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Strategic Cycle Corridors – Burys Bridge to Carrigtwohill

Report to inform Screening for Appropriate Assessment

Cork County Council

Project Number 60580596

Quality information

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1. Introduction

1.1 Purpose of this AA Screening Report

AECOM Ireland Limited (hereafter referred to as AECOM) were commissioned by Cork County Council (CCC) to produce this AA Screening Report to inform a 'Part 8' planning package for proposed cycle and pedestrian facilities as part of a Strategic Cycle Corridor along the Old Youghal Road (L3004) from the L2998/L3004 roundabout to Station Road, Carrigtwohill, Co. Cork.

This AA Screening Report will be provided by AECOM to CCC, as the competent authority for making determinations in relation to Screening for Appropriate Assessment (AA) under the legislation set out in Section 1.2.

1.2 Legal and Planning Context

1.2.1 Proposed Development Context

The European Communities Habitats Directive 92/43/EEC ("the Habitats Directive") provides, in Article 6 (3), the legal basis for AA (and by proxy the legal basis for Screening for AA[1]) at European level. In the context of the proposed development, the requirement (to screen) for AA under the Habitats Directive is transposed by the Planning and Development Acts (2010 to 2017 as amended); 'the Planning Acts', and the Planning and Development Regulations (2010 to 2018, as amended).

Under Section 177U (1) of the Planning Acts, a Screening for AA of the proposed development shall be carried out by the competent authority (in this case, CCC) to assess in view of best scientific knowledge, if the proposed development, either individually or in combination with other plans or projects, is likely to have a significant effect (s) on any European sites. The term 'European site' is defined in Section1.3.

Under Section 177U (5) of the Planning Acts, the competent authority shall determine that an AA of a proposed development is required if it cannot be excluded [emphasis added], on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site (s)[2].

1.2.2 Appropriate Assessment

An AA is triggered by an AA Screening determination that concludes significant effects on European sites are likely (or more specifically 'cannot be excluded on the basis of objective information'). If triggered, the competent authority must complete an AA to determine whether the project will adversely affect the integrity of any European site, in light of the site's Conservation Objectives. The competent authority's AA is typically informed by a Natura Impact Statement prepared by a technical expert.

1.2.3 Consultation and Publication Requirements

Section 177U (7) of the Planning Acts states: "A competent authority shall, as soon as may be after making a decision in relation to the application for consent for proposed development, make available for inspection by members of the public during office hours at the offices of the authority, and may also publish on the internet—any determination that it makes under subsection (5), and reasons for that determination".

[1] It is noted that there is, strictly speaking, no stated requirement to conduct Screening for AA in the Habitats Directive. The requirement for Screening arose from guidance issued by the European Commission (EC, 2001), and was subsequently made a statutory requirement in Irish law.
[2] The' Waddenzee' ruling (C-127/02) is an influential judgement of the European Court of Justice (ECJ) which has clarified what "likely to have a significant effect" means; specifically that, "if it cannot be excluded on the basis of objective information, that it will have a significant effect on the site" and that unless a significant effect can be objectively ruled-out with certainty, then it is 'likely'.

1.3 European Sites

In the Republic of Ireland, European sites[3] comprise:

- Special Areas of Conservation (SACs) designated for habitats, plants, and non-bird species;
- Special Protection Areas (SPAs) designated for bird species and their habitats; and,
- Candidate sites including 'cSACs'.

The process of designating cSACs as SACs is ongoing in Ireland. The term SAC is used throughout this AA Screening Report for both SACs and cSACs, given they are subject to equal protection.

[3] "European site" replaced the term "Natura 2000 site" under the EU (Environmental Impact Assessment and Habitats) Regulations 2011 S.I. No. 473 of 2011.

2. Project Description

Cork County Council (CCC) is proposing to develop pedestrian and cycle facilities along the Old Youghal Road (L3004) from the L2998/L3004 roundabout (Burys Bridge) to Station Road, Carrigtwohill, Co. Cork (hereinafter referred to as the 'proposed development') (see Figure 1).

The project objective is to provide a primary connection for sustainable transport between East Cork, Little Island and Cork City. To enable this, the project will improve safety (primarily by reducing vehicular speeds) and enhancing the quality of service for walking and cycling. It will form part of a wider network that identifies the L3004 as an Inter Urban route (IU - 1) connecting Burys Bridge to Midleton within the Cork Cycle Network Plan.

The proposed development is c. 7.7km of pedestrian and cycle path segregated from vehicular traffic and upgrades to c. 1.3km of unsegregated facilities. It provides walking and cycling facilities for connectivity with key origin and destination nodes including:

- Carrigtwohill Train Station,
- Carrigtwohill Town and New Expansion Area,
- New Primary and Secondary School Campus Access Area at Carrigtwohill,
- Carrigtwohill Business Park,
- Fota Business Park,
- Glounthaune Train Station,
- Glounthaune Village,
- Little Island Business Park,
- Little Island Train Station, and
- Local businesses and services with existing and new residential areas.

The proposed development will be constructed on the northern side of the existing carriageway, making it easier to access for the residents in the area as most of the residential development is on the northern side of the road. This will increase its attractiveness and accessibility.

Connecting key origin and destination nodes in the local area makes cycling and walking a more viable transport option for regular journeys to train stations, bus stops, local industry, local retail and schools from residential areas. Cycle parking will also be provided at the destination nodes, to further encourage cycling in the local area.

By providing safe cycle and pedestrian infrastructure along the route, the scheme aims to reduce motorised vehicle usage in the area by increasing the number of people walking and cycling. Cycling and walking short to medium distances in the area will be more attractive as it will be a safe and convenient way to travel. Reducing the dependency of motorised vehicles for these short to medium distance journeys will have environmental benefits to the local area by reducing the vehicular emissions and noise disturbance.

Providing cycle parking and connectivity to major transport hubs in the area such as Little Island Train Station, Glounthaune Train Station and Carrigtwohill Train Station will enable commuters to travel to Cork City using a combination of bike and train which will reduce the dependency of cars in the local area. For commuters wanting to cycle directly to Cork City the proposed development will connect with other projects, including the Glanmire development, to allow a safe route to the city centre.

The proposed development is surrounded by agricultural land, coastal habitats, and built environment, including: residential, commercial, and industrial land-uses. The coastal and estuarine areas, located south of the proposed development, are designated within the Cork Harbour SPA and/or Great Island Channel SAC which was a major consideration when determining the cross section.

The proposed cross-section of the project consists of a 3-4m shared use pedestrian and cycle path on the northern side of the road, a 1m separation strip and a 6/6.5m Carriageway. Formalised parking spaces and a footway on the southern side of the road are also provided where appropriate along the route. The shared use path and separation strip will be constructed where possible within the existing carriageway as sections of the existing carriageway are sufficiently wide to fit the proposed cross section. The existing carriageway width varies from 7-18m along the route. Reducing the carriageway width provides an opportunity to develop landscaped areas in turn reducing the areas of impermeable surfacing.

The separation strip is to be landscaped to provide a pollinator corridor. This separation strip will have multiple benefits. Firstly, it will act as physical separation between vehicles and pedestrians/cyclists which improves the safety, comfort and attractiveness of the scheme. Secondly, by acting as a pollination corridor this will have biodiversity benefits to the area. Pollinators are important to the local environment as they assist with the production of pollinator-dependant crops. Thirdly, by being a landscaped separation strip, this will reduce the overall impermeable surface area of the scheme which has environmental benefits as it reduces rainfall discharge rate along the corridor.

The proposed development was previously the primary vehicular route connecting Cork and Waterford (prior to the N25 upgrades). The existing corridor width encourages higher speeds through towns and villages along the route with limited pedestrian and cycle facilities. Reducing the carriageway width in accordance with DMURS recommendations, will ensure vehicle speeds will be reduced along the road. Reducing the vehicles speeds in the area will also reduce the vehicle emissions which will have a positive impact on the air quality along the route.

The proposed development is at the preliminary design stage and it is the intention of Cork County Council to apply for Part 8 planning permission.

2.1 Description of the Proposed Development

Section 1: Start – Chainage 1000m

The first section will consist of a reduction in the existing carriageway width from approx. 10.5m to a varying width of 6m & 6.5m (location dependent). This will allow for the construction of a 3m shared pedestrian & cycle path with a 1m separation strip between the carriageway and shared use path. The shared use path will be located on the northern side of the carriageway. A verge will be maintained on the southern side of the carriageway.

Construction

Construction activities include excavation of the existing carriageway/verge to a depth of 200mm. The pavement makeup consists of 50mm of flexible surface course on 150mm of granular sub-base. The material required for the path construction will be transported to site using the existing public infrastructure and the excavated material will be removed from site using the same public infrastructure. Refuelling of site vehicles will occur at the existing fuel stations on the route. Vegetation will be trimmed to accommodate the new shared use path but only within the permissible window.

Operational

The existing drainage consists of ‘over the edge’ drainage. Water runs off the existing carriageway into the grassed verge area where it filters naturally through the verge/open channel. There will be no increase in the impermeable surface area as the existing carriageway will be reduced from approx. 10.5m to 6/6.5m with a 3m shared use path. The proposed drainage will replicate the existing drainage system where the water will flow over the edge before filtering through the verge/open channel.

Section 2: Chainage 1000m – 1250m

The next section involves the reallocation of carriageway space at Island Gate rather than significant removal of verge area. The carriageway is to be reduced to 6m wide and a shared use path of 3m is to be constructed. A separation strip is to be provided between chainage 1150m – 1250m. The width of which is varied and will constructed from the existing space between carriageway and shared use path. A raised table is to be constructed across the Factory Hill Junction between chainage 1200m & 1250m.

A total of 10 new formalised parking spaces and a new shared use path are to be constructed along the southern side of the road. The southern path will extend from chainage 1000m to 1200m.

Construction

Again, the key construction activity will be excavation of the existing impermeable surface areas to form the shared use path, footpaths and parking spaces and paving of the same.

Operational

The existing drainage is a combination of ‘over the edge’ drainage and a gully system at the commercial locations. There will be no increase in impermeable surface areas as the proposed solution consists of reallocation of road space to incorporate the interventions. The proposed drainage will replicate the existing drainage system, gullies will be provided where they currently exist and ‘over the edge’ drainage will be

maintained to allow for filtration in the verges. The existing gully outfall location will be maintained and there will be no increase in the volume of water out-falling as there is no increase in the impermeable surface area.

Section 3: Chainage 1250m – 1550m

Between chainage 1250m & 1500m the shared use path and separation strip are 3m and 1m wide respectively. Both the shared use path and separation strip will be constructed by reducing the existing carriageway from 10.5m to 6.5m.

Construction

The construction activities are similar to those highlighted within section 1 where excavation of the existing carriageway/verge to a depth of 200mm and paving are the main activities. The pavement makeup consists of 50mm of flexible surface course on 150mm of granular sub-base. The material required for the path construction will be transported to site using the existing public infrastructure and the excavated material will be removed from site using the same public infrastructure. Refuelling of site vehicles will occur at the existing fuel stations on the route. Vegetation will be trimmed to accommodate the new shared use path but only within the permissible window.

Operational

The existing drainage consists of 'over the edge' drainage. Water runs off the existing carriageway into the grassed verge area where it filters naturally through the verge/open channel. There will be no increase in the impermeable surface area as the existing carriageway will be reduced from approx. 10.5m to 6/6.5m with a 3m shared use path. The proposed drainage will replicate the existing drainage system where the water will flow over the edge before filtering through the verge/open channel.

Section 4: Chainage 1550m – 1950m

The proposed new shared use path will go offline between chainage 1500m & 1950m where the width of the shared use path will increase from 3m to 4m. Land Acquisition and the construction of a retaining will be required for the implementation of a shared use path at this location.

Construction

The construction of the retaining wall and associated excavation will be the main construction activity. The existing carriageway and bridge to little island also act as physical barriers for pollutants. The works will be carried out in an area that has been developed previously as an industrial estate or a grasses park. Construction materials will be removed and transported to and from site using existing public infrastructure and refuelling of site vehicles will occur at the existing fuel stations on the route.

Operational

A gully drainage system is in operation on the existing bridge to Little Island, this would have been installed as part of the bridge construction. The drainage system on the bridge will not be impacted as a result of the proposed works. The proposed drainage for the shared use path will be 'over the edge' drainage where the runoff will filtrate through the grassed areas within the verge.

Section 5: Chainage 1950m – 2950m

The shared use path returns to the edge of the carriageway at chainage 1950m and the width is reduced to 3m, this will include the re-introduction of a 1m separation strip.

Construction

Like previous sections highlighted above, the main construction activity will include the excavation of the existing carriageway/verge to a depth of 200mm. The pavement makeup consists of 50mm of flexible surface course on 150mm of granular sub-base. The material required for the path construction will be transported to site using the existing public infrastructure and the excavated material will be removed from site using the same public infrastructure. Refuelling of site vehicles will occur at the existing fuel stations on the route. Vegetation will be trimmed to accommodate the new shared use path but only within the permissible window.

Operational

The existing drainage consists of 'over the edge' drainage. Water runs off the existing carriageway into the grassed verge area where it filters naturally through the verge/open channel. There will be no increase in the impermeable surface area as the existing carriageway will be reduced from approx. 10.5m to 6/6.5m with a 3m shared use path. The proposed drainage will replicate the existing drainage system where the water will flow over the edge before filtering through the verge/open channel.

Section 6: Chainage 2950m – 3750m

The carriageway will reduce from 6.5m to 6m through Glounthaune Village. Parking will be formalised on the southern side of the carriageway between chainage 2950m & 3000m. Bus stops will also be provided between the aforementioned chainages on both sides of the carriageway. A raised table crossing will be constructed at the Glounthaune Hill Junction between chainage 3050m & 3100m.

Parking is to be formalised the northern side of the carriageway between chainage 3100m & 3300m and on the southern side of the carriageway between chainage 3300m & 3550m.

The car park at Fitzpatrick's shop and Waterside Apartments is to be formalised and a controlled pedestrian crossing is to be provided to connect Fitzpatrick's shop with the new formalised parking on the southern side of the carriageway.

Construction

Construction activities include excavation of the existing carriageway, verge or footway to a depth of 200mm. The pavement makeup consists of 50mm of flexible surface course on 150mm of granular sub-base. The material required for the path construction will be transported to site using the existing public infrastructure and the excavated material will be removed from site using the same public infrastructure. Refuelling of site vehicles will occur at the existing fuel stations on the route. Vegetation will be trimmed to accommodate the new shared use path but only within the permissible window.

Operational

A gully drainage system is in operation through this section of the proposed development. There will be no increase in impermeable surface areas as the proposed solution consists of reallocation of road space and a reduction in the carriageway width. The proposed drainage for the shared use path will be 'over the edge' drainage where a verge is present, and the runoff will filtrate through the grassed area. Where there is no verge, the shared use path will be discharged through the existing drainage system. The existing gully outfall location will be maintained and there will be no increase in the volume of water out-falling as there is no increase in the impermeable surface area.

Section 7: Chainage 3750m – 4350m

The carriageway will increase from the previous section from 6m to 6.5m. The shared use path will remain at a minimum of 3m and widen to 4m at chainage 3800m on the northern side of the carriageway. A toucan crossing will be provided at chainage 3800m to connect the new shared use path to Glounthaune Train Station on the southern side of the carriageway.

Parking on the southern side of the carriageway between chainage 3850m & 4150m is to be formalised and a footway is to be constructed to connect the parking spaces to the train station entrance.

The internal car park for the train station is also to be expanded to provide an additional 57 parking spaces.

Construction

Construction activities include excavation of the existing carriageway/verge to a depth of 200mm. The pavement makeup consists of 50mm of flexible surface course on 150mm of granular sub-base. The material required for the path construction will be transported to site using the existing public infrastructure and the excavated material will be removed from site using the same public infrastructure. Refuelling of site vehicles will occur at the existing fuel stations on the route. Vegetation will be trimmed to accommodate the new shared use path but only within the permissible window.

There will also be construction work for the installation of the toucan crossing. Traffic signals will be installed which will require cabling from a dedicated ESB source and a traffic signal controller. The main construction activity will be the laying of ducting in trenches approx. 400mm wide.

Operational

The existing drainage consists of 'over the edge' drainage. Water runs off the existing carriageway into the grassed verge area where it filters naturally through the verge/open channel. The proposed drainage will replicate the existing drainage system where the water will filter over the edge before filtering through the verge/open channel.

Section 8: Chainage 4350m – 5150m

The existing carriageway width varies between 13m & 18m and is reduced to 6.5m. This allows for the provision of a 4m shared use path and a 1m verge on the northern side of the carriageway.

Construction

The construction activities are similar to those highlighted within section 1 where excavation of the existing carriageway/verge to a depth of 200mm and paving are the main activities. The pavement makeup consists of 50mm of flexible surface course on 150mm of granular sub-base. The material required for the path construction will be transported to site using the existing public infrastructure and the excavated material will be removed from site using the same public infrastructure. Refuelling of site vehicles will occur at the existing fuel stations on the route. Vegetation will be trimmed to accommodate the new shared use path but only within the permissible window.

Operational

The existing drainage consists of 'over the edge' drainage. Water runs off the existing carriageway into the grassed verge area where it filters naturally through the verge/open channel. There will be no increase in the hard surface area as the existing carriageway will be reduced from approx. 10.5m to 6/6.5m with a 4m shared use path. The proposed drainage will replicate the existing drainage system where the water will flow over the edge before filtering through the verge/open channel.

Section 9: Chainage 5150m – 5450m

At the Elm Tree Restaurant, the carriageway is reduced to 6m, or 9m where a right turn lane is provided for accessing the Elm Tree. A 4m shared use path runs adjacent to the carriageway on the northern side of the carriageway. Formalised car parking is provided on the southern side of the carriageway with a controlled pedestrian crossing connecting the parking to the Elm Tree.

Construction

The key construction activities will be the excavation verge and hard surface areas to form the shared use path, footpaths and parking spaces and paving of the same.

There will also be construction work involved in the installation of the toucan crossing. Traffic signals will be installed and the associated cabling to power and control the toucan crossing will also be installed.

Operational

The existing drainage is a combination of 'over the edge' drainage and a gully system at the commercial locations. There will be no increase in hard surfaced areas as the proposed solution consists of reallocation of road space to incorporate the interventions. The proposed drainage will replicate the existing drainage system, gullies will be provided where they currently exist and 'over the edge' drainage will be maintained to allow for filtration in the verges. The existing gully outfall location will be maintained and there will be no increase in the volume of water out-falling as there is no increase in the hard-surfaced area.

Section 10: Chainage 5450m – 5650m

The next section consists of an offline 4m wide shared use path that will extend from chainage 5450m to 5600m. This will run parallel to the existing road on the northern side until it reaches the existing railway line.

Construction

The main construction activity will include the excavation of the existing carriageway/verge to a depth of 200mm. The pavement makeup consists of 50mm of flexible surface course on 150mm of granular sub-base. The material required for the path construction will be transported to site using the existing public infrastructure and the excavated material will be removed from site using the same public infrastructure. Refuelling of site vehicles will occur at the existing fuel stations on the route. Vegetation will be trimmed to accommodate the new shared use path but only within the permissible window.

Operational

The proposed drainage for the shared use path will be 'over the edge' drainage where the runoff will filtrate through the grassed areas on either side of the path.

Section 11: Chainage 0m – 498m (Link to Future Development)

The next section consists of an offline 4m wide shared use path which will link to potential future development. The path will divert from the main path at Ch 5520m and is approx. 500m in length. This will run parallel to the existing road on the railway line and the Killacloyne stream until it connects to the road adjacent to the IDA Industrial Development.

Construction

The shared use path will be parallel to the Killacloyne stream but there will be no works required to the stream as a result of the proposed project. A clear distance of 5m will be maintained between the stream and the proposed new path for the entire length.

The main construction activity will include the excavation of the existing carriageway/verge to a depth of 200mm. The pavement makeup consists of 50mm of flexible surface course on 150mm of granular sub-base. The material required for the path construction will be transported to site using the existing public infrastructure and the excavated material will be removed from site using the same public infrastructure. Refuelling of site vehicles will occur at the existing fuel stations on the route. Vegetation will be trimmed to accommodate the new shared use path but only within the permissible window.

Operational

The proposed drainage for the shared use path will be 'over the edge' drainage where the runoff will filtrate through the grassed areas on the northern side of the path.

Section 12: Chainage 5650m – 5700m

The next section consists of an offline 4m wide shared use path that will require a new bridge over the Cork to Midleton railway line and the Killacloyne stream. The proposed bridge will run parallel to the existing road bridge. There is insufficient road width on the existing bridge to provide adequate cycle facilities.

Construction

The construction of the bridge and associated excavation will be the main construction activity. There will be no instream works required as the proposed bridge will span the railway line and the stream. The construction works will be carried out from existing agricultural land on either side of the railway line and there will be a width of 5m maintained between the stream and any works carried for the construction of the bridge. The incorporation of a bridge over the Killacloyne stream will require a Section 50 Application to the OPW which will ensure the proposed bridge will not impact flooding in the area.

Operational

A gully drainage system will be required for the bridge, the proposed system will connect to a soakaway within the agricultural land. The soakaway will allow the water collected to percolate through the ground within the existing field.

Section 13: Chainage 5700m – 5950m

The next section consists of an offline 4m wide shared use path that will extend from chainage 5700m to 5950m. This will run parallel to the existing road on the northern side until it reaches Killacloyne Crossroads.

Construction

The pavement makeup consists of 50mm of flexible surface course on 150mm of granular sub-base which will require 20mm excavation in total. The material required for the path construction will be transported to site using the existing public infrastructure and the excavated material will be removed from site using the same public infrastructure. Refuelling of site vehicles will occur at the existing fuel stations on the route. Vegetation will be trimmed to accommodate the new shared use path but only within the permissible window.

Operational

The proposed drainage for the shared use path will be 'over the edge' drainage where the runoff will filtrate through the grassed areas on the northern side of the path.

Section 14: Chainage 5950m – 7750m

A raised level crossing is to be constructed at the Killacloyne Crossroads to tie into previous section. Chainage 5950m – 7750m will comprise of upgrades to the existing pathways, which will result in an expansion of the pathway width to 4m. These upgrades will allow for shared use between pedestrians and cyclists and a varying with separation strip will provide a barrier between the carriageway and the shared use path. Raised table crossings will be constructed between chainage 7300m & 7350m, 7540m & 7500m. A structure will be required to span the 'Unnamed Stream' at Ch 5950 highlighted in Figure 1. The path also crosses Tibbotstown watercourse at Ch 7250. The watercourse passes under the existing carriageway and footpath at this location. No new structure will be required.

Construction

The main construction activity will require the incorporation of a structure over the 'Unnamed Stream' at Ch7250. The structure will be a precast system lifted into place from the existing development or carriageway. The structure will span from existing hard standing areas on either side of the stream. Instream works are not required for the construction of the structure.

No new structure will be required to cross the Tibbotstown Stream as the stream flows under the existing path and carriageway at this location.

Other construction activities include excavation of the existing path and verge to a depth of 200mm. The pavement makeup consists of 50mm of flexible surface course on 150mm of granular sub-base. The material required for the path construction will be transported to site using the existing public infrastructure and the excavated material will be removed from site using the same public infrastructure. Refuelling of site vehicles will occur at the existing fuel stations on the route. Vegetation will be trimmed to accommodate the new shared use path but only within the permissible window.

Where the raised tables are being constructed, minor altercations to the existing carriageway will be required to reduce the crossing distances and turning radii. At these locations the existing carriageway will be excavated, and kerbing removed.

Operational

The proposed widened shared use path will drain towards the landscaped areas on either side path, this will replicate the existing drainage for the path.

Section 15: Chainage 7750m – End

From the junction at chainage 7750m the project connects to the existing and proposed cycle lanes within Castlelake Residential Development. 1.75m cycle lanes will be provided on either side of the carriageway within the residential development connecting the project with the residential development, a future Education campus with the residential development and Carrigtwohill Train Station at the North Eastern side of the development.

The cycle paths at either side of the carriageway at Ch8200 pass over the Anngrove stream. These cycle paths are already constructed, and the stream passes under the carriageway and cycle.

Construction

The cycle lanes are partially constructed within the proposed development and the remainder will be constructed upon development of the remaining sites. The cycle tracks have received planning permission under the development planning application. The crossing of the Anngrove stream has already been constructed therefore there will be no works required for this project.

Operational

The cycle lanes drain towards a landscaped strip where water would filtrate through the landscaped areas. The remaining cycle lanes to be constructed will replicate the drainage system already constructed.

2.2 Anticipated Construction Phasing

Normal construction working hours will be observed – between the hours of 7am and 7pm or otherwise agreed with Cork County Council. It is envisaged that the project will be constructed in phases, the following highlights the desirable programme for the design and construction of each phase.

- Bury Bridge to Little Island Train Station - Chainage 0 -1700m (approx.),
- East of Rockgrove Industrial Estate to Elm Tree - Chainage 1700m – 5300m (approx.),
- Fota Business Park to Carrigtwohill - Chainage 5300m – 8750m (approx.).

3. Methodology

3.1 Guidance

The methodology for this AA Screening Report broadly follows that for Screening in European Commission guidance (EC, 2001) and guidance published by the Irish Department of Environment, Heritage and Local Government (DoEHLG, 2010).

The methodology used also draws on, and has evolved from guidance and recommendations from, international AA practitioners (see Levett-Therivel, 2009; Chvojková et al., 2013). For instance, in accordance with guidance from international AA practitioners, "the Precautionary Principle should be used within reason and should be commensurate with the level of risk and the level of uncertainty concerned [and as such] Time-consuming and costly ecological research should be required only in rare circumstances" (Levett-Therivel, 2009).

The approach to referencing of guidance and other sources in this AA Screening Report is to include published reports in the References Section, and legislation and websites as footnotes where relevant. Abbreviations are written in full at first mention, unless in tables, within which abbreviations are written in full or detailed within a table footnote.

3.1.1 Mitigation in AA Screening

There have been significant changes to AA practice since both the EC (2001) and DoEHLG guidance (2010) arising from rulings in European, UK and Irish courts. In particular (in chronological order):

- The Court of Justice of the European Union (CJEU) judgement published in November 2018[4] regarding the proposed Kilkenny Ring Road , which found that (among other points):
  - "the competent authority is permitted to grant to a plan or project consent which leaves the developer free to determine subsequently certain parameters relating to the construction phase (e.g. location of the construction compound and haul routes etc..), only if that authority is certain that the development consent granted establishes conditions that are strict enough to guarantee that those parameters will not adversely affect the integrity of the European site".
  - "'appropriate assessment' must..... [additionally] identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the conservation objectives of the site".
  - "it is not appropriate, at the Screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on [a European site]".
- The 2017 CJEU Ruling regarding a windfarm within an SPA designated for hen harrier Circus cyaneus, which ruled that habitat management constitutes compensatory measures which cannot be permitted as a form of mitigation within the AA process to avoid progressing to Article 6(4) and IROPI (and which supports aspects of 2012 CJEU ruling regarding a Dutch motorway); and,
- The 2013 judgement of the CJEU in relation to the Galway City Outer Bypass which clarified that, at least for 'Priority' Qualifying Interest habitats, "[any] lasting and irreparable loss" of QI would constitute an adverse effect to European site integrity".

The methodology informing this Draft NIS also draws on, and has evolved from guidance and recommendations from international AA practitioners (Levett-Therivel, 2009; Chvojková et al., 2013). For instance, following Levett-Therivel (2009): "the precautionary principle should be used with reasonableness, and should be commensurate with the level of risk and the level of uncertainty concerned". "Time-consuming and costly ecological research should be required only in rare circumstances".

3.2 Desktop Study

This assessment was informed by a desktop study, which assessed the potential for all Qualifying Interests (QIs; i.e. non-bird species and habitats) and Special Conservation Interests (SCIs; i.e. bird species and their habitats)

[4] Judgment of the Court (Seventh Chamber) 12 April 2018: Case C-323/17, REQUEST for a preliminary ruling under Article 267 TFEU from the High Court (Ireland), in the proceedings People Over Wind, Peter Sweetman v Coillte Teoranta,

of European sites to occur, given their ecological requirements identified by Balmer et al. (2013) for SCIs, and the National Parks and Wildlife Service (NPWS) for QIs (NPWS, 2013a,b).

SCI birds and mobile QI species can travel many kilometres from their core areas, and desktop surveys assessed the potential presence of such species beyond the European sites for which they are QIs/SCIs. Desktop studies had particular regard for the following sources:

- tabulated lists for all European sites in Ireland of SCIs and QIs, obtained through a data request to the NPWS;
- information on ranges of mobile QI populations in Volume 1 of NPWS' Status of EU Protected Habitats and Species in Ireland (NPWS, 2013a), and associated digital shapefiles obtained from the NPWS Research Branch;
- information on ranges of mobile SCIs bird populations from Bird Atlas 2007–11 (Balmer et al., 2013), excluding birds of prey whose ranges were determined with reference to Hardey et al. (2013);
- mapping of European site boundaries and Conservation Objectives for relevant sites in County Cork and beyond, as relevant, available online from the NPWS[5];
- distribution records for mobile populations of distant European sites held online by the National Biodiversity Data Centre (NBDC)[6];
- details of QIs/SCIs of European sites within the County Cork Biodiversity Action Plan 2009-2014 (CCC, 2014a), which had not been updated at the time of writing;
- data including surface and ground water quality status, and river catchment boundaries available from the online database of the Environmental Protection Agency (EPA)[7];
- national and regional surveys of semi-natural habitats, including grasslands (O'Neill et al., 2013), saltmarsh (McCorry and Ryle, 2009; Devaney and Perrin, 2015), and woodland (Perrin et al., 2008);
- boundaries for catchments with confirmed or potential freshwater pearl mussel (FWPM) Margaritifera margaritifera populations in GIS format available online from the NPWS[5]; and,
- Ecological Impact Assessment (EcIA) and an AA Screening Report for the Glanmire Road Improvements and Sustainable Transport Works, Co. Cork (AECOM, 2018a,b).

3.3 Field Surveys

This assessment was informed by a habitat and protected species of the proposed development site on 16 October 2018 by AECOM ecologist Dr Miles Newman MCIEEM. The survey consisted of a 'windscreen survey'[8] combined with walkover surveys of key areas, focusing on invasive species and QI/SCI species and habitats.

The survey assessed the potential for all QIs/SCIs of European sites to occur, given their ecological requirements identified by Balmer et al. (2013) for birds, and the NPWS for all other species/habitats (NPWS, 2013a,b). The survey included checks of invasive species, scheduled to the European Communities (Bird and Natural Habitat Regulations) 2011-2015, and of suitable habitats for all highly mobile QI/SCI species potentially occurring. Before completing the invasive species survey, known locations of three invasive species were checked to ensure identification of these species was possible at this time of year.

Many non-breeding SCI bird species travel many kilometres from their core areas, and surveys also assessed potential presence of roosting or feeding sites of such species. Species survey guidance had regard for sources including the National Roads Authority (NRA, 2009).

During the field survey, access was not possible to the brownfield area between Terry's-Land and Station Road, Carrigtwohill (See Figure 1, Appendix A).

[5] Available from https://www.npws.ie/maps-and-data Accessed September 2018.
[6] Available from http://maps.biodiversityireland.ie/# Accessed September 2018.
[7] Available from http://gis.epa.ie/Envision Accessed September 2018.
[8] A 'windscreen survey' is carried out from within a moving vehicle, where the proposed development is driven (sometimes several times) and notes on key habitat and species are taken.

3.4 Steps in Screening

Irish departmental guidance states that "Screening is an iterative process that involves consideration of the plan or project and its likely effects and of the European sites and their ecological sensitivities, and the likely interaction between these" (DoEHLG, 2010). In summary, the steps for the Screening follow a protocol to:

1) Determine if the project is directly connected with or necessary to the management of a European site.
2) Describe the project.
3) Assess potential source-pathway-receptor models to determine relevant zones of influence.
4) Describe the baseline environment within relevant zones of influence.
5) Identify any links with European sites (defined as 'relevant' European sites) having regard for their Conservation Objectives.
6) Use Screening matrices to determine if Likely Significant Effects (LSEs) could arise due to the links with European sites having regard for:

- Source-pathway-receptor models and zones of influence;
- Known distribution and ranges of QI;
- Likely ranging behaviours of mobile QIs and SCIs beyond their European sites; and,
- Potential in-combination effects with other plans or projects.

7) Conclude the assessment with a Screening Statement.

A summary of the key information required to complete the above steps is tabulated later in this AA Screening Report, prior to presenting the Screening matrices in Appendix B.

3.4.1 Links with European Sites

The 'source-pathway-receptor' conceptual model is a standard tool in environmental assessment to determine links between sensitive features and sources of effects. In order for an effect to occur, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism means there is no likelihood for the effect to occur. An example of this model is provided below:

- Source (s); e.g. Piling;
- Pathway (s); e.g. Vibration; and,
- Receptor (s); e.g. Underground otter Lutra lutra resting site at risk of disturbance and/or collapse.

The model is focused on relevant QI/SCI for which European sites are designated, or on undesignated habitats/species that are necessary to the conservation of the QI/SCI. Any Conservation Objectives referred to in this AA Screening Report are referenced to identify the date of publication and version number.

3.4.2 Zones of Influence and Proximity to Identify Relevant Sites

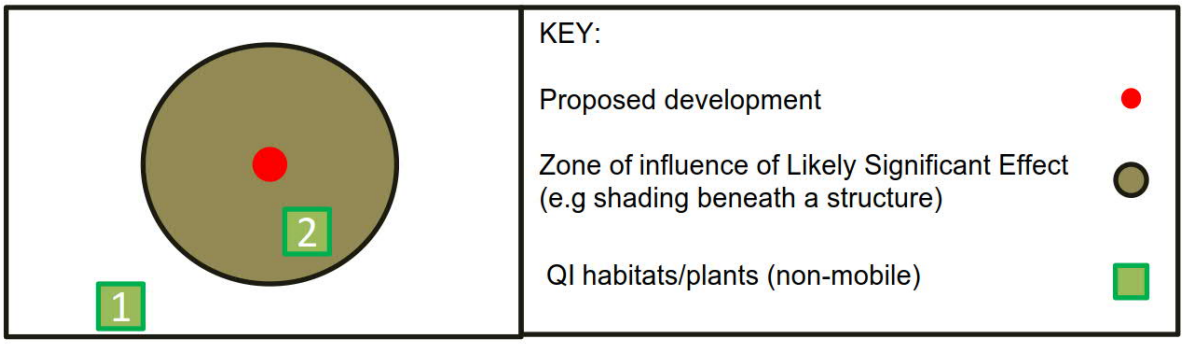
The construction and operation of the proposed development has the potential to result in a number of environmental effects. The analysis of these effects, using 'best available' scientific knowledge and professional judgement, leads to the identification of Zones of Influence (ZoIs). The proximity of the proposed development to European sites, and more importantly their QIs/SCIs, can be of importance in identifying source-pathway-receptor models which could result in significant effects. Irish departmental guidance on AA states:

"For projects, the distance could be much less than 15 km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects" (DoEHLG, 2010; p.32, para 1).

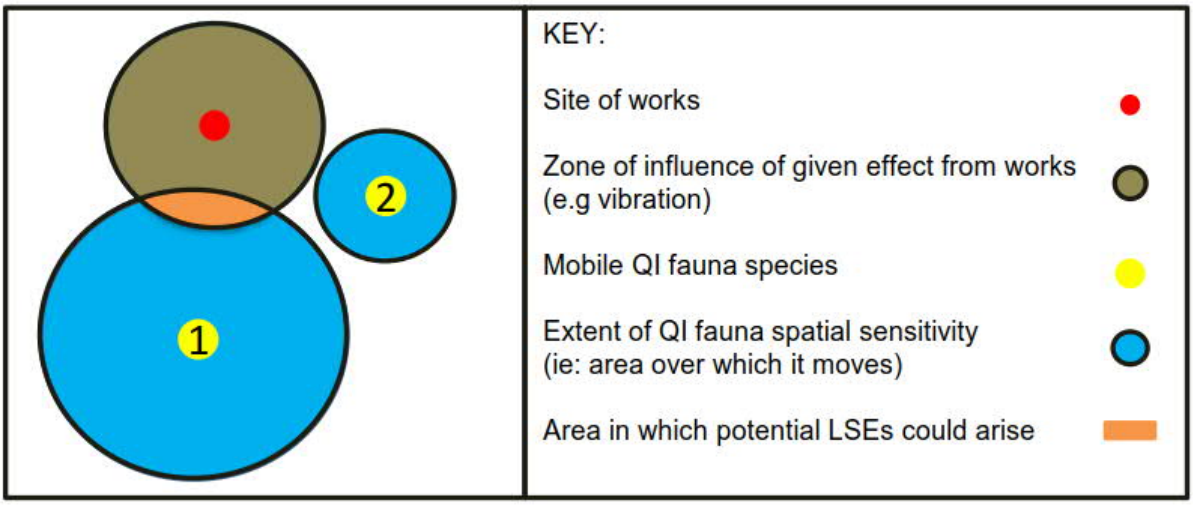
In this AA Screening Report, a conservative approach has been used which minimises the risk of overlooking distant or obscure effect pathways, while also avoiding non-scientific and arbitrary buffer zones (e.g. 15 km), within which all European sites should be considered. The starting point for this approach is to assess the complete list of all QIs/SCIs of European sites in Ireland (i.e. potential receptors), obtained in digital format from the NPWS, instead of listing European sites within arbitrary buffer zones.

Habitats and plants are not mobile, however, fauna species are and their predicted mobility outside European sites (i.e. range) will affect whether they occur within the ZoI. The range of fauna species varies considerably, from a maximum of several metres (e.g. in the case of whorl snails Vertigo spp.), to hundreds of kilometres (in the case of migratory wetland birds). Whilst habitats and plants are not mobile, these features can still be significantly affected at considerable distances from an effect source; for instance where an instream habitat is located many kilometres downstream from a pollution source.

This difference in determining the ZoI for (mobile) fauna versus (non-mobile) habitats has been illustrated in Graphic 1 and Graphic 2.



Graphic 1. Relationship between Zone of Influence and QI habitats and plants which are not mobile



Graphic 2. Relationship between Zone of Influence and QI fauna species which are mobile

In response to DoEHLG (2010) guidance, ZoIs were estimated for potentially relevant effects from the proposed development based on the “the nature size and location of the project”. These ZoIs are summarised in Table 1.

Table 1. Zones of Influence Estimated for Potential Effects from the Proposed Development

Phase	Source of Potential Effect	Description of Effect Pathway	Potential Zone of Influence of Effect (References Footnoted for Brevity)	Potential Relevance of Effect to AA Screening
Construction	Noise, vibration, lighting and human presence during movements of vehicles and staff associated with construction activities.	During construction, noise or other construction-related disturbance could reduce the ability of populations of Qualifying Interest/ Special Conservation Interest species to forage, roost or breed (if Qualifying Interest/ Special Conservation Interest species are present within the estimated Zone of Influence).	Varies by species. Generally assessed within 500 m of the proposed development footprint for wintering birds[9]. However, distance can be significantly lower (e.g. 150 m for otter underground sites[10], or higher (e.g. hen harriers may take flight when nesting at up to 750 m from disturbance[11]).	Potential relevance to Special Conservation Interest fauna and Qualifying Interest habitats/species of European sites, if present.
	Surface water run-off carrying suspended silt or contaminants into local watercourses.	Silt, hydrocarbons, and/or other contaminants (oils, fuels, etc.) may enter nearby watercourses through surface water run-off into the Cork Harbour, via various streams.	The Zone of Influence of effects from contaminated surface water is difficult to accurately estimate as it will depend on numerous factors including the type and concentration of pollutants, assimilative capacity of receiving waters, and time of year (related to water levels). As a precautionary measure, a reasonable worst-case Zone of Influence for water pollution from the proposed development site is considered to be the downstream surface water catchment. In this AA Screening Report the surface water catchment is defined at the scale of Catchment Management Unit (CMU) as adopted in the River Basin Management Plan (RBMP) for Ireland 2018-2021 (DoHPLG, 2018). The open coastlines, where Coastal Waterbodies[7] begin, are considered to fall outside the potential Zone of Influence of significant effects.	Potential relevance to Special Conservation Interest fauna and Qualifying Interest habitats/species of European sites, if present.
	Disturbance of invasive species during the construction of the proposed development.	If invasive species are present, construction activities could lead to the dispersal of invasive species and/or material within and beyond the proposed development site; either via machinery, clothing or wild animals including birds, depending on the species concerned.	The Zone of Influence of effects for spread of terrestrial invasive species is difficult to accurately estimate, as plant fragments may be spread on tyre treads to distant unrelated sites. In relation to water-borne spread of vegetation, the Zone of Influence generally is restricted to the surface water Catchment Management Unit.	Potential relevance to Special Conservation Interest fauna and Qualifying Interest habitats/species of European sites, if present.

[9] Wintering birds collectively considered at risk of disturbance at up to 500 m based on compilation of data from Madsen (1985); Smit & Visser (1993) and Rees et al., (2005).
[10] In accordance with guidance on road construction-related disturbance of underground sites from the National Roads Authority (NRA, 2006).
[11] Hen harrier flush or 'flight initiation distance' of 750 m from Whitfield et al. (2008).

Phase	Source of Potential Effect	Description of Effect Pathway	Potential Zone of Influence of Effect (References Footnoted for Brevity)	Potential Relevance of Effect to AA Screening
	Changes of groundwater quality or yield associated with earthworks during construction.	Earthworks could interfere with groundwater flow paths, potentially affecting the quality or distribution of habitats dependent on groundwater supply, if such habitats are present.	The potential Zone of Influence of effects from earthworks to ground water flow or yield is difficult to accurately estimate as it will depend on factors including the depth and intrusion of excavations, and time of year (related to water levels). As a precautionary measure, a reasonable worst-case spatial Zone of Influence is considered to be 500 m from the point of excavation; which is a precautionary doubling of the 250 m stated as the potential Zone of Influence from intrusive excavations to sensitive upland peatland sites (SEPA, 2014).	Potential relevance to Qualifying Interest groundwater dependant habitats of European sites, if present.
Operation	Noise, lighting and human presence during movements of vehicles and staff associated with operational activities.	During operation, noise or other disturbance from cyclists and pedestrians could reduce the ability of populations of Qualifying Interest/ Special Conservation species to forage, roost or breed (if Qualifying Interest/ Special Conservation species are present within the estimated Zone of Influence).	Varies by species. Generally assessed within 500 m of the proposed development footprint for wintering birds[9]. However, distance can be significantly lower (e.g. 150 m for otter underground sites[10], or higher (e.g. hen harriers may take flight when nesting at up to 750 m from disturbance[11]).	Potential relevance to Special Conservation Interest fauna and Qualifying Interest habitats/species of European sites, if present.
	Surface water run-off carrying suspended silt or contaminants into local watercourses.	Silt, hydrocarbons, and/or other contaminants (oils, fuels, etc.) may enter nearby watercourses through surface water run-off into the Cork Harbour, via various streams.	The Zone of Influence of effects from contaminated surface water is difficult to accurately estimate as it will depend on numerous factors including the type and concentration of pollutants, assimilative capacity of receiving waters, and time of year (related to water levels). As a precautionary measure, a reasonable worst-case Zone of Influence for water pollution from the proposed development site is considered to be the downstream surface water catchment. In this AA Screening Report the surface water catchment is defined at the scale of Catchment Management Unit (CMU) as adopted in the River Basin Management Plan (RBMP) for Ireland 2018-2021 (DoHPLG, 2018). The open coastline is considered to fall outside the potential Zone of Influence of significant effects.	Potential relevance to Special Conservation Interest fauna and Qualifying Interest habitats/species of European sites, if present.

3.5 The Precautionary Principle

The Precautionary Principle, which is referenced in Article 191 of the Treaty on the Functioning of the European Union, has been defined by the United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2005) as:

"When human activities may lead to morally unacceptable harm [to the environment] that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm. The judgement of plausibility should be grounded in scientific analysis".

Reasoned application of the 'Precautionary Principle' is fundamental to all stages of Screening for AA. In this AA Screening Report, significant effects would be presumed without evidence to the contrary, where there was evidence of possible effects on a European site (s) from the proposed development, but uncertainty remained.

4. Baseline Description

This Section details desktop and field survey results, in order to describe the relevant baseline environment to the proposed development. The relevant baseline environment relates to anything that may be directly or indirectly related to the QIs/SCIs of European sites.

4.1 Overview of Proposed Development Site

The proposed development site will include existing road infrastructure and adjacent verges. The predominant land-uses within the ZoI of the proposed development site are agriculture, semi-natural habitat (coastal, woodland, and hedgerow), residential and commercial development, and road and rail transport infrastructure.

4.2 European Sites

All European sites identified in this report are illustrated in Figure 1 (Appendix A). There are two European sites within the ZoI of the proposed development site.

The closest European site to the proposed development is Cork Harbour SPA (site code 4030) which is located c. 20 m to the south of the proposed development, at its nearest point. This SPA is downstream of the proposed development.

The next nearest European site to the proposed development is Great Island Channel SAC (site code 1058) which covers the area of tidal mudflat bordered with saltmarsh within Cork Harbour and is located c. 30 m from the proposed development site, at its nearest point.

The next nearest European site is Blackwater River (Cork/Waterford) SAC (site code 2170), located c. 13 km north of the proposed development. Neither this SAC, nor any other European sites are within the surface water catchment in which the proposed development is located, or within the ZoI of the proposed development. If relevant, more distant European sites will be discussed in the Screening assessment in Section 5.

The Conservation Objectives and of the Great Island Channel SAC and Cork Harbour SPA are detailed in Table 2 and Table 3.

Table 2. Conservation Objectives for Special Areas of Conservation Referenced in AA Screening Report

Site (Code), and Distance from Proposed Development	Conservation Objectives Version	Qualifying Interest (s)	Conservation Objective (Maintain or Restore)
Great Island Channel SAC (1058); located c. 8 m from proposed development	Version 1 (NPWS, 2014a)	Mudflats and sandflats	To maintain favourable conservation condition
		Atlantic salt meadows	To maintain favourable conservation condition

Table 3. Conservation Objectives for Special Protection Areas Referenced in AA Screening Report

Site (Code) and Distance from Proposed Development	Conservation Objectives Version	Special Conservation Interest (s)	Scientific Name	Population	Conservation Objective (Maintain or Restore)
Cork Harbour SPA (4030) ; located c. 12 m from proposed development	Version 1 NPWS, 2014b;	Bar-tailed godwit	Limosa lapponica	Non breeding	To maintain favourable conservation condition
		Black-headed gull	Chroicocephalus ridibundus	Non breeding	To maintain favourable conservation condition
		Black-tailed godwit	Limosa limosa	Non breeding	To maintain favourable conservation condition

Site (Code) and Distance from Proposed Development	Conservation Objectives Version	Special Conservation Interest (s)	Scientific Name	Population	Conservation Objective (Maintain or Restore)
		Common gull	Larus canus	Non breeding	To maintain favourable conservation condition
		Common tern	Sterna hirundo	Breeding	To maintain favourable conservation condition
		Cormorant	Phalacrocorax carbo	Non breeding	To maintain favourable conservation condition
		Curlew	Numenius arquata	Non breeding	To maintain favourable conservation condition
		Dunlin	Calidris alpina alpina	Non breeding	To maintain favourable conservation condition
		Golden plover	Pluvialis apricaria	Non breeding	To maintain favourable conservation condition
		Great-crested grebe	Podiceps cristatus	Non breeding	To maintain favourable conservation condition
		Greenshank	Tringa nebularia	Non breeding	To maintain favourable conservation condition
		Grey heron	Ardea cinerea	Non breeding	To maintain favourable conservation condition
		Grey plover	Pluvialis squatarola	Non breeding	To maintain favourable conservation condition
		Lapwing	Vanellus vanellus	Non breeding	To maintain favourable conservation condition
		Lesser black-backed gull	Larus fuscus	Non breeding	To maintain favourable conservation condition
		Little grebe	Tachybaptus ruficollis	Non breeding	To maintain favourable conservation condition
		Oystercatcher	Haematopus ostralegus	Non breeding	To maintain favourable conservation condition

Site (Code) and Distance from Proposed Development	Conservation Objectives Version	Special Conservation Interest (s)	Scientific Name	Population	Conservation Objective (Maintain or Restore)
		Pintail	Anas acuta	Non breeding	To maintain favourable conservation condition
		Red-breasted merganser	Mergus serrator	Non breeding	To maintain favourable conservation condition
		Redshank	Tringa totanus	Non breeding	To maintain favourable conservation condition
		Shelduck	Tadorna tadorna	Non breeding	To maintain favourable conservation condition
		Shoveler	Anas clypeata	Non breeding	To maintain favourable conservation condition
		Teal	Anas crecca	Non breeding	To maintain favourable conservation condition
		Wigeon	Anas penelope	Non breeding	To maintain favourable conservation condition
		Wetland and waterbirds	N/A	N/A	To maintain favourable conservation condition

4.3 Habitats

No potential Annex I habitats were identified within the footprint of the proposed development during the desk and field survey. QI Atlantic salt meadow and QI mudflat are distributed within the Great Island Channel SAC, which is located c. 30 m from the proposed development site, at its nearest point across the existing railway line. These habitats are south, and downstream, of the proposed development.

4.3.1 Terrestrial Habitats

No potential Annex I terrestrial habitats were identified within the ZoI of the proposed development. The nearest European site for which a terrestrial habitat is designated, is the Blackwater River (Cork/Waterford) SAC (site code 2170). The nearest of these habitats is old Oak woodland (91A0), located c. 19 km north of the proposed development (NPWS, 2012). There is no hydrological, or other link between the proposed development and these QI habitats within the Blackwater River (Cork/Waterford) SAC. There is, therefore, no potential for LSEs on this European site from the construction or operation of the proposed development.

No terrestrial habitats within the footprint of the proposed development offer any significant supporting value to QI or SCI features of any European sites.

4.3.2 Aquatic Habitats

Analysis of the EPA online mapper[7] identified four watercourse crossings within the ZoI of the proposed development; located from west to east: the Killacloyne, 'an unnamed stream', Tibbotstown, and Anngrove streams (Figure 1, Appendix A).

These streams are hydrologically connected to the proposed development via existing surface water run-off.

The Killacloyne Stream and the unnamed stream are both open watercourses (i.e. not culverted or crossed by the existing carriageway). Both streams are approximately 1 m wide at the proposed crossing points. The Tibbotstown Stream and the Anngrove Stream are covered by the existing carriageway at the proposed crossing points, there is no open water visible at these sections.

The streams are not designated as European sites and do not support QIs of the downstream European sites; however, they do discharge into the Cork Harbour SPA and the Great Channel Island SAC. There are no EPA water-quality monitoring stations on the above-mentioned watercourses, or their tributaries.

The ZoI of the proposed development extends to the estuarine areas, located c. 20 m south of the proposed development. The water quality of estuarine areas (i.e. transitional River Douglas (Lee) (Lough Mahon)) is of intermediate status[7] (most recent results from 2010-2012).

Downstream c. 7 km, the coastal water status for Cork Harbour (most recent results from 2010-2012) is unpolluted[7].

The proposed development is within the Ballinhassig East groundwater body, which is classified as 'good' status, for the period 2010-2015. This groundwater body adjoins the Cork Harbour SPA and the Great Channel Island SAC. None of the Cork Harbour SPA or Great Island Channel SAC QIs/SCIs are highly groundwater dependent.

The nearest aquatic QI habitats to the proposed development are mudflats (1140) and Atlantic salt meadows (1130), located c. 345 m and c. 30 m south of the proposed development, respectively, within the Great Island Channel SAC (NPWS, 2014 a, b).

No aquatic habitats within the footprint of the proposed development offer any significant supporting value to QI or SCI features of relevant European sites.

4.3.3 Invasive Species

Through investigation of known locations of three-cornered leek Allium triquetrum outside the proposed development site, it was established that the species could not be identified at this time of the year. It is possible that this species occurs within the ZoI of the proposed development, as known records are located c. 140 m to the west (AECOM, 2018a).

Three scheduled invasive plant species were noted during the field survey. These included Japanese knotweed Fallopia japonica, Himalayan balsam Impatiens glandulifera, and Giant-rhubarb Gunnera tinctoria. Eight relevant invasive species were recorded (desk study and field study combined) within c. 2 km of the proposed development (see Table 4). Both Japanese knotweed and Himalayan balsam were confirmed within the footprint of the proposed development, and it is possible that giant knotweed Fallopia sachalinensis, Himalayan knotweed Persicaria wallichii, Rhododendron Rhododendron ponticum, and three-cornered leek occur within the ZoI of the proposed development.

Table 4. Scheduled Invasive Plant Species within 5 km of the Proposed Development

Common Name	Scientific Name	Location in Relation to the Proposed Development (Source: This Report*; AECOM, 2018a^; NBDC[6])
Giant hogweed	Heracleum mantegazzianum	c. 0.5 km west[6]
Giant knotweed	Fallopia sachalinensis	c. 1.8 km north west^
Giant-rhubarb	Gunnera tinctoria	c. 40 m south (on island within Terry's-Land pond)*
Himalayan balsam	Impatiens glandulifera	Within footprint*
Himalayan knotweed	Persicaria wallichii	c. 0.5 km north west[6]
Japanese knotweed	Fallopia japonica	Within footprint*
Rhododendron	Rhododendron ponticum	c. 500 m south[6]
Three-cornered leek	Allium triquetrum	c. 140 m west^

4.4 Mobile Species

The proposed development and environs provide potentially suitable habitat for SCIs of Cork Harbour SPA.

4.4.1 Special Conservation Interest Birds

Cork Harbour SPA adjoins the proposed development site. There are no other SPAs designated for wintering birds within more than 20 km of the proposed development site. Based on the known core foraging range of relevant species (e.g. Bell 1988, SNH, 2016, Thaxter et al., 2012), Cork Harbour SPA is the only SPA relevant to this AA Screening Report. There are 23 SCI birds designated within the Cork Harbour SPA (NPWS, 2014b).

There are SCI wintering bird feeding and roosting habitats of Cork Harbour SPA located south, and downstream of, the proposed development. Core breeding habitats for breeding SCI common tern are not located within the ZoI of the proposed development. As noted by RPS (2014), common terns of Cork Harbour SPA breed on man-made structures at Fota Island, and mooring dolphins at Ringaskiddy Deepwater Basin.

Feeding features (i.e. SCI wetland habitat, including intertidal mudflats and adjacent shorelines for use by various SCI wader and SCI duck species) are discussed in detail, where relevant, in the screening matrices in Appendix B. There are no direct pathways for LSEs to these SCI wetland feeding features, as there is no direct overlap of these habitats with the proposed development.

Using a digital version of the Site-Specific Conservation Objectives (SSCO), known roost locations for wintering SCI birds (NPWS, 2014c) were assessed in relation to the proposed development. These are mapped in Figure 2. Using the precautionary principle, and to account for the relatively low replication in the available NPWS data[12], the highest estimates within the range of individual roosting birds have been used.

According to available data, the nearest known SCI wintering bird roosts are located c. 50 m and c. 60m south of the proposed development respectively (NPWS 2014c). All other known SCI wintering bird roosts within the ZoI of the proposed development are located > 200 m south of the proposed development (NPWS 2014c). The proposed development is spatially separated from and/or screened from SCI winter bird roosts by the existing regional road (L3004) and existing rail lines (Cork to Youghal and Cork to Cobh)

Table 5 summarises the known SCI wintering roosts within the ZoI of the proposed development, based on the estimates detailed in NPWS (2014c).

Table 5. Estimates of SCI Wintering Roosting Bird Populations of Cork Harbour SPA (per Subsite) Within the Zone of Influence of the Proposed Development (Data from NPWS, 2014c)

Guild*	Named Subsite (NPWS, 2014c)			
	Harper's Island North (0L592)	Harpers Island (only) (0L587)	Brown Island East (0L590)	Brown Island North (0L591)
SCI Waders	No roosting SCIs within ZoI of the proposed development	Lapwing, dunlin, golden plover (c. 100 individuals)	Redshank (c. 50 individuals)	Greenshank, redshank (c. 50 individuals)^ lapwing, curlew, (c. 200 individuals)
SCI Ducks	Wigeon (c. 100 individuals)^	No roosting SCIs within ZoI of the proposed development	No roosting SCIs within ZoI of the proposed development	No roosting SCIs within ZoI of the proposed development
SCI Gulls	Black-headed gull, common gull (c. 100 individuals)^ Black-headed gull (c. 50 individuals)	Lesser black-backed gull (c. 50 individuals)	No roosting SCIs of Cork Harbour SPA	Black-headed gull, common gull, lesser black-backed gull (c. 200 individuals)
Other	No roosting SCIs within ZoI of the proposed development	No roosting SCIs within ZoI of the proposed development	No roosting SCIs within ZoI of the proposed development	Cormorant, grey heron (c. 200 individuals)

[12] Comprising surveys during a single wintering season in 2011 (NPWS, 2014c).

Guild*	Named Subsite (NPWS, 2014c)			
	Harper's Island North (0L592)	Harpers Island (only) (0L587)	Brown Island East (0L590)	Brown Island North (0L591)

Notes:

^Grey cells indicate roosts located c. 50 m to 60 m from proposed development site. All other cells indicate roosts located >500 m from proposed development site.

SCI = Special Conservation Interest

ZoI = Zone of Influence

*Grouping of bird species into 'guilds', is a useful means to rapidly assess the 22 wintering SCI species of Cork Harbour. Birds are grouped broadly based on shared taxonomy (e.g. gulls; or gull family 'Laridae'), and/or shared feeding preferences (e.g. 'waders' who preferentially feed on benthic invertebrates and 'ducks' who feed in or on water.

4.4.1.1 Summary

In summary, the desktop analysis has identified that Cork Harbour SPA is the only SPA of potential relevance to the AA Screening Report.

Based on available data, several roosts of SCI wintering birds of Cork Harbour SPA are known to occur within the potential ZoI of disturbance from the proposed development, the nearest of which are c. 50 m (comprising greenshank and redshank; c. 50 individuals), and c. 60 m distant (wigeon, black-headed gull, and common gull; c. 100 individuals). The potential for likely significant effects to arise, due to the presence of SCI birds within the ZoI of the proposed development is assessed in Section 5.

5. Screening Assessment

5.1 Management of European Sites

AA Screening is not required where the proposed development is connected with, or necessary to the management of any European site. In this case, the proposed development is not connected to the management of any such site. The competent authority is therefore required to make a Screening determination.

5.2 Summary of Information Required

The detailed methodology underpinning this AA Screening Report has been set out in Section 3. A summary table of the specific information required is presented in Table 6, for the benefit of the reader, in advance of presenting the Screening assessment.

Table 6. Summary of Information Required to Complete Screening Assessment

Best Available Scientific Evidence Required	QI/SCI Fauna Species (Mobile)	QI Habitats/Plants (Not Mobile)
Zones of Influence for different effects from proposed development	Zones of Influence (Table 1)	Zones of Influence (Table 1)
Distribution of QI/SCI relative to ZoI	I. Presence/absence of SPAs/SACs designated for QI/SCI species within relevant ZoIs. II. Habitat requirements of QI/SCI fauna species (see footnote) III. Presence of habitat for QI/SCI fauna within ZoI from field and desk studies IV. Range of QI/SCI species beyond their designated sites (see footnote) V. Seasonality of QI/SCI usage of habitats relative to programme for proposed development	I. Presence/absence of SAC(s) designated for QI habitat/species within relevant ZoI II. Distribution of QI habitat/plants within relevant SAC(s) from field and desktop data
Analyses required to inform the Screening assessment	I. Could the range of the QI/SCI fauna species overlap with the ZoI of the proposed development? II. If yes, is suitable habitat present? III. If suitable habitat is present, will LSEs arise?	I. Do any SAC designated for the QI habitat/plants occur within the ZoI of the proposed development? II. If yes, what are the specific locations of QI habitats/plants within the relevant SAC(s)? III. Are the locations of QI habitats/plants within the ZoI of LSE?

Footnotes:

ZoI: Zone of Influence

QI: Qualifying Interest

SCI: Special Conservation Interest

LSE: Likely Significant Effect

Range data and habitat requirements for QI/SCI fauna species primarily from Balmer et al. (2013) for birds, and NPWS (2013) for other species.

5.3 Assessment of Source-Pathway-Receptor Links

As explained in the detailed methodology (Section 3), the AA Screening Report assessment adopts a comprehensive and precautionary approach for which the starting point is a complete list of all QIs/SCIs of European sites in Ireland, obtained in digital format from the NPWS.

5.3.1 Scoping of Effects

5.3.1.1 Habitat Loss

There is no predicted direct habitat loss from the relevant European sites. The proposed development is located on existing hardstanding away from the wetland habitats designated as QIs for Great Island Channel SAC, or which support SCI species of Cork Harbour SPA. The closest recorded QI habitat (mudflat and sandflat not covered by seawater at low tide) to the proposed development is approximately 50 m south at the closest point.

Structures which are required as crossings for the proposed development are not proposed in areas which will directly or indirectly affect the habitats of Great Island Channel SAC and Cork Harbour SPA in terms of shading.

There is QI mudflat and sandflats not covered by sea water at low tide located at the outfall of the Killacloyne Stream (Figure 3, Appendix A). The Tibbotstown Stream and Anngrove Stream both discharge to the same point within the SAC and SPA. These discharge points are located approximately 300 m from the closest recorded area of QI mudflat habitat and approximately 430 m from the closest point to QI habitat Atlantic Salt Meadows habitat (Figure 3, Appendix A). It is not clear where the outfall of the unnamed stream discharges as it is culverted under the L3004 road, however, it is considered that it may connect to the Killacloyne Stream.

All streams therefore discharge directly to the wetland habitat which supports the SCIs for Cork Harbour SPA.

In conclusion, there is no predicted direct habitat loss during construction or operation of the proposed development. The effects of pollution and other contaminants entering the SAC and SPA via these hydrological channels, thereby potentially affecting the habitats (i.e. indirect habitat loss), is further discussed in Section 5.3.1.3.

5.3.1.2 Noise, Lighting and Human Presence

The effects of noise, lighting, and human presence on SCI fauna species and/or QI habitats and species, during construction and operation of the proposed development, have been assessed.

No QI species are known to occur within the ZoI of the proposed development site.

SCI wintering bird populations of Cork Harbour SPA (are known to occur in estuarine habitats within the potential ZoI of the proposed development site (11 species; Table 5).

Whilst activities during construction and/or operation of the proposed development could disturb the 11 species identified, these disturbance effects are not predicted to result in any LSEs on the Cork Harbour SPA, having regard to relevant Conservation Objectives.

The rationale for this judgement is that:

- the proposed development site is spatially separated from and/or screened from SCI populations by the existing regional road (L3004) and existing rail lines (Cork to Youghal and Cork to Cobh), which provide a background of activity;
- there is no proposed piling or other works which would generate impulsive sound elements that can disturb wintering birds. Noise generating works will be confined to shallow excavation works (200 mm) of the existing carriageway. Crossing structures (of watercourses) will be precast and placed in situ with no requirement for piling;
- although the closest known wintering bird roost is approximately 50 m from the proposed development, at the closest point, the majority are located >100 m from the proposed development (Figure 2, Appendix A), thereby reducing the potential for disturbance; and,
- birds are unlikely to flush or delay feeding, in response to the additive disturbance from construction or operation of proposed development (from noise, lighting, and human presence), given the significant extant local disturbance regime represented by existing rail, road, and industry, to which birds are already habituated. The apparent habituation of wintering birds to continuous low-intensity disturbance of a

predictable nature is well documented in the scientific literature (refer, for instance to relevant sections of Hockin et al., 1992; Hill et al., 1997, Price, 2004, Livezey et al., 2016). Some studies have also specifically established habituation to disturbance of Irish wintering bird populations (e.g. Norriss and Wilson, 1988; Phalan and Nairn, 2007[13]; Benson, 2009[14]; Nairn, 2015[15]).

In conclusion, there are predicted to be no LSEs to SCIs of Cork Harbour SPA arising from construction or operation of the proposed development. In-combination effects are assessed in Section 5.4.3.

5.3.1.3 Contaminants from Surface Water Runoff

The effects of contaminants from surface water runoff on SCI fauna species and/or QI habitats and species, during construction and operation of the proposed development, have been assessed, as follows.

5.3.1.3.1 Construction Phase

The crossing at Killacloyne Stream (and railway line) (Chainage 5650 m – 5700 m) will be via a clear span structure to be set in place, parallel to (north east of) the existing crossing. Construction work will take place from existing lands either side of the railway line. No instream works are required for this crossing.

The crossing of the unnamed stream at Chainage 5950 m will be via a precast structure which will be put in place from existing hardstanding areas both sides of the stream. No instream works are required for this crossing.

At Tibbotstown Stream (Chainage 7250 m) and Anngrove Stream (Chainage 8200 m) the existing carriageway crosses these watercourses and therefore there are no additional structures required. Works at Tibbotstown Stream will be along the existing carriageway, excavating to a depth of 200 mm and will not reach open water. There are no proposed works required to cross Anngrove Stream, where the existing pathway is deemed sufficient for the proposed development.

The path and drainage system parallel to Killacloyne Stream (Chainage 0 m – 498 m) will be constructed on relatively flat agricultural lands. Given the gradient of the land there is no predicted movement of contaminants from the construction works towards the stream. The drainage system will be constructed to replicate existing drainage of the proposed development.

The proposed development is located within an urban setting close to existing fuelling stations capable of servicing construction vehicles. All vehicles used for the works will be fuelled at these existing fuel stations with no requirement to have dedicated on-site fuelling stations. There is no predicted effect of hydrocarbons reaching Cork Harbour SPA via refuelling incidents.

The watercourse crossings will be precast and placed in situ from adjacent lands with no requirement for cementitious material to be mixed on site therefore no risk of release to watercourses.

There is negligible risk of sediments being released in to the watercourses based on the proposed work practices. Should sediment be released, it is considered it will be low in volume based on the project description (no-instream works, works taking place from existing hardstanding or agricultural lands) (Section 2) and therefore not to be in such as quantity to cause LSE on the QIs of Great Island Channel SAC and overall population status of SCIs of Cork Harbour SPA.

In conclusion, there are no predicted LSEs to SCIs of Cork Harbour SPA or QIs of Great Island Channel SAC arising from construction of the proposed development with regards to contaminants reaching these European sites via waterflow.

5.3.1.3.2 Operation Phase

There is no predicted net increase in impermeable surfaces from the proposed development and is therefore not expected to be any change in the volume of runoff. Given the nature of the traffic using the new corridor (bicycles and pedestrians) there is also not expected to be any contaminants generated by corridor users.

[13] Habituation of feeding Light-bellied Brent Goose, Oystercatcher, Redshank, and Turnstone to people and dogs along paths in Dublin Bay; study over 3 month period in single winter.
[14] Habituation of feeding Light-bellied Brent Goose to traffic and pedestrians in Dublin Bay; study over six month study in a single winter
[15] Habituation of roosting redshank to construction activity in Galway Bay; study over single winter. Habituation of feeding Greenland white-fronted geese to disturbance from farming; study over six months in each of two winters.

The proposed drainage during operation will replicate the existing drainage. During operation, the existing 'over-the-edge' drainage systems will be utilised where they are present. These systems are set up where surface water run-off flows over the edge of the carriageway and filtrates through grassed areas, for the most part. At some sections of the proposed development, existing gullies or open channels (typically at commercial locations) capture the water which then is directed to verges.

At Chainage 0 m to 498 m section, there is no predicted effect of contaminants entering Killacloyne Stream where the path will be shared used for pedestrians and cyclists only, with no risk of hydrocarbons entering the drainage system.

In conclusion, there are no predicted LSEs to SCIs of Cork Harbour SPA or QIs of Great Island Channel SAC arising from the operation of the proposed development with regards to contaminants reaching these European sites via waterflow. In-combination effects are assessed in Section5.4.3.

5.3.1.4 Spread of Invasive Species

The potential for the spread of invasive species effecting SCI fauna species and/or QI habitats, during construction and operation of the proposed development, have been assessed.

Desk study and field surveys have indicated that scheduled invasive plant species are present within the ZoI of the proposed development (Section 4.3.3). The species recorded within the proposed development are not considered to succeed within the SAC and SPA where the saline conditions are not favourable to the growth and spread of these species. This is further confirmed where the windscreen survey of the proposed development did not record these species within the boundary of the SAC or SPA (Section 4.3.3).

CCC have advised AECOM (via email in November 2018) that all scheduled invasive plant species within the ZoI will be controlled and/or removed under existing commitments unrelated to the proposed development.

In conclusion, there is no LSE predicted from the spread of invasive species on European sites and this pathway is scoped out from further assessment.

5.3.1.5 Changes of Groundwater Quality or Yield

The effects of changes of groundwater quality or yield associated with earthworks during construction on SCI fauna species and/or QI habitats and species, of the proposed development, have been assessed.

Having regard for the ranking of ground-water dependencies of different features by Kilroy et al. (2012), these effects have been scoped out from further assessment as there are no highly groundwater dependant habitats within the ZoI of the proposed development.

5.4 In-combination Effects

5.4.1 Projects

A search was conducted in November 2018 of planning applications within the vicinity of the proposed development, using the Cork County Council Planning Enquiry System[16], the National Planning Application Map Viewer[17] and An Bord Pleanála's Enquiry System[18]. The search of the Cork County Council Planning Enquiry System and the National Planning Application Map Viewer was limited to the five year period preceding the date of issue of this report (due to the typical five-year lifetime of planning permission). Withdrawn, refused, and incomplete applications were eliminated from the search. The An Bord Pleanála's search was limited to cases within the immediate vicinity of the proposed development within the last several months.

[16] Available from: http://maps.corkcoco.ie/planningenquiryv3/MainFrames.aspx Accessed November 2018
[17] Available from: https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=9cf2a09799d74d8e9316a3d3a4d3a8de Accessed November 2018
[17]Available from: https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=9cf2a09799d74d8e9316a3d3a4d3a8de Accessed November 2018
[18] Available from: http://www.pleanala.ie Accessed November 2018.

Planning applications in proximity to the proposed development have potential to result in the loss of habitats. These are detailed in Table 7, Table 8, and Table 9. These developments will potentially increase traffic volumes within the areas surrounding the developments.

The results of the planning search, using the CCC planning enquiry system and the national planning application map viewer are detail in Table 7.

Table 7. Planning Search Using the Cork County Council Planning Enquiry System and the National Planning Application Map Viewer

Planning Application Reference Number	Brief Development Description	Application Status/ Outcome	Approximate distance and direction from Proposed Development	Date Planning Application Grated
154093	Two-storey manufacturing and assembly building, including production and administration areas, a new site entrance and access road, car parking and external storage and gas compound areas, together with all associated site works	Conditional	c. 100 m north	23/04/2015
175699	Construction of residential development of 40 no. 2 storey dwelling houses and all ancillary site development works. The proposed development makes provision for the upgrade of the Knockraha road.	Conditional	c. 50 m north	21/05/18
174596	A solar photovoltaic panel array consisting of up to approximately 68,000 m^2 of solar panels, 2 no. substation buildings, 3 no. transformer units, 1 no. storage & control cabin, 1 no. storage & combined substation cabin, underground cable and ducts. Planning Permission is sought for a period of 10 years.	Conditional	c. 750 m south	05/10/18
177137	Construction of 25 no. dwelling units and all associated ancillary development works including access roads, parking, footpaths, drainage, landscaping and amenity areas.	Conditional	c. 2.2 km north	-
156341	Construction of new 'Munster Football Centre of Excellence'. The proposed development includes the construction of 3 no. full size turf playing pitches, 1no. full size artificial turf playing pitch, 3 no. artificial turf training pitches and 1 no. goal keeper training pitch, floodlighting, a pavilion building, a seated viewing terrace all over 3 no. levels, car and coach paring, 2 no. machinery storage buildings, substation, generator building.	Conditional	c. 2.9 km north	04/7/16
156722	Construction of 54 no dwellings, all ancillary car parking, landscaping and site developments works.	Conditional	c. 3 km north west	30/06/16
184551	Demolition of 1 no existing dwelling house and the construction of 89 no. dwelling houses as an extension of the existing 'Glashaboy Woods' estate currently under construction and all associated ancillary development works.	Appealed (awaiting decision)	c. 3.5 km north	-
165554	Construction of 89 no. dwelling houses and all ancillary site development works.	Conditional	c. 4 km north	09/10/17

The results of the Part 8 planning search, using the CCC website[19] are detail in Table 7.

Table 8. Part 8 Planning Search

Part 8 Proposed Development	Brief Development Description	Approximate distance and direction from Proposed Development
Glanmire Road Improvements and Sustainable Transport Works	A road improvement scheme to address significant public infrastructure deficits, where the lack of infrastructure is considered to have hindered the development of housing. The project area includes Glanmire, Riverstown and Sallybrook areas to the northeast of Cork City extending from the Tivoli roundabout on the junction between the N8 and the R639 to the Brook Inn junction between the R639 and the L2973. The proposed development comprises a total of 16 no. infrastructural projects.	Immediately west of the Proposed Development

The results of the Strategic Infrastructure Development (SID) and Strategic Housing Development (SHD) planning search are detail in Table 9.

Table 9. Strategic Infrastructure Development (SID) and Strategic Housing Development (SHD) Planning Search

ABP Planning Reference Number	SID/SHD	Brief Development Description	Application Status/ Outcome	Approximate distance and direction from Proposed Development	Date Planning Permission Granted
ABP-300543-17 (PL04.300543)	SHD	10 year permission for demolition of existing dwelling house and farm buildings and construction of 608 no. residential units, crèche, conversion of former coach house to provide retail/professional services, reservation of 1.2ha site for 16 classroom school, road improvements and associated site works.	Conditional	1.5 km north	29/03/18

[19] Available at https://www.corkcoco.ie/en/housing-infrastructure-implementation-team/public-consultation-part-8s Accessed December 2019.

Cork County Council Development Plan 2014 discussed in Section 5.4.2.1, details the requirement for future development to take into account the overall capacity of the SPA to absorb such development, and also states that population targets set for Metropolitan Area can be accommodated without giving rise to adverse impacts on Great Island Channel SAC (paragraphs 2.2.34 and 4.9.19 in CCC, 2014). It is considered unlikely that the developments listed within Table 7, Table 8, and Table 9 will significantly affect roosting habitats or remove intertidal areas within the Cork Harbour SPA.

5.4.2 Plans

5.4.2.1 Cork County Development Plan 2014

The Cork County Council Development Plan 2014 (CCC, 2014) sets out four Strategic Planning Areas and identifies Glanmire and Carrigtwohill as main town development areas within County Metropolitan Cork Strategic Planning area. The plan objective for the County Metropolitan Cork Strategic Planning Area is to recognise the importance of the area as a key point of the Atlantic Gateways Initiative, and an area as a single market area for residential properties and employment. The area is considered an area of population growth and identifies the importance of development and transport infrastructure improvement while protecting and enhancing the areas natural and built heritage in the Cork Harbour area. The proposed development occurs in part in Glanmire, and Carrigtwohill. Both Glanmire and Carrigtwohill are considered Smaller Metropolitan Towns, requiring 1,320 and 3,656 new housing units to be built between 2011 and 2022, respectively.

Little Island in proximity to the development is an area of high mixed employment, the development plan identifies Little Island as an area to continue to maintain high level of employment and as an area linked to next generation uses. Both Little Island and Carrigtwohill have been identified within the development plan as areas suitable for large scale development.

5.4.2.2 Cobh Municipal District Local Area Plan (LAP) 2017

The main towns which occur in the vicinity of the proposed development are Glanmire, Carrigtwohill and Little Island. Within the Cobh Municipal District Local Area Plan (LAP) 2017 (CCC, 2017), the Glanmire area has been identified as a key growth centre in Metropolitan Cork. The Cork County Development Plan 2014 sets out the development of this area as the main engine of both population and employment growth within the south west region. Glanmire is identified as an area with the potential to deliver population growth spurring retail growth, the development of high quality social and community facilities and improved transport linkages while protecting its woodland setting. Carrigtwohill is one of the primary locations for industrial development as well as an important location for high technology manufacturing. Little Island is also designated as a Strategic Employment Area and is a major employment centre. Little Island also has a significant residential element.

There are a range of areas protected under the LAP as open space/sports recreation/amenity, however, there are also several areas designated for Residential development that occur in proximity to the proposed development. Within Glanmire, sufficient land is required to accommodate the predicted increase in population within this area. Areas designated within the LAP for Residential development include GM-R-06, GM-R-07, GM-R-08 and GM-R-09. These designated areas occur in areas of greenfield, currently in agricultural use. Construction in these areas will result in the loss of greenfield areas, woodland, hedgerow and tree lines.

It is envisioned within the LAP that there will be a significant growth in both housing and employment within Carrigtwohill, with the town requiring a provision of approximately 3,656 additional dwellings within the lifetime of the LAP. In Carrigtwohill, there are lands identified for residential development, industry development, business development, and community/utility. While some of these designated areas for development occur in brownfield areas, the majority of the designated areas for development occur in areas of greenfield, currently in agricultural use. This would result in the loss of greenfield, hedgerows, and treelines.

Future development within Little Island as outlined within the LAP will predominantly be of an industrial nature with designated development areas occurring predominantly in brownfield areas; however, some designated development areas occur in areas of greenfield, currently in agricultural use.

The Cobh Municipal District LAP outlines the importance of achieving the population and development targets proposed within the plan in a sustainable manor which ensures the integrity of the biodiversity of the area is protected. These objectives are laid out by LAS-01 of the LAP.

5.4.2.3 Pollution and Water Quality

There are binding obligations on all Irish local authorities including Cork County Council to achieve good status of surface waters, under the terms of the EU Water Framework Directive (WFD) 2000/60/EC, and in related policies in applicable county development plans. Furthermore, Irish Water, who has national statutory remit for wastewater and drinking water services, has committed to a 25 year programme of improvements to wastewater impacts on surface waters in their Water Services Strategic Plan (WSSP) (Irish Water, 2015).

The WFD provides a framework for the protection and improvement of rivers, lakes, marine and ground waters, in addition to water-dependent habitats. The aim of the WFD is to prevent any deterioration in the existing status of water quality, including the protection of good and high water quality status where it exists.

The proposed development occurs within the Water Framework Directive Catchment no. 19; Lee, Cork Harbour and Youghal Bay. The transitional waterbody in proximity to the proposed development is Lough Mahon, which is considered at risk.

The Cork County Development Plan (CCC, 2014) sets out objectives under GI10-1 which relate to the EU Water Framework Directive and River Basin Management Plans, as well as objective GI10-2 on surface water protection. These objectives seek to protect and improve the County's water resources and the status and quality of all surface waters.

5.4.2.4 Flooding

A flood management scheme is currently underway for Glanmire following the flooding event of 2012. The Glashaboy Flood Relief Scheme[20] was initiated in 2014 following major flooding in 2012 and is currently at confirmation stage with construction expected to begin in 2018. The scheme includes "Flood Defence embankments and walls, culverts and bridge works, vegetation clearing, individual property protection, and a pumping station". This is expected to provide protection from 100-Year flood (1% Annual Exceedance Probability)[20].

The flood relief scheme for Little Island includes the installation of a sluice gate under the N25, this will prevent the natural proliferation of tidal water into low lying lands to the north of the N25 and is expected to provide protection against a 200-Year flood (0.5% Annual Exceedance Probability). This has been developed and proposed for progression to implementation as part of the Lee Catchment Flood Risk Assessment Management Study (CFRAMS)[21].

5.4.3 In-combination Conclusion

The in-combination effects of other project and plans, on the QI/SCI of European sites within the ZoI, have been assessed. It is concluded that the inherent policy protections outlined in existing plans, and the predicted effects from relevant projects, together with the statutory requirements to carry out AA, would result in no LSEs within the ZoI of the proposed development in-combination with other plans and projects.

[20] Available from http://www.glashaboyfrs.ie/. Accessed November 2018.
[21] Available from http://www.lee.cfram.com/ Accessed November 2018

6. Screening Statement and Conclusion

LSEs on SACs and SPAs were screened out of assessment as there are no impact pathways and therefore no possible impacts on QIs or SCIs of the relevant European sites.

There are two European sites with direct (hydrological) pathways to the proposed development, namely Cork Harbour SPA (located c. 20 m south and downstream) and Great Island Channel SAC (located c. 30 km south and downstream). It was considered that there was potential for habitats and species designated for these European sites to be affected by contaminants/pollutants and invasive species during construction and operation of the proposed development. On further assessment of the LSE during all phases of the proposed development it was considered that the predicted effects would not cause LSEs on the SCIs for Cork Harbour SPA and QIs for Great Island Channel SAC either alone or in-combination with other plans and projects. This conclusion was drawn, based on;

- there is no proposed direct land take for the proposed development;
- there is no instream works proposed, thereby decreasing the risk of contaminants entering the European sites;
- there is no predicted net increase in run off during operation, therefore no predicted pressure on the existing drainage systems which will be use during operation (i.e. no predicted increase in flooding releasing pollutants (hydrocarbons etc.) to watercourses;
- all vehicles will be fuelled off-site at designated public fuelling stations; and,
- an invasive species management plan is part of the Cork County Development Plan (disconnected to the proposed development) which ensures no spread of non-native, invasive species;

The proposed development will increase the availability of public transport options for residents in the wider area while also narrowing the existing carriageway. With this in mind, it is anticipated that, during operation, the noise from vehicles on the road will be decreased based on;

- a narrower carriageway reduces the likelihood of vehicles travelling above the national speed limit for the road; and,
- the availability of cycle and pedestrian routes linking residential dwellings to public transport is proposed, in the long term, to decrease the dependency on vehicle use and increase use of public transport, reducing noise from the existing carriageway.

The reduction in noise from the existing carriageway may, in the long term, be favourable to SCIs of Cork Harbour SPA.

This AA screening therefore concludes that there are no Likely Significant Effects on any European site as a result of the Proposed Development, and therefore that there is no requirement to proceed to the next step of Appropriate Assessment and , subject to other requirements, the Proposed Development can be authorised.

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Appendix A Figures

Figure 1: European Sites Discussed in AA Screening Report

Figure 2. Known SCI Wintering Bird Roosts of Cork Harbour SPA

Figure 3. Known QI Habitats (Great Island Channel SAC) in proximity to watercourse outfalls

Appendix B Project Design Drawings

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