the site is compromised and which is reversible. This arises where an archaeological / cultural heritage feature can be incorporated into a modern day development without damage and that all procedures used to facilitate this are reversible.
Low	An impact which causes changes in the character of the environment which are not significant or profound and do not directly impact or affect an archaeological / cultural heritage feature, site or monument.
Negligible	An impact capable of measurement but without noticeable consequences.
No change	No change to the asset or setting

Sensitivity Criteria

An evaluation of the sensitivity / value of sites and features is based on the extent to which assets contribute to the archaeological or built heritage character, though their individual or group qualities, either directly or potentially and guided by legislation, national policies, acknowledged standards, designations and criteria. The table below presents the scale of sensitivity / value together with criteria.

Table 3: Sensitivity Criteria

Sensitivity / Value	Criteria
Very High	Sites of international significance: World Heritage Sites National Monuments Protected Structures of international and national importance Designed landscapes and gardens of national importance Assets of acknowledged international importance or that can contribute significantly to international and national research objectives
High	RMP / SMR sites Designated assets that contribute to regional research objectives Protected Structures of regional importance Architectural Conservation Areas
Medium	Recently / newly identified archaeological sites (not yet included on the SMR / RMP; the importance of the resource has yet to be fully ascertained) Undesignated assets that contribute to regional research objectives NIAH Building Survey and Garden Survey Sites
Low	Undesignated Sites of local importance (e.g. townland / field boundaries) Assets compromised by poor preservation and/or poor survival of contextual associations Assets of limited value but with the potential to contribute to local research objectives (e.g. potential buried foundations associated with features / structures shown the 1st edition OS six-inch mapping) Historic townscapes or built up areas of limited historic integrity in their building or their settings
Negligible	Assets with very little or no surviving archaeological interest. Buildings of no architectural or historic note

Sensitivity / Value	Criteria
Unknown	The nature of the resource has yet to be fully ascertained, e.g. sites or areas of specific archaeological potential, greenfield areas or riverine / stream / coastal environs with inherent archaeological potential. Structures with potential historic significance (possibly hidden or inaccessible).

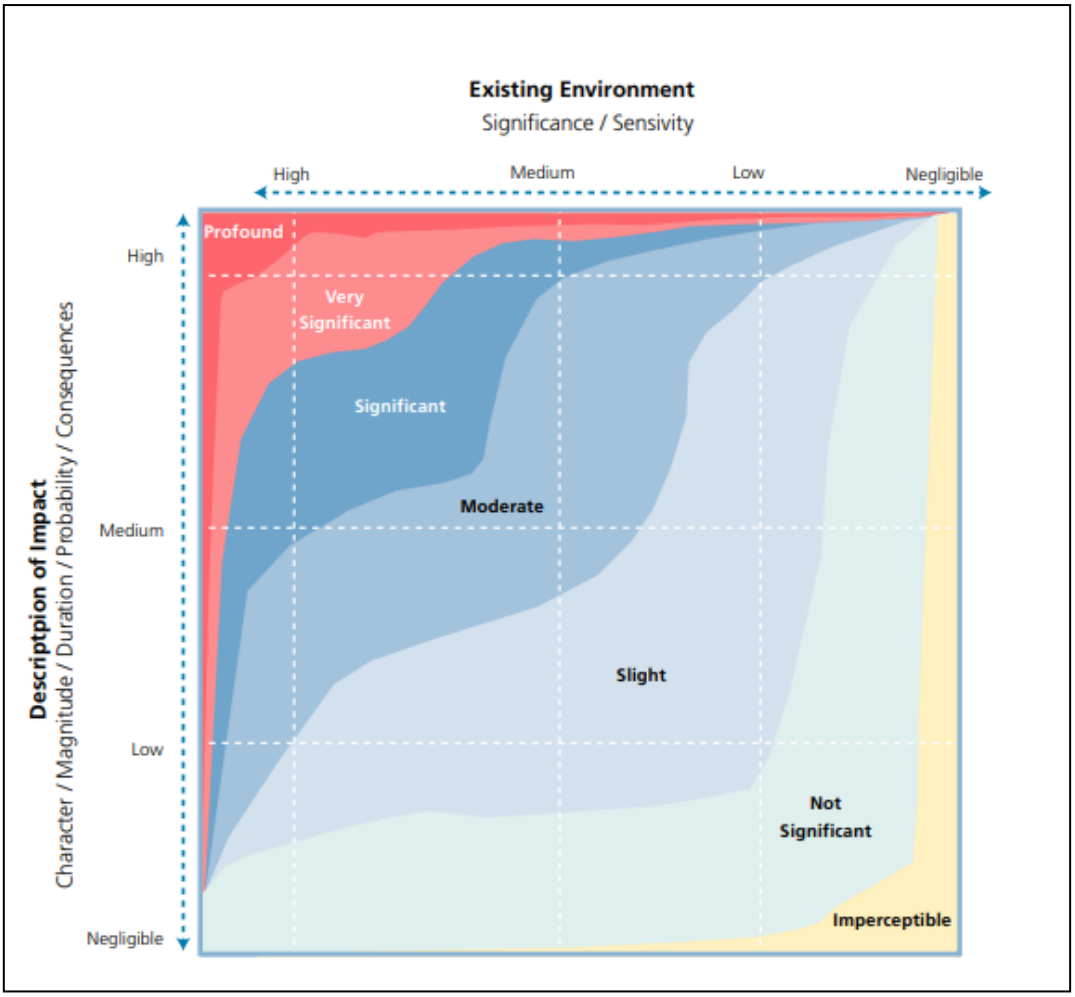
Criteria for Assessment of Impact Significance

Using both the sensitivity of the heritage asset and the magnitude of impact, the impact significance is established (Table 5).

The Draft EPA Revised Guidelines on Information to be contained within an EIS (September 2015) has also added the following levels of significance of effect (as per figure below):

Table 4 – Significance of Effects (EPA draft 2015)

Significance of Effect	Description
Very Significant	An impact which by its character, magnitude, duration or intensity significantly alters the majority of a sensitive aspect of the environment, for example in this case a monument
Not Significant	An effect which causes noticeable changes in the character of the environment but without noticeable consequences.



Source: Draft EPA Revised Guidelines on Information to be contained within an EIS (September 2015), p.43

Table 5: Impact Significance Matrix

Impact Significance					
Magnitude Impact (+/-)	**Sensitivity / Value of Cultural Heritage asset**				
Neutral	Very Low	Low	Medium	High	Very High
Very Low	Imperceptible	No	Slight	Slight	Slight
Low	Imperceptible	Slight	Moderate	Moderate	Moderate
Medium	Slight	Moderate	Moderate	Significant	Significant
High	Slight	Moderate	Significant	Significant	Profound
Very High	Slight	Moderate	Significant	Very Significant	Profound