

6 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

An EIS sets out the findings of an EIA which is undertaken by the competent authority to assess the potential effects of certain development projects on the environment.

The primary objective of an EIA is to ensure that projects which are likely to have significant effects on the environment are assessed and impacts avoided, where possible. This assessment process aims to achieve the most sustainable and environmentally friendly integration of a development with the local environment.

Firstly, the planning context, the background to the project including the need for the development, the alternatives assessed and the existing and proposed development is described. This sets the reader in context as to the practical and dynamic process undertaken, in order to arrive at the layout and design of the proposed development that will cause least impact on the environment.

Subsequent chapters deal with specific environmental topics for example, human beings, air, water, noise, etc. These appraisals may involve specialist studies and evaluations. The methodology applied during these specific environmental appraisals is a systematic analysis of the proposed development in relation to the existing environment. The broad methodology framework for these assessments is outlined below and is designed to be clear and concise and allow the reader to logically follow the appraisals process through each environmental topic. In some instances, more specific topic related methodologies are outlined in the relevant chapters of the EIS.

The broad methodology framework used in all chapters includes:

- Introduction
- Methodology
- Existing Environment
- Summary of Key Possible Impacts
- Mitigation Measures
- Predicted Impacts after Mitigation
- Monitoring
- Conclusion and Summary
- References

The advantage of using this framework is that it is easy to investigate each environmental topic and it facilitates easy cross-reference to specialist studies undertaken as part of the appraisals.

The following sections outline the methodology used during this assessment process. The methodology has been undertaken in accordance with best practice EIS guidelines:

- *Guidelines on the Information to be contained in Environmental Impact Statements*, (EPA, 2002)
- *Advice notes on Current Practice (in the preparation of Environmental Impact Statements)* (EPA, 2003)

6.1 Environmental Appraisal Methodology

[6.1.1 Introduction](#)

This section generally introduces the environmental topic to be assessed and the areas to be examined with the appraisal.

[6.1.2 Methodology](#)

Specific topic related methodologies are outlined in this section. This will include the methodology used in describing the existing environment and undertaking the impact assessment.

It is important that the methodology is documented so that the reader understands how the assessment was undertaken. This can also be used as a reference if future studies are required.

6.1.3 Existing Environment

An accurate description of the existing environment is necessary to predict the likely significant impacts of a new development. Existing baseline environmental monitoring data can also be used as a valuable reference for the assessment of actual impacts from a development once it is in operation.

To describe the existing environment, desktop reviews of existing data sources were undertaken for each specialist area. This literature review relied on published reference reports and datasets to ensure the objectivity of the assessment. Desktop studies are also supplemented by specialised field walkovers or studies in order to confirm the accuracy of the desktop study or to gather more baseline environmental information for incorporation into the EIS.

The existing environment was evaluated to highlight the character of the existing environment that is distinctive and what the significance of this is. The significance of a specific environment can be derived from legislation, national policies, local plans and policies, guidelines or professional judgements. The sensitivity of the environment was also described.

6.1.4 Summary of Key Possible Impacts

In this section individual specialists predict how the receiving environment will interact with the proposed development. The full extent of the proposed development's effects and emissions before the proposed mitigation measures are introduced is outlined here. Impacts from both the construction and operation phases of the proposed development are outlined. Interactions and cumulative impacts with other environmental topics are also included in this assessment. The evaluation of the significance of the impact is also undertaken. Where possible, pre-existing standardised criteria for the significance of impacts will be used. Such criteria can include Irish legislation, international standards, EPA guidelines or good practice guidelines. Where appropriate criteria do not exist the assessment methodology section states the criteria used to evaluate the significance.

6.1.5 Mitigation Measures

If significant impacts are anticipated mitigation measures are devised to minimise impacts on the environment. Mitigation measures by avoidance, by reduction and by remedy can be outlined.

6.1.6 Predicted Impacts after Mitigation

This identifies the likely impact that will occur after the proposed mitigation measures have been put in place. These impacts are described in detail and assessment of their significance undertaken.

6.1.7 Monitoring

This section outlines specific monitoring programmes for the individual environmental topic to be undertaken to ensure the effectiveness of mitigation measures put forward in the EIS. Monitoring results can be compared with baseline monitoring undertaken as part of the EIS or with other regulatory standards, planning conditions, Industrial Emission, IPC or waste licence conditions, etc.

6.1.8 Conclusion and Summary

An overall summary of the assessment undertaken, specific impacts predicted, mitigation measures outlined and final residual impacts is provided in this section.

6.2 EIS Conclusion: Development and its Impacts in Context

This section provides a summary of the key impacts and mitigation measures associated with the proposed development. It also discusses cumulative impacts and interactions and inter-relationships between environmental topics. This section provides an overall conclusion to the EIS.

7 HUMAN ENVIRONMENT – LAND USE

7.1 Introduction

This section examines the potential impacts of the proposed pipeline project on land use. It covers the existing nature of the environment within the proposed planning corridor, and predicts the impacts that may be expected and the measures proposed to mitigate these effects. Consideration is given to both the construction and operational phases of the development.

7.2 Study Area

The assessment area has been defined with reference to the potential for impact from the proposed scheme which is typically limited to the boundary of the pipeline planning corridor and the availability of relevant information. In terms of land use it was considered that a 500 m offset from the centerline of the proposed pipeline planning corridor would encompass all land uses directly impacted by the proposed scheme. Therefore, land use zoning and existing land uses within the 500 m offset were considered in this section.

7.3 Methodology

In order to assess the existing local human environment, a desk-top study was undertaken. The areas studied included land use, education and amenity. The main land uses in the area which could be potentially impacted by the proposed project were described from Google Earth/OSI Orthophotography and this data was verified by subsequent walkovers and drive-by surveys. Heritage, culture, leisure and recreational facilities along the route were identified. A walkover of the route was subsequently conducted to confirm information.

The following literature and data sources were reviewed as part of this assessment:

- The Dublin City Development Plan 2011 – 2017
- Fingal County Council Development Plan 2011 - 2017
- Ordnance Survey Mapping Sheet No. 50
- Google Earth/OSI Orthophotography
- www.myplan.ie

7.4 Existing Environment

7.4.1 Human Environment - Land Use

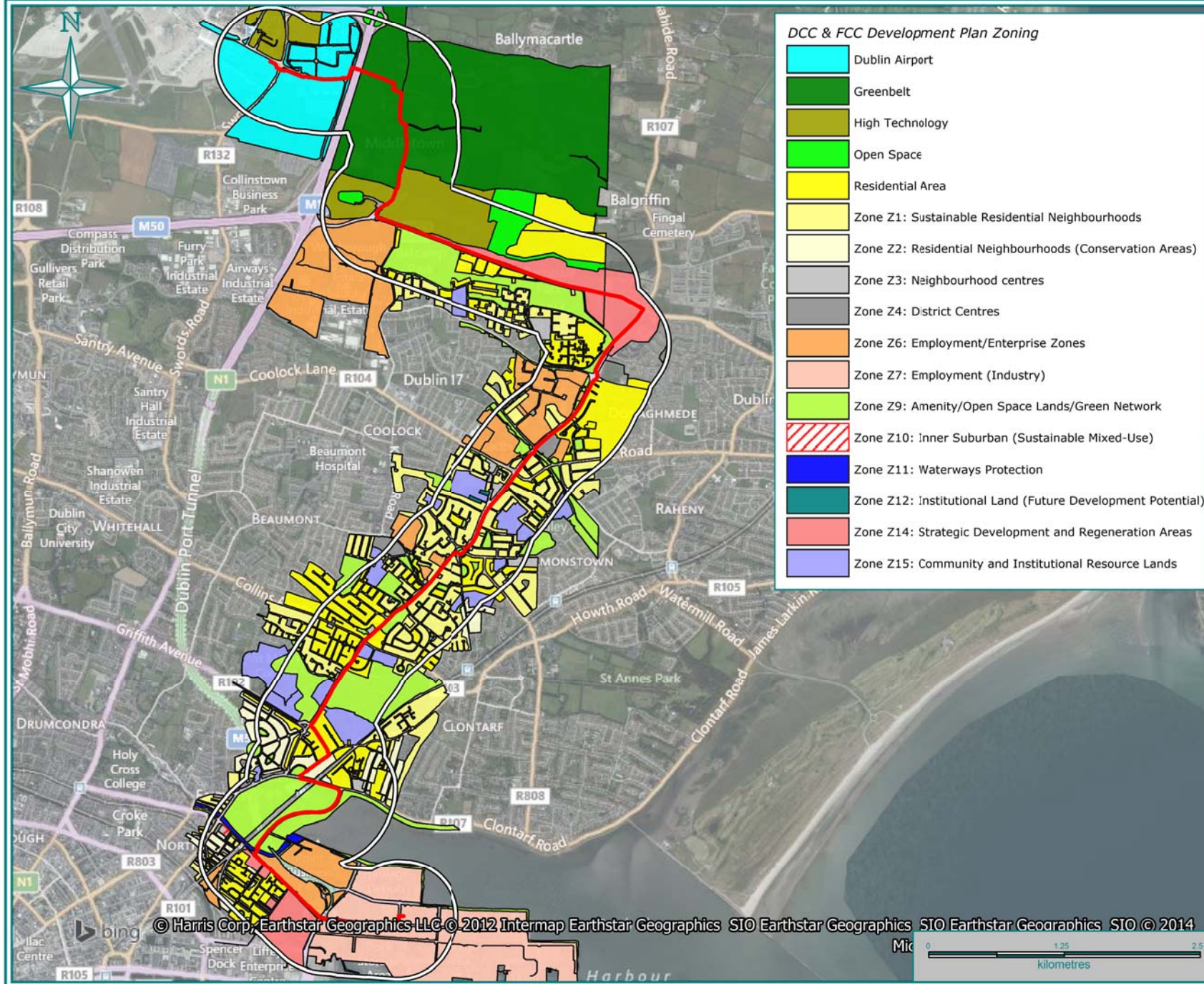
The main land use through which the route passes is roadway.

The DCC and FCC Development plans outline existing and proposed land use zoning objectives within the planning corridor. These zoning objectives provide land use classification within the development plan areas. While there are a number of land use classifications within the development plans, some of these classifications are not relevant to the proposed aviation pipeline. With reference to the Dublin City and Fingal County Development Plans the following classifications are used to describe the zoning land uses surrounding the proposed pipeline route corridor.

Table 7.1: Zoning Land Uses Within 500m of the Pipeline Corridor

ZONE	Plan	No. of times Zoning occurs within 500 m of Pipeline Corridor
Zone Z1 - Sustainable Residential Neighbourhoods	Dublin City Development Plan 2011-2017	441
Zone Z2 - Residential Neighbourhoods /Conservation Areas)	Dublin City Development Plan 2011-2017	168
Zone Z3 - Neighbourhood Centres	Dublin City Development Plan 2011-2017	63
Zone Z4 - District Centres	Dublin City Development Plan 2011-2017	22
Zone Z6 - Employment/Enterprise Zone	Dublin City Development Plan 2011-2017	48
Zone Z7 - Employment (Industry)	Dublin City Development Plan 2011-2017	16
Zone Z9 - Amenity and Open Space and Green networks	Dublin City Development Plan 2011-2017	259
Zone Z10 - Inner Suburban (Sustainable Mixed-Use)	Dublin City Development Plan 2011-2017	2
Zone Z14 - Strategic Development and Regeneration Areas	Dublin City Development Plan 2011-2017	10
Zone Z15 - Community and Institutional Resource Lands (Educational, Recreational, Community, Green Infrastructure, and Health)	Dublin City Development Plan 2011-2017	36
DA - Dublin Airport	Fingal Development Plan 2011-2017	12
Open Space	Fingal Development Plan 2011-2017	4
HT - High Technology – Office, Research & development, high technology	Fingal Development Plan 2011-2017	6
GB -Greenbelt – Recreation & community	Fingal Development Plan 2011-2017	34
RA - Residential Area	Fingal Development Plan 2011-2017	2

The distribution of these land use zonings is shown on Figure 7.1.



DCC & FCC Development Plan Zoning

- Dublin Airport
- Greenbelt
- High Technology
- Open Space
- Residential Area
- Zone Z1: Sustainable Residential Neighbourhoods
- Zone Z2: Residential Neighbourhoods (Conservation Areas)
- Zone Z3: Neighbourhood centres
- Zone Z4: District Centres
- Zone Z6: Employment/Enterprise Zones
- Zone Z7: Employment (Industry)
- Zone Z9: Amenity/Open Space Lands/Green Network
- Zone Z10: Inner Suburban (Sustainable Mixed-Use)
- Zone Z11: Waterways Protection
- Zone Z12: Institutional Land (Future Development Potential)
- Zone Z14: Strategic Development and Regeneration Areas
- Zone Z15: Community and Institutional Resource Lands



Legend

- 500m Buffer of Proposed Aviation Fuel Pipeline
- Proposed Aviation Fuel Pipeline (Centreline of Corridor)

Date	23/05/2014	
Name of Client	Fingleton White	
Name of Job	EIS for Aviation Fuel Pipeline between Dublin Port - Dublin Airport	
Title of Figure	Planning Zones along Proposed Pipeline Route	
Scales Used	1 : 50,000 @A4	
Figure No.	7.1	Rev B

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A description of the dominant land uses along the proposed pipeline route corridor is provided hereunder.

Table 7.2: Land Use Zoning & Classification

Dublin Port and Tolka Quay Road	
Location	The Dublin Port Oil Terminal and Tolka Quay Road are located in the Docklands area of the city which is under the remit of the Dublin Port Company. This area is surrounded by Dublin Harbour.
Land use	<ul style="list-style-type: none"> • Employment (industrial) areas, SEVESO II establishments
Description	<p>This area is designated as industrial land use with industrial facilities such as coal yards, oil installations, freight yards, car parks and oil and chemical storage tanks, some designated as SEVESO II sites, etc. The pipeline will commence from an AGI to locate at an existing fuel storage facility within the port.</p> <p>AMEC Environment & Infrastructure UK Limited prepared a Safety and Environmental Impact Evaluation Report (Appendix 2.1 of Volume 3 of the EIS) in which they identified five lower tier Seveso sites along with seven upper tier sites. While the pipeline does not cross over or through any of these sites, it does pass near to one and follows the outer wall of one of the lower tier site on Tolka Quay Road for approximately 300 m.</p> <p>Other land uses identified for this area are the pedestrian and cycle walkways including the Integrated S2S/Docklands cycle network which commences within the Port and passes along East Wall Road and onto Alfie Byrne Road.</p>
East Wall Road and Environs	
Location	East Wall Road is in the Docklands area of the City and runs in an east-west direction from Tolka Quay Road to North Strand Road. (Note the proposed pipeline route does not impact on North Strand Road).
Land use	<ul style="list-style-type: none"> • Residential amenity, residential amenity (conservation areas), strategic development & regeneration areas • Waterway protection areas • Employment/ enterprise areas.
Description	<p>Significant areas to the south of East Wall Road have been designated for rejuvenation, for example, a factory area and the Docklands Innovation Park. An educational facility within this area includes Saint Joseph's National School. In addition there is a hotel, church, two medical centres, a community centre, fire station and post office. The remaining area to the south of East Wall Road is residential with terraced houses along the roadway. There are a number of residential conservation areas also designated within the region. The East Wall Road has also been identified as a priority cycle route.</p> <p>To the north of the East Wall Road, is the Portside Business Centre, a designated enterprise and employment centre as well as the Tolka River amenity.</p>
Alfie Byrne Road, the John McCormack Bridge Clontarf Road, Howth Road and Copeland Avenue	
Location	<p>There are a number of parks in the vicinity of the pipeline route corridor as it runs along Alfie Byrne Road. These include Fairview Park, which is located within the townland of Fairview just north of the Tolka River and west of the Tolka River Estuary/Dublin Harbour. The River Tolka is an important local fishery. The river is mostly a 'put and take' fishery and is stocked by the Tolka Trout Angler's Club and the IFI</p> <p>The Alfie Byrne Open Area is also adjacent to this section of the pipeline route corridor.</p>

	The route then travels a short distance (approx 650m) along the Clontarf Road before turning north-east at the John McCormack Bridge where it will cross under the Tolka River onto the Howth Road (over the port tunnel) for a distance of approximately 600 m. It then travels north-west along Copeland Avenue to join the Malahide Road.
Land use	<ul style="list-style-type: none"> • Recreational amenity and amenity, open space and green networks • Residential amenity, residential amenity (conservation areas) • Neighbourhood centre/mixed service facilities, community/Institutional areas.
Description	<p>Fairview Park and Alfie Byrne Open Space are large green areas that are popular recreational areas for local workers, residents as well as visitors. There are a number of paths through the parks for recreational enjoyment as well as an access path across the River Tolka onto the East Wall Road (Fairview Park). Other facilities in these green areas include a playground, basketball ground, football pitches, etc.</p> <p>The DART and northern railway line passes between Fairview Park and the Alfie Byrne Open Space with the Clontarf train station on the Alfie Byrne Road. In the vicinity of this route there is a primary school, dance school, Garda station, nursing home, refugee centre, medical centres as well as a number of commercial activities including a service station and car showroom at John McCormack Bridge. Howth Road and Copeland Avenue are primarily residential areas.</p>
Malahide Road (R109) – From Griffith Avenue Junction to Coolock Village Centre	
Location	Malahide Road runs in a north-south direction north of Fairview Park and west from Clontarf. The proposed pipeline route corridor runs along this road from the Griffith Avenue junction, through Donnycarney and Artane to Coolock Village Centre.
Land use	<ul style="list-style-type: none"> • Residential, amenity, residential amenity (conservation areas), • Amenity/open space/green network areas, • Employment/ enterprise zones, • Neighbourhood / mixed service facilities, community/Institutional areas.
Description	<p>The dominant land use in this area is residential with both detached and semi-detached dwellings. Some of these residential areas are designated residential conservation areas for example in Marino Crescent or along Carleton Road. Neighbourhood facilities and mixed services include veterinary clinics, local shops, bars and restaurants. In the Artane area there is an increase in industrial land use, primarily at the Fairdale Industrial Estate. There are a number of areas designated as mixed facility areas such as Artane Castle Shopping Centre and Cromcastle Court.</p> <p>There are several churches (5), schools (11), medical centres (2) and a community centre within a 500m buffer of the proposed pipeline route corridor in this area. There are a number of open spaces and recreational areas in close proximity to the route including an open space at the Howth Road/Clontarf Road junction, a GAA pitch within the Marino Casino Architectural Conservation Area (ACA), Clontarf Golf Course, Mayfield Park, St David's Park and Rockfield Park near the Killester Avenue junction, and Middle Park, Mask Park and McAuley Park in Artane.</p> <p>As well as the Marino Casino ACA, there is a protected structure at Griffith Avenue junction and near St. David's Woods estate and there is a site of archaeological interest north of the Collins Avenue Junction. There are two churches designated as sites of archaeological interest east of Artane Castle Shopping Centre and Woodville House, a protected structure, is also located to the north of Kilmore Road.</p>

Malahide Road (R109) – From Coolock Village Centre to Clare Hall	
Location	The pipeline corridor runs north-east along the Malahide Road from Coolock Village to Clare Hall. It crosses the Santry River just north of Coolock.
Land use	<ul style="list-style-type: none"> Residential, amenity, residential amenity (conservation areas), strategic development & regeneration areas Amenity/open space/green network areas, Employment (industrial), employment/ enterprise zones, District, neighbourhood centre, community/Institutional areas.
Description	<p>Along this part of the road the land use is predominantly retail and services associated with the district centre at Coolock village. Between Coolock and the Clare Hall Shopping Centre at the northern end of this area, there is significant industrial use in the form of the Cadbury's factory, the Coolock Industrial Estate and the Newtown Industrial Estate. To the east of the road, the Donaghmede area is primarily residential. There are a number of small green open space areas associated with residential areas including: Rathvale Field and Concarr Park.</p> <p>There are a number of churches (3), schools (3), community centres (2) and a Garda station in close proximity to the proposed pipeline route corridor in this area. In the north of this area is the Hilton Dublin Airport Hotel, located within the City Junction Business Park.</p>
Northern Cross (N32) to Clonshaugh Road (North)	
Location	The proposed pipeline route corridor follows the Northern Cross in a north-westerly direction for approximately 4 km until the junction with Clonshaugh Road. It runs almost parallel to the Mayne River for much of this stretch, converging at Clonshaugh Bridge.
Land use	<ul style="list-style-type: none"> Residential, amenity, residential amenity (conservation areas), strategic development & regeneration areas Amenity/open space/green network areas Community/Institutional areas Industrial, enterprise employment zones, office business/high technology.
Description	<p>This area represents the boundary between DCC and FCC functional areas, and the change in land use density that entails is in evidence. There are a limited number of residential areas along this section of the route, principally in the Darndale area. There is a large amount of open space in the form of the Darndale Park, Moatview Open Space, Belcamp Park and Clonshaugh Woods. There is also a GAA pitch.</p> <p>Belcamp Park covers 25 hectares. It has significant historic origin dating back to late 17th century when the Lord Mayor of Dublin Sir Humphrey Jervis, erected a house on the property. Henry Grattan is believed to have been there in 1746 and Dean Swift was believed to have been a regular visitor. Also the Countess Markievicz rented the house in 1909 and it was used for a short time as a centre for the Fianna Eireann movement. This may attract some visitors to the park. The park also has facilities such as a pitch and putt course, tennis courts, playing fields, children's play and basketball areas, as well as pathways for walking to entice visitors.</p> <p>Darndale Park covers 13.1 hectares and was developed to its current layout during the late 1990s. It is a neighbourhood park providing a children's playground, playing pitches, tree planted boundaries, 2.3 km of recreational pathways and a significant water feature. The latter provides an important series of freshwater habitats and wetland and is also an important local fresh water fishing facility which is very popular in the area.</p> <p>North of the N32 the land is zoned as a master plan area for office, research and development and high technology manufacturing type employment.</p>

	<p>Local objectives in this area (432 and 442) require that any master planning in this area has regard to the capacity of the road network and development is restricted within the Mayne River Flood plain in accordance with the recommendation of the Greater Dublin Strategic Drainage Study.</p> <p>The Bewley's Hotel and Woodlands Lodge are located in this area. In addition there is a church, a permanent halting site (along Belcamp Lane), with ancillary training and resource centres, schools and medical centres. Also to the north is the Woodlands House site of archaeological interest and conservation area.</p>
Clonshaugh Road/Stockhole Lane	
Location	The road runs north-south from the Northern Cross, on the south fringe of Fingal County Council's jurisdiction. The pipeline route corridor follows this road and crosses the Cuckoo Stream at Middleton. The road runs through the townlands of Clonshaugh, Stockhole and Glebe before joining the M1 motorway. The proposed pipeline corridor will follow this road until it reaches the townland of Stockhole and it then turns westwards off Clonshaugh Road.
Land use	<ul style="list-style-type: none"> • Existing residential • Amenity, open space and green networks, • Neighbourhood/mixed service facilities, • Industrial facilities. • High technology areas.
Description	<p>To the south of this road the area is designated as a master plan area for office, research and development and high technology manufacturing type employment. Local objectives to the east of the road are outlined above. To the west of the road local objectives for high technology type employment and mixed community facilities are proposed such as a hotel, education, petrol station, restaurants, cafes etc. Also there is an objective to facilitate the provision of public transport to the lands north of the M50 Extension. There are also proposed road developments for this road and a new road development of the East West Distributer.</p> <p>To the north of the route the surrounding land use is predominantly green open agricultural land.</p>
Across Athletic Union League (AUL) Sports Complex and M1 motorway	
Location	The Athletic Union League Sports ground is located between the M1 motorway and Clonshaugh Road. The proposed pipeline route corridor will cross to the north of the sport grounds access road and sport fields.
Land use	<ul style="list-style-type: none"> • Amenity/Open Space/Green Network areas
Description	This is a football (soccer) club grounds with associated club house, parking and soccer pitch facilities which are used for social and amenity purposes. The proposed pipeline route corridor will then cross under the M1 motorway.
Dublin Airport Long term Airport Carpark (Red)and Swords Road	
Location	The long term (red) airport carpark is located to the east of the M1 motorway and to the west of the R132 Swords Road. The proposed pipeline route corridor will follow the access route out of the carpark and will cross the R132 Swords Road.
Land use	<ul style="list-style-type: none"> • Ancillary aviation related development zone • Amenity/open space/green network areas • Existing residential.
Description	<p>Land use in this area includes ancillary aviation related development which comprise of logistics, taxi feeder park, aviation related light industrial, staff and long-stay parking, car hire.</p> <p>A sports and recreation facility the 'ALSAA Sports Fitness and Social Association' and a limited number of residential dwellings are also located to the south of the proposed pipeline route corridor.</p>

Dublin Airport	
Location	The Dublin Airport fuel storage depot is located at the entrance to Dublin airport. It is bounded by the R132 Swords Road to the east, to the north by the airport access road and to the west and south by the terminal/apron airport grounds.
Land use	<ul style="list-style-type: none"> • Apron related development, terminal/apron, core aviation development zone, ancillary aviation related development zone • Amenity/open space/green network areas • Existing residential.
Description	<p>Dublin airport area consists of apron related development such as cargo, flight catering facilities, aircraft maintenance and general aviation. The airport terminals, runways and aircraft aprons command the single greatest land use in this local area plan (LAP) and are located to the west and south of the fuel storage area. A Fingal County Council local objective (LA 399) south of this area includes for the construction of an oil pipeline from Dublin Port.</p> <p>Nearby land use across the airport access road includes the core aviation related development zone which includes public transport interchange, short-term car park, taxi facilities, hotel and terminal related offices. Fingal County Council has a local objective (LA 378) in this area and that is to consider appropriate office, research and development and high technology/high technology manufacturing associated with airports or aviation within this area.</p> <p>Permission has been granted for the Metro North Scheme which includes a stop and depart at Dardistown which is located south-west of the proposed pipeline as it terminates at the airport tank farm.</p>

7.5 Summary of Key Potential Impacts

7.5.1 Construction Impacts

Overall construction impacts on land use will be predominantly short-term (10 months) and temporary. Direct impacts on land use will occur mainly within the pipeline route planning corridor (public road, footway and verges within the boundary lines between public and private property) where sections of the proposed route will be fenced off for the duration of the works. This has the potential to cause disruption and interfere with access arrangements to these facilities.

The pipeline will be constructed in sections, four crews operating at any one time. During this period there will be indirect impacts on adjacent land uses such as residential, commercial/retail, amenity/park areas and public roads where noise and dust nuisance may occur. These issues are discussed in more detail in Chapter 9 – Road, Traffic and Transportation, Chapter 10 – Noise and Chapter 14 – Air Quality & Climate.

The proposed pipeline route corridor will cross through Dublin Port, the AUL Athletic Union League Sports ground lands owned by the FAI, and Dublin Airport Authority owned lands, as it crosses through the long term (red) airport car park. Construction impacts on these lands will include some severance of land use in the AUL sports ground where the pipeline route corridor is located between the pitches and some maintenance facilities. No other private land uses will be directly impacted. Construction on these lands, while short term, will impact on users of these facilities.

Impacts on land use will be predominantly temporary and confined to the construction period. With the exception of the above ground station sites at Dublin Port and Dublin Airport, the land use for construction will be limited to a defined planning route corridor as indicated on the strip mapping included in Appendix 3.4 of Volume 3 of the EIS and this will be further refined once construction commences.

7.5.2 Operational Impacts

Upon completion of the construction phase, the land use along the pipeline route corridor will be restored to its previous condition and use, with the resultant impacts on land use being negligible. A positive impact will be the establishment of a safer and cleaner form of transport for aviation fuel which have the potential to remove over 15,000 fuel tankers from public roads per year.

Permanent land use impacts during operation of the pipeline will be restricted to the above ground stations at both Dublin Port and Dublin Airport. The proposed stations are located in existing industrial land use areas of similar use i.e. fuel storage facilities/tank farms. While the proposed development may result in minor intensification at these sites, the overall impact on land use in these areas will be negligible. . In addition, there will be a permanent sterilisation of the lands above the pipeline route in FAI/UAL owned grounds and in DAA owned grounds to allow for access to the pipeline for maintenance during its operation.

In relation to Seveso sites, the AMEC report (Appendix 2.1 of Volume 3 of the EIS) has assessed the impact of a domino event between the pipeline and a neighbouring site. This report concluded that the risk was *"broadly acceptable...which is a term typically used by the HSA to define the lowest risk threshold used in various forms of risk assessment"*.

There is also the potential for impacts on water quality and water based recreational activities if a significant leak was to occur within the vicinity of a waterbody. This impact is discussed in more detail in Chapter 11 – Flora and Fauna.

7.5.3 Decommissioning & Re-Validation Impacts

The processes for decommissioning and re-validation of the pipeline as outlined in Chapter 3 – Description of the Proposed Development, will not result in direct impacts on land use such as disruption nor a change in land use if commissioned as an alternative service such as a water main or sewer.

7.5.4 Do-Nothing Impact

The do-nothing scenario will give rise to the continued transportation of aviation fuel by road tankers along public roads. Given the urban nature of the receiving environment, particularly the sections of the route within the functional area of DCC, commercial/retail, recreational (pedestrian and cycle walkways), transportation (bus corridors etc.) development will most likely occur.

7.5.5 Cumulative Impacts

Cumulative impacts on land use may arise if the construction of proposed pipeline project coincided with the other projects along the proposed pipeline corridor. Such impacts would include increased traffic congestion, nuisance (noise and dust) and access issues. However, given that 13.6 km of the proposed route occurs within road way which is a regulated environment, the Developer will be made aware through consultation with DCC and FCC of any potential cumulative impacts and necessary mitigation measures can be put in place.

7.6 Mitigation Measures

Mitigation measures outlined to minimise the potential land use impacts are listed below. Potential impacts in terms of visual, noise, traffic and air impacts are individually assessed and are outlined separately within the EIS.

7.6.1 Mitigation by Avoidance – Design

The transportation of fuel by pipeline is a much safer mode when compared to road tankers. The AMEC report included in Appendix 2.1 of Volume 3 of the EIS states that a release frequency from the pipeline is a factor of over 90 times lower than for a road tanker. In addition,

- The selection of the proposed pipeline corridor was based on a number of health and safety, environmental and project requirements as outlined in Chapter 2 – Background to the Development. The resultant route avoids all public park and amenity areas and is routed through the public road for 13.6 km of the 14.4 km. Consultation was undertaken with the Parks and Landscape Services Division of DCC in relation to the proposed routing through Fairview Park and Alfie Byrne Open Space, Clontarf linear open space and St Annes, Darndale and Belcamp Parks.
- The river and stream crossings will be completed using trenchless technology. This will maintain in particular the open channels of the River Tolka and Santry in their natural condition and there will be no disturbance to the bed of the river or flow within the channel itself
- Depth of cover 1.2 m
- Pipe wall thickness of 12.7 mm
- Trench backfilled with 700 mm of lean mix concrete providing protection from third party (external) interference
- External leak detection at the Tolka River. This will comprise a slotted duct installed in the pipeline trench with a sensing cable installed in the duct. The duct will have 0.5 mm wide slots to prevent it filling with silt. Other river crossings on the route are in culverts or in a concrete open channel (Santry River crossing)
- Marker tape installed in the lean mix concrete – to indicate the presence of the utility
- Cathodic protection system to prevent external corrosion
- Leak detection using instrumentation to monitor: pressure; flow; mass balance and static pressure together with automatic and manual emergency shut-down capability
- Leak detection by visual inspection which includes a fortnightly walkover of the route by operators
- Isolation valves at the beginning and end of the pipeline with two emergency shutdown valves positioned along the pipeline, one on the Malahide Road and one on the R139. The emergency shut down valves are strategically located to limit the drain down of the pipeline taking into account topography of the route
- Protection for valves and fittings
- Disturbance of the fibre optic communications cable laid above the pipe will automatically initiate an emergency shutdown of the pumps and closure of the section isolation valves.

7.6.2 Construction Mitigation Measures

- The proposed pipeline will be constructed in a progressive and sequential manner divided into four working zones which allows a number of sections of pipeline to be laid concurrently and therefore minimises the duration of the overall works to 10 months
- The working zone of each crew will 72 m x 4 m and will be fenced off so as to minimise impacts on surrounding land uses
- Maximum separation between each work site will be maintained to ensure effective traffic and pedestrian management. A Construction Report (Appendix 3.3 of Volume 3 of the EIS) and a Traffic Management Report (Appendix 9.1 of Volume 3 of the EIS) have been prepared for the pipeline corridor, which sets out procedures and controls which will minimise land use impacts

- A Liaison Officer will be appointed for the construction phase and residents and businesses along the route will get regular construction updates to ensure construction schedules and management plans are communicated and any public issues or queries are resolved
- It is anticipated that permanent reinstatement will be carried out shortly after the pipeline is installed with all current land uses being restored.

7.6.3 Operational Mitigation Measures

- The operation of the pipeline will be monitored by an automated system and will include a leak detection system (refer to Chapter 3 – Description of the Proposed Development). In the event of a leak this system will automatically shut down the pipeline and alarms will be activated and emergency response procedures activated
- These emergency response procedures will be put in place to cover the unlikely event of an accident with the pipeline. This plan will include a communications link to Dublin Port, Dublin City Council, Fingal County Council and Dublin Airport Authority. The plan will be based on existing plans used by the aviation fuel transportation industry in the UK and adapted and modified as necessary to meet local conditions and agreed with Dublin Fire Brigade. An outline emergency response plan is included in Appendix 3.7 of Volume 3 of the EIS.

7.6.4 Decommissioning & Re-Validation Mitigation Measures

As no impacts were identified, mitigation measures have not been outlined.

7.7 Residual Impacts after Mitigation

Following the implementation of mitigation measures as outlined above, residual impacts on the human environment from a land use perspective will be imperceptible - very low. There will be permanent sterilisation of the lands above the pipeline in the AUL/FAI sport complex and DAA grounds. This is to allow access to the pipeline during its operation.

7.8 References

- AMEC Environment & Infrastructure UK Limited (2014). Aviation Fuel Pipeline – Safety and Environmental Impact Evaluation
- Dublin Docklands Development Authority - Dublin Docklands Area Master Plan (2008) - Transportation and Infrastructural Framework (Chp 5)
- Dublin City Council - The Dublin City Development Plan 2011 – 2017
- Fingal County Council-Fingal County Council Development Plan 2011 – 2017.