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CONSULTANTS IN ENGINEERING, ENVIRONMENTAL SCIENCE & PLANNING

Environmental Impact Assessment Report
Development at Waterford Airport

Volume 1 – Non-Technical Summary

Prepared for: Waterford City & County Council in Partnership with Waterford Regional Airport PLC

Comhairle Cathrach & Contae Phort Láirge
Waterford City & County Council

Waterford Airport
Serving the Southeast for 30 years

Date: **July 2020**

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Abstract: Waterford City & County Council in Partnership with Waterford Regional Airport PLC are seeking planning permission to expand the existing airport infrastructure at Waterford Airport, Killowen, County Waterford. The application is accompanied by this Environmental Impact Assessment Report (EIAR) carried out in accordance with the requirements of Directive 2014/52/EU.

This volume provides a non-technical summary of the EIAR.

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1. INTRODUCTION

This Environmental Impact Assessment Report (EIAR) has been prepared by Fehily Timoney and Company (FT) under the instruction of Waterford City & County Council and Waterford Regional Airport PLC in support of a planning application to construct the proposed airport expansion including runway extension, taxiway extension, additional car parking and associated works at Waterford Airport, Killowen, Co. Waterford. This document is a summary of the information contained in Volume 2 of the EIAR.

The EIAR has been prepared in accordance with the information set out in Directive 2011/92/EU of the European Parliament as amended by Directive 2014/52/EU.

Waterford City & County Council in partnership with Waterford Regional Airport PLC is the applicant for the proposed development.

1.1 Outline of Proposed Project

The proposed project consists of approximately 491m of new runway extending north from the existing and 363m of new runway extending south of the existing bringing the total length of the runway to 2,287m. The proposed project also consists of widening of the entire length of runway from 30m to 45m in width, widening of the taxiway by 8m, extension to the car parking area to provide 205 new spaces, re-alignment of security fencing, new navigation lighting, underground holding tank for cold weather storage, demolition of 2 no. houses to the north of the runway and alterations to site drainage.

The proposed development will consist of the following operational changes; alteration of take-off and landing positions, take-off and landing of jet planes such as the Boeing 737/800 and Airbus 320, and capacity for up to 345,000 passengers per annum by year five of operations.

The project, for EIAR purposes, will also consist of the proposed extension to the terminal building, public transport set-down area and upgrade to the installed wastewater treatment unit. These elements of the project will form separate planning consent procedures at a later date but are considered in the EIAR.

1.2 Need for the Project

The overall rationale for the proposed development at Waterford Airport is to improve transport integration and connectivity both nationally and on a European scale in order to increase the competitiveness of the South-Eastern Region, to support the local population and to attract foreign investment and tourism.

For the airport to compete in the current market place, a move into the medium sized jet market is required. For this to take place the airport needs to embark on a runway development that is sufficient to meet the operational needs of modern medium sized jets. Support for the runway extension is evident at a number of policy levels and it is seen as a potential economic driver for the region. The importance of balance in regional growth is set out in European and national policy.

1.3 Methodology and Structure

The structure of the EIAR follows the 'grouped format structure' as outlined in guidance documents. This has been done to ensure that standard methods are used to describe all sections of the EIAR.

The chapters included in this EIAR are:

- Introduction
- Description of the Proposed Development
- Policy
- EIA Scoping, Consultation
- Population and Human Health
- Land, Soils & Geology (including hydrogeology)
- Hydrology and Water Quality
- Traffic and Transport
- Landscape & Visual
- Air Quality and Climate
- Noise and Vibration
- Biodiversity / Flora & Fauna
- Cultural Heritage
- Site Selection & Alternatives
- Interactions of the Foregoing

The structure proposed for the EIAR is as follows:

Volume 1 – Non-Technical Summary (NTS)

Volume 2 – Main EIAR

Volume 3 - Appendices

1.4 Difficulties Encountered

No exceptional difficulties were encountered during the preparation of the EIAR.

2. DESCRIPTION OF THE DEVELOPMENT

2.1 Existing Environment

Waterford Airport is located in Killowen, Co. Waterford, approximately 5.5km to the north east of Tramore and approximately 7.4km north west of Dunmore East in Co. Waterford.

Figure 2.1 illustrates the site location and Figure 2.2 illustrates the main elements of the proposed development.

The existing airport consists of the following:

- Terminal Building
- Hangers
- Aprons
- Taxi Way
- Runway (1,433m)
- Control Tower
- Search and Rescue Facility Building
- Car Park (245 spaces)

Following the discontinuation of medium passenger turboprop flights in 2016, typical aircraft movements at Waterford Airport are now made up of the following aircraft type:

- Business Jet, E.g. Citation 525
- Multi Engine Piston / Turbine, E.g. PA44 / C441
- Single Engine Training Aircraft, E.g. PA28
- Helicopter, E.g. S91 – EC135

Aircraft moments for recent years are detailed in table 2-1.

Table 2-1: Aircraft Movements

Year	Total Movements	Year	Total Movements
2007	30,156	**2014**	8,710
2008	29,814	**2015**	10,947
2009	18,105	**2016**	11,804
2010	15,936	**2017**	10,922
2011	16,788	**2018**	9,746
2012	13,985	**2019**	22,895
2013	10,954		

2.2 Proposed Project

The proposed development will comprise of an additional 491m of new runway including a new hammerhead at its northern termination. A 363m extension to the southern end of the runway is also proposed[1]. The full length of the runway including proposed and existing sections will be 2,287m. The extension of the runway will also require the upgrading of ancillary development including car parking, terminal building, drainage, wastewater treatment unit and navigation lighting.

The proposed project for EIA purposes will consist of the following as outlined in Table 2-2.

Table 2-2: Elements of the Project

Elements of the Project that are the Subject of this Planning Application
Extension of the runway to the north and south by 491m and 363m respectively.
Widening of the entire runway by 15m.
Taxiway widening by 8m.
Navigational lighting.
Alterations to drainage.
Demolition of 2 no. dwellings.
Provision of water storage tank.
Extension to the parking area to provide for 205 no. new parking spaces
Realignment of security fencing.
Alteration of take-off and landing position to extend into the proposed expansion.
Take-off and landing of jets such as the Boeing 737/800 and Airbus 320.
Capacity for up to 345,000 passengers per annum by year five of the operational phase.
Elements of the Project Considered for EIA that are not Proposed as part of this Planning Application (to be consented at a later date)
Extension of the existing terminal building of ca. 1,170sqm.
Upgrade of existing wastewater treatment plant.
Set down area for public transport at the terminal building.

[1] A 350m extension to the southern end of the runway was the subject of a previous planning application which was granted a 10-year permission in 2014 (Planning Ref. 14/89).

The construction phase for the Waterford Airport Runway extension is estimated to last approximately eight to nine months. Construction movements are expected to access the site from the existing public access road at the R708. Three additional temporary construction access points will be used where appropriate.

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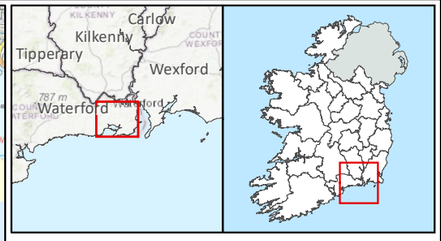

Site Boundary

Land under SERA (South East Regional Airport) and Waterford City and Council Ownership

TITLE: Site Location			
PROJECT: Waterford Airport Runway Extension			
FIGURE NO:	2.1		
CLIENT:	Waterford Airport		
SCALE:	1:50000	**REVISION:**	0
DATE:	13/05/2020	**PAGE SIZE:**	A3

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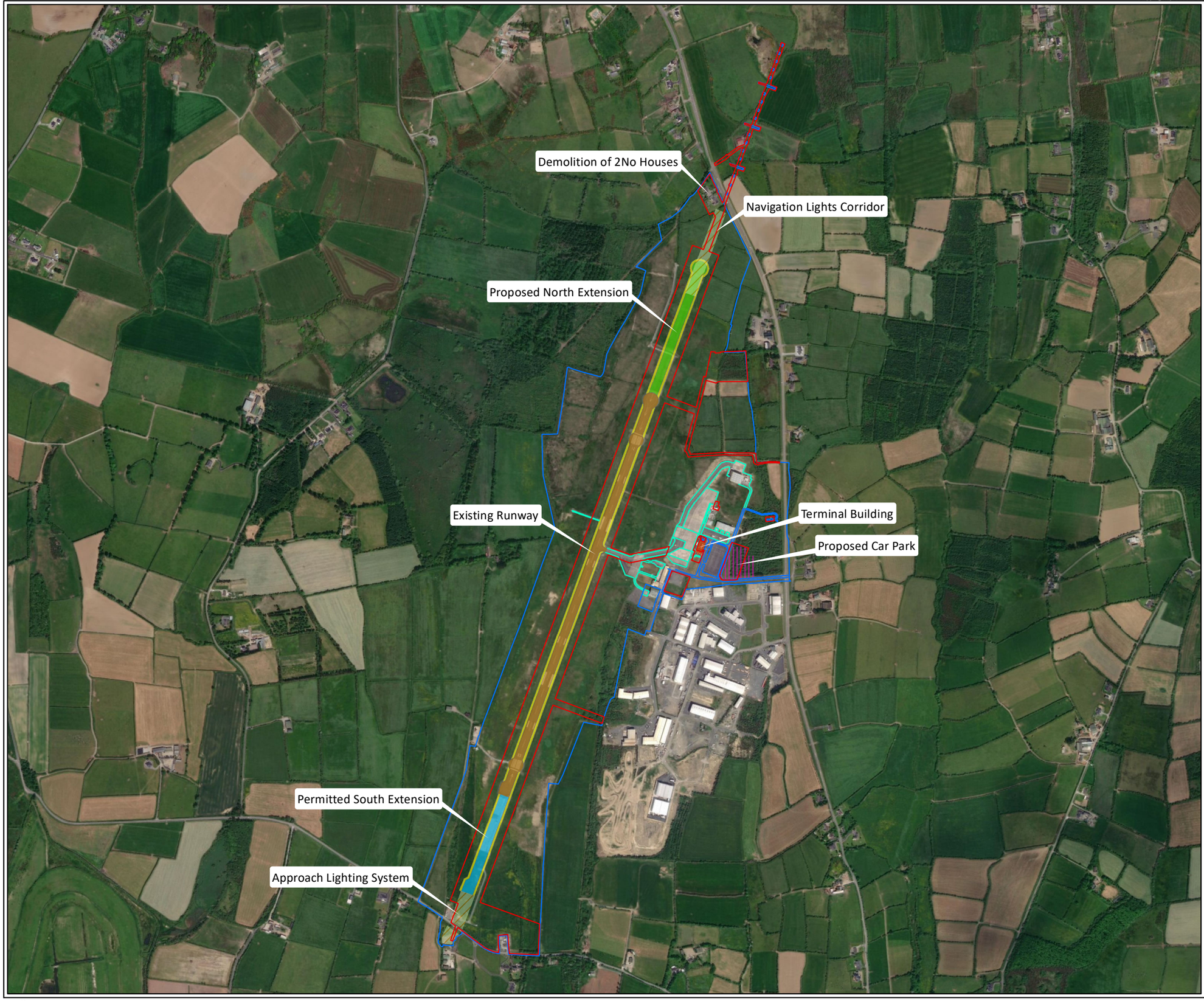

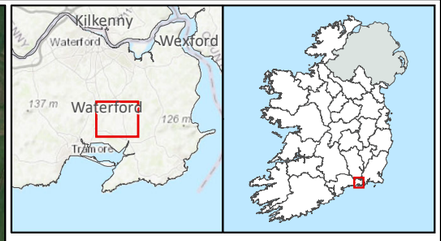

Site Boundary

Land under SERA (South East Regional Airport) and Waterford City and Council Ownership

Airside Infrastructure

Landside Infrastructure

Runway Proposals

Existing Runway (Phase 1)

Proposed North Extension (Phase 2)

Permitted South Extension (Phase 2)

Phase 3 (extension to width 7.5m)

Terminal Building

Proposed Car Park

Naviatiojn Lights Corridor

N W E S

0 0.25 0.5 1 Kilometers

TITLE:	Site Layout		
PROJECT:	Waterford Airport Runway Extension		
FIGURE NO:	2.2		
CLIENT:	Waterford Airport		
SCALE:	1:12500	**REVISION:**	0
DATE:	13/05/2020	**PAGE SIZE:**	A3

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3. POLICY

The review of European, national, regional and local planning policy demonstrates that there is a supportive and consistent policy framework for airport related development and in particular, the development and expansion of Waterford Airport.

At national level, the National Planning Framework 2040 advocates the role of international connectivity, with Waterford Airport specifically mentioned due to its strategic geographic location and airport facilities.

National aviation policy is provided for in the National Aviation Policy for Ireland (August, 2015) document. The document recognises that regional airports, including Waterford Airport, are important because of the level of international connectivity that they bring to a region for business and tourism.

The Southern Regional Spatial and Economic Strategy (RSES) (2020) reinforce the key details set out in national policy and supports the Regional Airports Program and the role of Waterford Airport to develop its potential as a key tourism and business gateway.

The Waterford County Development Plan 2011-2017 (as extended) (WCDP) recognises the role of Waterford Airport in providing for high quality, international transportation linkages.

Objective INF 4 is the relevant policy objective with respect of Waterford Airport:

> *"To assist the future expansion of services and routes at the Airport, the Council support the lengthening and widening of the runway, subject to compliance with proper planning and sustainable development and in compliance with Article 6 of the Habitats Directive."*

The Waterford Regional Airport & Business Park Masterplan (2011) is appended to the WCDP and sets out the planning objectives for the future of the regional airport.

The following policy and objective are noted in relation to the Council's support of the proposal's intent:

- *"Policy Airport 1: The Council will support and co-operate with the relevant authorities, government agencies, businesses and interest groups to improve access to the Airport and to facilitate the appropriate development at the Airport.*

- *Objective Airport 1: To assist the future expansion of services and routes at the Airport, the Council support the lengthening and widening of the runway."*

4. EIA SCOPING AND CONSULTATION

Consultation is a practice that is carried out to ensure that all relevant issues are addressed within the EIAR. The consultation process and EIAR scoping identified key effects from the proposed development. A number of points and submissions were raised which have informed the preparation of this EIAR.

4.1 Scoping

A scoping document was sent to 32 consultees on the 22nd of June 2018. The recipients included the Local Authority, Government Departments, non-governmental organisations (NGOs), interested parties and key stakeholders.

11 consultation responses were received and in particular the following responses are noted:

- An Taisce highlighted the need to assess the proposal in relation to climatic impact regarding jet aviation, the Paris Agreement climate targets, low carbon alternatives and greenhouse gas emissions and this has been considered in Chapter 10: Air Quality and Climate Chapter of the EIAR in particular.
- Fáilte Ireland provided a copy of their Guidelines on the treatment of tourism in an Environmental Impact Statement. The document is considered Chapter 5: Population and Human Health of the EIAR in particular.
- Irish Water responded with a number of suggestions to be included in the scope of an EIAR. Issues included the capacity of water services, upgrading of water services, discharge, surface-water management and mitigation and this has been reflected in Chapter 7: Hydrology and Water Quality of the EIAR in particular.
- The Southern Regional Assembly recommended a number of documents for assisting the preparation of the EIAR. This response has been considered in Chapter 12: Biodiversity of this EIAR in particular.
- The response received from Inland Fisheries Ireland specified that the treatment of extra surface water run-off from the proposed runway and carpark area should be addressed and this is considered in Chapter 7: Hydrology and Water Quality of this EIAR in particular.
- The response received from TII detailed best practice guidance to uphold policy as set out in the Spatial Planning and National Roads Guidelines for Planning Authorities (2012). Consideration of the response from TII is dealt with in Chapter 8: Traffic & Transportation, in particular.

4.2 Consultation

A pre-planning meeting was held with the Planning Department of Waterford City and County Council in relation to the proposed development on the 28th of June 2018.

Items discussed at the meeting included the nature and need for the proposed development, its layout and the design process, project components, the policy context for the proposed development, drainage design and construction methods.

Items highlighted by the Local Authority for consideration included drainage, construction methods, navigation lights, car parking, the red-line development boundary and the importance of Appropriate Assessment in relation to the Tramore SPA/SAC.

5. POPULATION AND HUMAN HEALTH

The population, human health and material assets assessment considers potential impact on the following components:

- Population trends;
- Socio-Economics, Employment and Economic Activity;
- Land Use;
- Infrastructure and Utility Services;
- Tourism, Recreation & Amenity; and
- Human Health including Health and Safety.

5.1 Existing Environment

The proposed development site is located in Killowen, Co. Waterford, approximately 5.5km to the north east of Tramore and approximately 7.4km to the north west of Dunmore East in Co. Waterford.

There are 29 no. residential receptors, 34 no. commercial receptors and 4 residential and commercial receptors, within 500m of the airport. A large percentage of commercial receptors are airport related. Within 1km, there is 62 no. residential receptors, 35 no. commercial receptors and 13 receptors of both residential and commercial uses. [2]

The population of the study area increased by 10% over a 10-year period. This largely coincides with population trends across Waterford, which experienced an overall increase in population of 7.6% between 2006 and 2016.

In terms of the existing data relating to aviation activity at the proposed development site, the highest passenger numbers accounted for at Waterford Airport reached 144,000 in 2008 with the level of aircraft activity totalling 4,045 international and domestic passenger schedule aircraft movements.

In the context of existing human health, Ireland's population has a high level of health as demonstrated in self-evaluation statistics included in Census data. Approximately 92% of the responses recorded for the Study Area in 2016 indicated that they had very good or good health which is above the State response (87%) and Waterford's average (87%) for 2016.

The predominant land use according to the CORINE 2018 land cover data, is defined as 124 – Airport. There is also fragments of 231 Pastures and 312 Coniferous forest within and around the site boundary. The site is zoned as 'airport area' and 'airfield reserve area' according to the zoning objectives set out within the Waterford County Development Plan 2011-2017 (as extended).

[2] Source: Eircode Postcodes database (2020)

5.2 Potential Impacts

5.2.1 Potential Impacts – Construction Phase

The construction phase will have no impact on the permanent population within the Study Area (as defined by the Electoral Divisions of the site boundary), however there may be a slight increase in population in the immediate study area during construction, associated with the influx in workers to the site to carry out the proposed works. The construction phase will provide a temporary increase of employment figures in the construction industry locally. Further indirect employment may arise from the sourcing of materials, aggregates and expertise locally.

Aspects of the development that may present health and safety issues are as follows:

- potential impact on general site health and safety;
- potential traffic safety impacts;
- potential general airport operations safety impacts (e.g. slip/trip, moving vehicles, vehicle collisions, falling from heights etc.);
- potential for the operations at the airport to come into contact with the construction phase.

The designs for runway, taxiway and apron areas will be completed by Leading Edge Aviation Planning Professional (LEAPP). The designs will be approved by the IAA and the associated works will be certified by the appropriate authority prior to operations.

The construction management plan will provide for appropriate mitigation measures and safety protocols to minimise the potential for effects occurring. Such mitigation measures include, following best practice, standard procedure, and adherence to aviation and construction legislation and guidance; monitoring of dust and dirt.

The construction works will see the temporary disruption of the existing land use within the site boundary where works are proposed. The potential construction impacts will see soil excavations, ground works, hardstanding areas and other typical site construction works.

The proposed development will see the laying of electric and fibre optic cables for the new airfield ground lighting system. Overhead ESB lines on the southern end of the site will be buried.

The proposed development will see alterations to drainage systems. Mitigation measures relating to the construction phase of development will ensure that the proposed development will have a ‘low impact’ to the receiving hydrological environment.

5.2.2 Potential Impacts – Operational Phase

The broader area will experience an increase in visitor numbers by way of enhanced aviation links, contributing to short-term population increases.

The existence of the airport has the capacity to cause a negative impact for residential development in the immediate environs.

It is envisaged that the employment numbers at the airport at present will be sustained with an opportunity to increase over time. Therefore, it can be considered that the proposed development will give rise to employment opportunities by its fifth year of operation.

Like all modern airports, Waterford Airport operates to stringent standards of safety and security. These will be maintained as requirement by regulation. The airport will require adherence to airport design standards and provision of specified operational safety procedures to achieve licensing from the IAA in advance of commencing operations.

The risk of 'major accidents and/or disasters' occurring at the airport is negligible subject to achievement of required safety standards and licencing from the Irish Aviation Authority.

During the operational phase of the proposed development, the existing land use will see an extension of aviation related land use activity arising from the construction of the proposed works and the enhanced aviation operations.

The laying of electric and fibre optic cables for the new airfield ground lighting system and burying of ESB lines will give rise to a benefit to the existing materials assets.

As part of the proposed project, an upgrade the existing wastewater treatment plant is proposed. This will provide appropriate levels of treatment consistent with regulations and guidelines.

It is anticipated that Waterford Airport will have a direct, positive impact on recreation, amenity and tourism as it facilities enhanced accessibility to the region.

5.3 Cumulative Impacts

No cumulative effects have been identified to have any significant 'in combination' impact arising from the proposed development in conjunction with another permitted or under construction project.

5.4 Mitigation Measures

No mitigation measures will be required with respect to population given that there will be no adverse effects on population trends, density, household size, or age structure as a result of the proposed development.

The construction management plan will mitigate against potential effects on socio-economics, employment and economic activity. Similarly, in respect of human health, adherence to legalisation and guidance will mitigate against potential health and safety effects.

No mitigation measures are required beyond the design phase in relation to land-use, or recreation, tourism and amenity.

5.5 Residual Impacts

Once mitigation measures are implemented where required, issues regarding impacts on population, human health and material assets will be removed or reduced significantly for the construction and operational phases of the proposed development

6. LANDS, SOILS, GEOLOGY

The potential impacts on lands, soils and geology, from the proposed development have been examined as part of this EIAR. The assessment included a desktop review of published literature and data, walkover surveys and intrusive site investigations.

6.1 Existing Environment

The land use across the site generally consists of level ground, predominantly covered by existing runway, car parking and terminal buildings with grassland at the vicinity of these. The typical elevations of the site are between 60 – 150m AOD. The subsoils present at the study area are Made Ground; and Till derived from Acidic Volcanic Rocks. The soils underlying the development predominantly comprise Surface Water and Groundwater Gleys.

The southern portion of the site is underlain by the Booley bay Formation with the northern portion of the site underlain by the Ballyhack Member. The site is located within the Dunmore East groundwater body.

The Groundwater Vulnerability is 'Moderate' (as per GSI classification) in the vicinity of the majority of the proposed infrastructure locations becoming 'Low' towards the western extent of the site. A portion of the site of limited aerial extent is described as having 'High' vulnerability to groundwater pollution.

Overburden deposits are generally between 5 and 10 m deep in the central portion of the site and <10m deep to the west of the site.

The GSI Geological Heritage database shows three sites of significant geological heritage located on the south-eastern side of the development boundary.

No evidence of soil contamination is evident on the proposed development site.

6.2 Potential Impacts

The potential impacts on soils and geology typically associated with this form of development include excavation of soils for elements of the development (runway extension, hardstands, foundations, drainage trenches, etc.), use of stone and aggregate for construction of the runway, foundations, hardstands etc., use of concrete for foundations, use and storage of fuels presenting a contamination risk and erosion of soils exposed during earthworks.

Potential impacts on hydrogeology from the development are typically of much lower magnitude and occurrence. Potential impacts include use and storage of fuels presenting a contamination risk to groundwater, construction of foundations below the groundwater level, excavations below the groundwater level requiring dewatering which could impact nearby wells, and creation of preferential pathways along cable routes for groundwater / contamination movement.

Impacts during the operational phase of the airport include accidental leaks or spills from maintenance/service vehicles which may impact soils, surface water and groundwater.

6.3 Cumulative Impacts

There are no cumulative impacts envisaged in respect of lands, soils, and geology for the proposed development.

6.4 Mitigation Measures

Mitigation measures to avoid or reduce the potential impact of the proposed development during construction are as follows:

- A Construction Management Plan will be developed and implemented;
- Temporary storage of any spoil will be carefully managed;
- Excavated spoil will be stockpiled at appropriate heights and slope angles;
- Bunds for the storage of chemicals and hydrocarbons will be lined or constructed of materials resistant to damage by the materials stored therein.;
- Where refuelling is to take place on site it will be within a designated impermeable, bunded area, away from all drains. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment;
- Portable chemical toilets will be provided for the duration of the works and all waste material will be removed from site and disposed of to an appropriately licensed facility;
- Drip trays will be used where hydrocarbons are being used for vehicle maintenance/refuelling;
- All plant will be inspected at the beginning and end of each shift and if leaks are evident, they are to be repaired immediately or removed from site and replaced;

The preliminary design stage ensures the minimum volume of soil excavation and lengths of track and trench construction with excavated soils will be reused as far as possible.

Surplus soil or rock excavated during the course of the works will be temporarily stored in a level area and will be used for reinstatement or will be for landscaping and berms.

Some temporary stockpiles of material may be necessary prior to reinstatement; however, no permanent stockpiles of material will remain after construction and no surplus/waste soil or rock will be removed from the proposed development site.

Due to the possibility of soil-borne diseases, all topsoil recovered from a study area will remain within the development boundary where required.

Prior to the commencement of any earthworks, the works corridor will be pegged, and machinery will stay within this corridor so that soils outside the work area is not damaged. Excavations will then be carried out from access tracks, where possible, as they are constructed in order to reduce the compaction of topsoil.

All excavations will be constructed and backfilled as quickly as possible. Excavations will stop during or prior to heavy rainfall events.

All temporary cuts/excavations will be carried out such that they are stable or adequately supported.

Diesel tanks, will be self-contained and double-walled. Refuelling will be carried out at designated refuelling areas. Specific mitigation measures relating to the management of hydrocarbons will also be carried out.

6.5 Residual Impacts

Following the implementation of mitigation measures, the residual impact significance to the receiving environment would be moderate/slight to imperceptible during the construction period and imperceptible during the operation of the proposed development. There will be a change in ground conditions due to the replacement of natural materials with concrete, sub-grade and surfacing materials.

Mitigation measures will be monitored throughout the construction and operational phases with mitigation systems in place before the proposed development works commence.

7. HYDROLOGY AND WATER QUALITY

7.1 Existing Environment

The existing land is grassland and is used to facilitate the runway approach and take-off areas. The development site is fenced off for security and is bound by natural field hedgerows and ditches. Existing fields are well drained by natural field drainage in the undeveloped areas.

The existing runway falls across two natural drainage catchments: Ballygunnermore catchment and Kilmacleague West catchment.

Existing catchment drainage travels to the Kilmacleague West watercourse for the southern part of the site and the Ballygarran to the east. A drainage channel takes the surface water drainage from the northern part of the site to the Ballygunnermore, which drains to the Tramore Back Strand.

The existing runway is currently drained by a French drain style drain which runs parallel to the runway on both sides. The drain is approximately 650mm deep and includes a perforated pipe along with single sized stone.

7.2 Potential Impacts

The construction will require the excavation of additional drainage channels to ensure continuity of the existing surface water drainage regime.

Possible potential indirect impacts on surface water quality during construction, operation and maintenance activities include:

- Increased sediment loading of drains due to increased traffic;
- Haul roads passing close to ditches could allow the migration of silt laden run-off into ditches and ultimately the watercourse;
- Silt carried on the wheels of vehicles leaving the site could be carried onto the public road.
- Poorly constructed drainage could lead to blockages and consequent flooding and concentration of surface water flows.
- Suspended solids could potentially lead to siltation and physical effects on flora and fauna in aquatic habitats.
- Refuelling activities could result in fuel spillages.
- Sanitary waste could lead to contamination of groundwater.
- Excavation of soils could lead to an increase in suspended solids in the surface water run-off and from minor quantities of exposed mineral soils.
- The removal of the vegetated material will also lead to an increase in the rate of run-off along the route of the site access roads and hard-standing areas. This increase in the rate of run-off could lead to a minor increase in flooding downstream.
- Inappropriate site management of excavations could lead to loss of suspended solids to surface waters.
- Inappropriate management of the excavated material could lead to loss of suspended solids to surface waters.

- Cable trenches could act as a conduit for surface water flows.
- Flows from the new drainage system could be impeded, should blockages occur in the existing perimeter drains.
- Ditches and saturated ground present a risk to the safety of site personnel and the public.
- A blockage in the proposed roadside drains could allow a break out of silt laden run-off to reach adjacent watercourses.
- Inappropriate management of spoil heaps could result in accidental break outs of silt on site leading to the loss of suspended solids to surface waters

It is not envisaged that the maintenance activities taking place on the runway, involving general maintenance and including maintenance of the drainage system and reinstated areas, will give rise to any significant impacts on the hydrological regime of the area.

There would be increased trafficking and an increased risk of disturbance to underlying soils at the development, leading to the potential for silt laden run-off entering receiving watercourses from the wheels of vehicles.

Additional run-off as a result of the operational phase of the development is deemed to be imperceptible.

7.3 Cumulative Impacts

The cumulative impact assessment for hydrology and water quality concluded that no adverse 'in-combination' impact would arise on hydrological features as a result of the proposed development and any other permitted or proposed developments.

7.4 Mitigation Measures

The mitigation measures proposed to reduce potential direct and indirect impacts are outlined below:

- The increase in the rate of run-off from the runway will be mitigated by the proposed drainage system which includes the provision of a large area for percolation, with a connection to the watercourse in the event that the percolation is blocked or not achievable. This percolation zone will provide adequate additional storage in the event of a large rainfall event.
- The new car parking area to the front of the terminal, and the extension of the existing car parking area is drained using surface water gullies in the form of 'eco drain' style drainage. This drainage is directed through an interceptor which will remove any hydrocarbons which may enter the system from vehicles and is also directed through an attenuation tank prior to discharge to the open drain/watercourse.
- De-icing the runway and Aircraft will use the 'Clearway' de-icing products, which have achieved the 'Blue Angel' standard and are classed as low hazard to waters in the German Water Hazard Class (WGK). De-icing would occur after an assimilative capacity assessment is conducted on the receiving environment, to demonstrate to the satisfaction of the appropriate authorities that de-icing activity would not exceed the assimilative capacity for all relevant pollutants in the receiving waters.

- The airport will deploy a suitable emergency response protocol to a fuel spill or potentially polluting incident on the runway from an aircraft. This protocol will include the provision of equipment to ensure pollutants do not enter the surface water drainage system.
- The surface water apron drainage proposal includes an interceptor drain and a cold-water storage tank to capture any pollutants which enter the system. It is proposed to have a control system on this line which would shut the system in the event of a pollution incident and direct all of the surface water to the holding tank where it can be tested and/or taken off site if required. This control system will be designed to the satisfaction of the appropriate authorities, to ensure that contaminated waters are detected and retained. This would remove the possibility of any pollutants from the system getting to the watercourse.
- An assimilative capacity assessment of the WWTP discharge will need to be undertaken, which proves to the satisfaction of the appropriate authorities that the assimilative capacity of the receiving waters will not be exceeded by the increased flow from the upgraded wastewater treatment plant
- A buffer zone of 10m is required from drainage ditches to the temporary compounds.
- No construction-stage drainage will be allowed to discharge directly to the watercourses or its tributaries. Construction-stage drainage will be treated in settlement ponds prior to being discharged over vegetated land before draining towards the watercourse;
- Excavated subsoil material will be used for backfilling or removed off site to an appropriate facility.
- Temporary spoil heaps will be surrounded by silt fencing to filter sediment from the surface water run-off from excavated material.
- Drains around hard-standing areas will be shallow to minimise the disturbance to sub-soils.
- Trenches will be excavated during dry periods where possible in short sections and left open for minimal periods, to avoid acting as a conduit for surface water flows. Clay bunds will be constructed within the trenches at regular intervals.
- All ditches and streams adjacent to proposed construction areas will be protected by fencing, including the proposed stilling ponds.
- The conceptual site drainage has been designed to complement existing overland flow and existing drainage. The drainage design will be developed in full at the detailed design stage.
- All personnel working on site will be trained in pollution incident control response. Emergency Silt Control and Spillage Response Procedures contained within the Site Drainage Management Plan of the Construction Environmental Management Plan (CEMP) will ensure that appropriate information will be available on site outlining the spillage response procedure and a contingency plan to contain silt. Adequate security will be provided to prevent spillage as a result of vandalism. A regular review of weather forecasts of heavy rainfall is required, and a contingency plan will be prepared for before and after such events. A record will be kept of daily visual examinations of watercourses which receive flows from the proposed development, during and for an agreed period after the installation phase.
- The developer will ensure that erosion control measures, namely silt-traps, silt fencing and swales are regularly maintained during the construction phase.
- During the construction period, an emergency facility will be provided to control the discharge from stilling ponds. This will mitigate the risk of any accidental spillage on site affecting watercourses.
- A suitably qualified person will be appointed by the developer to ensure the effective operation and maintenance of drainage and other mitigation measures during the construction process. The operations management of the new runway will include regular monitoring of the drainage system and maintenance as required.
- Where haul roads pass close to ditches, silt fencing will be used to protect the ditch at locations where runoff from the tracks flows towards existing ditches. Silt traps will also be provided at outfalls from roadside swales to existing drains. Silt traps will be kept upstream of outfalls to allow a buffer zone to the outfall.

- Self-contained, wheel washing facilities will be provided at the temporary site compounds near each of the site entrances. Additional silt fencing will be kept on site in case of an emergency break out of silt laden run-off.
- Silt traps and silt fencing will be put in place in advance as construction progresses across the site.
- Wet concrete operations shall not take place within 10m of ditches and streams.
- Refuelling of plant during construction will only be carried out at designated refuelling station locations on site. Namely at the temporary construction compounds. Each station will be fully equipped for a spill response and a specially trained and dedicated environmental and emergency spill response team will be appointed before commencement on site. Only emergency breakdown maintenance will be carried out on site. Drip trays and spill kits will be kept available on site, to ensure that any spills from the vehicle are contained and removed off site.
- Portaloos and/ or containerised toilets and welfare units will be used to provide toilet facilities for site personnel. Sanitary waste will be removed from site via a licenced waste disposal contractor. No permanent sanitary facilities will be constructed on site.

The conceptual drainage has been designed by Frank Fox Consulting Engineers to operate effectively during the construction and operation periods.

The maintenance regime will include inspecting the following:

- Ditches and cross-drains for any blockages;
- Outfalls to vegetated areas of the site;
- Existing roadside swales for any obstructions; and
- Swales and stilling ponds.
- Water Sampling and Ground Testing

7.5 Residual Impacts

The residual impacts of the development of the runway extension on sensitive downstream receptors, taking account of mitigation measures and monitoring measures as outlined above is expected to be slight (causing noticeable change to the character of the environment without affecting its sensitivities).

As a result of the mitigation measures and monitoring to be applied, the impact of Waterford Airport runway extension on the receiving hydrological environment is expected to be Not Significant (causing noticeable changes to the environment without significant consequences)

8. TRAFFIC AND TRANSPORTATION

Potential impacts associated with the construction and operation of the development, in relation to traffic and transportation are examined and assessed. Mitigation measures are discussed followed by an assessment of residual impacts and potential cumulative impacts.

8.1 Existing Environment

The nearest motorway is the M9 which is located approximately 18km to the north of the site. The N25 National Road is located approximately 13km to the north west of the main site entrance at Waterford Airport. The N24 is approximately 18km to the north and connects Waterford City with the M8 at Cahir.

The R708 is located at the entrance to the development, this road runs from Waterford City to the R685 at Cloghernagh. The R685 runs along the south of the proposed development and connects to Tramore. The R710, approximately 12km north is the Waterford City outer ring road which travels around the southern suburbs of Waterford City.

Access to the airport is not facilitated by local roads as the regional and national roads provide access from all major towns in the region.

The existing site accesses is well located to provide adequate visibility in both directions for both construction traffic and existing road users and requires no upgrades or improvements. A right turning lane on the R708 is provided for any right turning traffic into the airport approaching from the north.

8.2 Potential Impacts

8.2.1 Transport Route

The proposed transport route identified for the project is shown on Figure 8.1.

All construction traffic approaching the site shall do so from the R708. Construction traffic shall approach the R685 from the north. Traffic coming from the north would join the R708 at the Airport Road roundabout. The traffic would then travel south from here, through Monamintra roundabout and directly to site.

Three temporary site entrances will be located at existing road access points, providing access to the northern section of the runway, the southern section of the runway and to a section of land north of the R708 where navigation lights will be placed.

The delivery routes are considered suitable to accommodate delivery vehicles in terms of alignment, condition and width. The equipment for the site will be delivered to site via HGVs. It is not anticipated that any works will be required on the local road network for the purposes of facilitating delivery.

The construction phase for the proposed development will result in additional traffic on the roads in the vicinity of the development as shown in Figure 8-1.

It is estimated that construction period will last 8 to 9 months. The development will be divided into a number of phases. Construction is to be phased across the main activities underway during a given period and to minimise the level of impact of the construction on the local road network and residents.

It is estimated that construction phase will lead to approximately 4,752 additional HGV trips (two-way) over the duration of the construction period. With respect to site staff, an average workforce of 20 persons is anticipated. This is estimated to give rise to an average increase in LGV traffic of 22 trips per working day.

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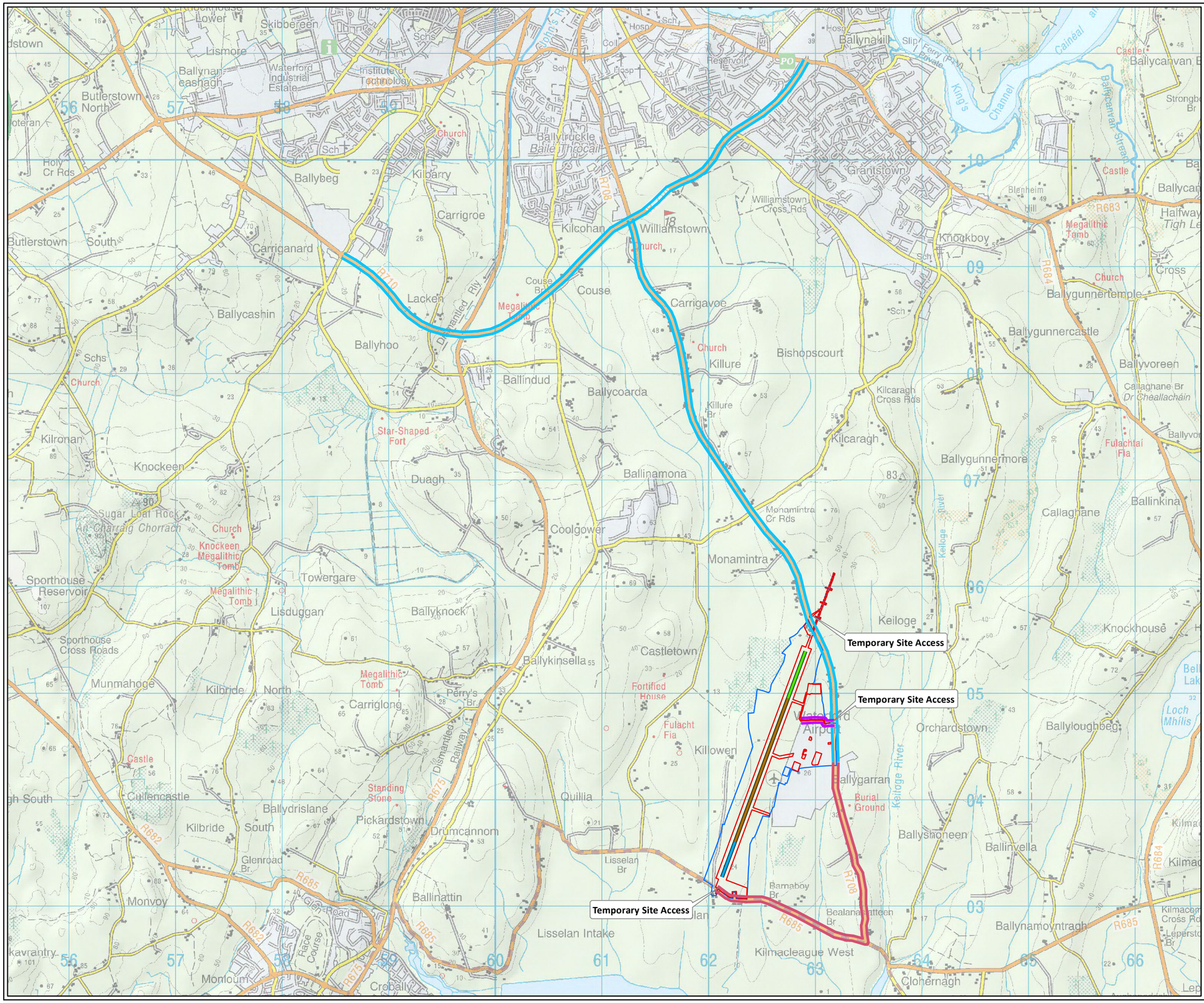

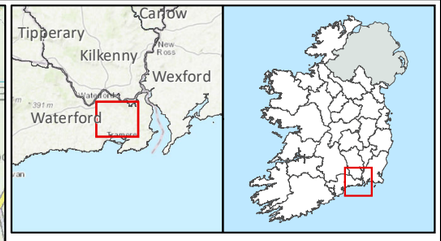

- Proposed Haul Route
- Proposed Haul Route (North Only)
- Proposed Haul Route (South Only)
- Site Boundary
- Land under SERA (South East Regional Airport) and Waterford City and Council Ownership
- Existing Runway
- Permitted South Extension
- Proposed North Extension

TITLE:	Proposed Haul Route		
PROJECT:	Waterford Airport Runway Extension		
FIGURE NO:	8.1		
CLIENT:	Waterford Airport		
SCALE:	1:35000	**REVISION:**	0
DATE:	27/05/2020	**PAGE SIZE:**	A3

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In relation to the operation phase of the proposed development, TII growth factors for the south-east region have been used to anticipate growth on the road, with and without the development during operational phase.

The predicted increase in traffic can be seen in Table 8-1 and Table 8-2 below and are based on traffic counts from 2018.

Table 8-1: Growth without Development

Road	AADT (2018)	AADT (2020)	Opening Year (2021)	Opening Year + 5 Years	Opening Year +15 Years
R708 Regional Road	2,497	2,588	2,572	2,745	2,898

Table 8-2: Growth with Development

Road	AADT (2020)	Opening Year (2021)	Opening Year + 5 Years	Opening Year +15 Years
R708 Regional Road	2,588	2,816	3,659	3,812
% Capacity increase on the R708 due to the operation of proposed development	0%	9%	33%	32%

In accordance with TII Guidelines, the regional road R708 would be classified to have an estimated capacity of 8,600 AADT without the need for any traffic improvement measures. The road has significant spare traffic capacity and a worst-case scenario (3,812 AADT), based on the above figures, would suggest that the R708 would continue to have 56% spare capacity with the airport operating to its projected maximum capacity.

8.2.2 Potential Impacts – Construction

The construction works will lead to additional traffic on the existing public road network. Without appropriate mitigation measures, the proposed works have the potential to lead to a negative impact on the road network including:

- Delay and disruption to road users, especially on the R708 and R685;
- Road safety issues should the works not be carried out in line with good traffic management practices;
- Inappropriate parking of construction related vehicles near the site;
- Soiling of the public road leading to a general lack of cleanliness and poor skid resistance on roads;

The construction of the following aspects of the proposed development have been identified as the sources of potential risks in terms of traffic and transportation:

- New pavement make-up
- Surfacing of extended pavement on runway
- New drainage
- Cabling/ducting for lighting at or adjacent the extended runway
- Temporary Construction Compound
- New Car Park
- New Terminal Buildings
- Upgrade of Waste Water Treatment Plant

8.2.3 Potential Impacts - Operation

Additional traffic is created by the operation of the airport as a result of the extended runway. The amount of traffic equates to an increase in traffic volumes along the R708 of up to 33%. The current capacity of the R708 is much higher than the expected worst-case scenario, which accounts for the airport running to its projected maximum capacity. Impacts on the road network will be slight and long-term.

8.3 Cumulative Impacts

A solar farm, permitted to the north east of the proposed development (planning reference PL93.248487) was considered in the cumulative impact assessment for the proposed development in relation to traffic and transportation. Should the two projects be constructed together, no significant impact on the local road network is envisaged with any impact being temporary in nature.

8.4 Mitigation Measures

Mitigation measures regard standard best practice and defined through the impact assessment process will be implemented.

8.5 Residual Impacts

By adopting the mitigation measures and through the implementation of an adequately designed Traffic Management Plan, it is envisaged that the negative impact that construction related traffic will have on the local road network will be 'temporary' to 'short-term' in duration, and 'slight' in significance.

The residual impact on the R708 during the increased operation of Waterford Airport is expected to be slight

9. LANDSCAPE AND VISUAL

The Landscape and Visual Impact Assessment (LVIA) assesses the likely effects on the landscape and visual environment arising from the proposed development.

A series of photomontages were prepared to illustrate the physical and visual character of the site, its wider setting, and the likely impacts arising from the proposed development (contained in Appendix 9-1 of Volume 3 of the EIAR).

9.1 Existing Environment

The existing environment comprises of agricultural fields, mature hedgerows and treeline cover, individual houses, and a large business park. Airport elements situated within the existing environment include a terminal building, control tower, internal roads, runway, lighting and signage. Aircraft activity is also visible within the existing environment. The subject site is identified as 'Robust' in the Waterford County Development Plan 2011-2017 (as extended). This area is considered to have the potential to support new development as it is less likely to be conspicuous in the context of existing development in the landscape.

9.2 Potential Impacts

Viewshed reference points (VRPS) are locations used to study the visual impacts of the proposals. Four VRPs have been studied as part of the LVIA. The level of visual impact for each of the VRPs as a result of the proposed development is considered Imperceptible. Imperceptible means an impact that is capable of measurement but without noticeable consequences.

9.3 Cumulative Impacts

The proposed development has been considered in combination with the existing airport buildings and runway, and also the Airport Business Park. The potential cumulative impact arising from the proposed development in conjunction with existing airport elements will not result in a significant change to the landscape and visual environment.

9.4 Mitigation Measures

No mitigation measures will be required given that the proposed development will not significantly alter the landscape character of the area.

9.5 Residual Impacts

The proposed development will have a minor physical impact on the receiving environment and will not significantly alter the landscape character of the area.

10. AIR QUALITY AND CLIMATE

AWN Consulting have assessed the potential air quality and climatic impacts that the proposed development at Waterford Airport may have on the receiving environment during the construction and operational phase.

10.1 Existing Environment

Four air quality zones are defined in Ireland for air quality management and assessment purposes (EPA 2019). In terms of air monitoring, the area of Waterford Airport is categorised as Zone D. Zone D represents rural Ireland but also includes all towns with a population of less than 15,000.

10.2 Potential Impacts

The greatest potential impact on air quality during the construction phase of the proposed development is from construction dust emissions and the potential for nuisance dust and PM_{10}/$PM_{2.5}$ emissions, however, impacts as a result of these usually occur within 200m of the source, whereas most residential properties are greater than 200m from construction areas.

There is the potential for a number of greenhouse gas emissions to enter the atmosphere during the construction phase of the development. Construction vehicles, generators etc., may give rise to CO_2 and NO_2 emissions. However, due to the scale of the project it is predicted that the construction phase greenhouse gas emission impacts will be negligible and short-term.

The results of NO_2 (nitrogen dioxide) modelling for the 'Proposed Operational Scenario' for the airport indicate that the ambient ground level concentrations are below the relevant air quality standards for NO_2. The SO_2 (sulphur dioxide) modelling results for the 'Proposed Operational Scenario' of the airport indicate that the ambient ground level concentrations are below the relevant air quality standards for SO_2.

The CO (carbon monoxide) modelling results for the proposed operation of the airport indicate that the ambient ground level concentrations are below the relevant air quality standards for CO.

The results of the NOx (nitrogen oxides) modelling for sensitive ecosystems (Natura 2000 sites) indicate that the ambient ground level concentrations are below the relevant air quality standard for NOx for the protection of ecosystems.

The likely impact of the proposed airport extension on Ireland's obligations under the EU Directive 2016/2284 "On the Reduction of National Emissions of Certain Atmospheric Pollutants and Amending Directive 2003/35/EC and Repealing Directive 2001/81/EC" are imperceptible. The likely overall magnitude of the changes on climate in the operational stage of the proposed development is negligible and long-term.

Levels of road traffic-derived air pollutants from the proposed extension will not exceed the ambient air quality standards either with or without the proposed extension in place. The impacts on climate from road traffic during the operational stage of the proposed development are predicted to be long-term and imperceptible.

10.3 Cumulative Impacts

There are no significant sources of pollutants in the area of Waterford Airport. Should the construction phase of proposed development and any other permitted developments coincide, it is predicted that once appropriate mitigations are put in place during the construction for the proposed development, impacts will not be significant. The cumulative impact of other permitted developments and airport expansion area also predicted to cause insignificant impacts during the operational phase with respect to local air quality for the long and short term due to limited size of the area of impact from the airport.

10.4 Mitigation Measures

In order to minimise dust emissions during construction, a series of mitigation measures have been prepared in the form of a dust minimisation plan. Provided the dust minimisation measures outlined in the Plan and construction management plan are adhered to, the air quality impacts during the construction phase should not be significant.

Mitigation measures in relation to traffic-derived pollutants have focused generally on improvements in both engine technology and fuel quality.

Emissions of pollutants from aircraft traffic can be controlled most effectively by ensuring free flow of aircraft traffic and reductions in idling and taxi times with engines running. This can be implemented through good flight traffic management.

10.5 Residual Impacts

When the dust minimisation measures detailed in the mitigation section of this Chapter and construction management plan are implemented, fugitive emissions of dust from the site will be insignificant and pose no nuisance at nearby receptors.

Results of the road and aircraft dispersion modelling studies indicate that the residual impacts of the proposed extension on air quality and climate are predicted to be negative, not significant and long-term with respect to the operational phase local air quality assessment at the nearest residential receptor.

11. NOISE AND VIBRATION

An assessment was carried out on the potential noise and vibration impacts associated with the proposed development.

11.1 Existing Environment

There are three types of noise sources associated with the operation of the proposed development: air traffic noise, ground noise and traffic noise. For the current case three noise sensitive locations were identified for obtaining a detailed representation of the ambient and background noise levels in the vicinity of the proposed runway extension.

A baseline noise survey was conducted to quantify the background and ambient noise levels in the vicinity of the proposed development. The noise survey was conducted from the 5th to 11th July 2018 and the procedure followed was in accordance with ISO 1996-2:2017 Acoustics – Description, measurement and assessment of environmental noise. The chosen noise monitoring locations are representative of nearest occupied dwellings to the proposed development.

The data was analysed with respect to the EPA 'area of low background noise' criteria. Monitoring location N2 was not considered an 'area of low background noise'. Monitoring locations N1 and N3 generally have background noise levels less than low background noise criteria, with occasions when the background noise is above the low background noise criteria. The ambient noise levels are also significantly higher.

11.2 Potential Impacts

Potential impacts for the construction phase were considered with respect to the various construction activities which will occur on the site. Predicted noise limits at nearby receptors are expected to be below the noise limit of 65 dB for most construction activities. Any exceedance of these levels during the construction phase is likely to be due to the ambient noise (non-construction related) and hence, it is beyond the control of the developer. It is unlikely that vibration will have a significant impact on nearby dwellings due to the distance between the proposed works and existing dwellings.

Potential impacts arising from the proposed development during its operations will take the form of air traffic noise, ground operations noise and road traffic noise. 405 noise sensitive locations were identified and appraised within the 48 dB LAeq,16h noise contour (prepared by Leading Edge Aviation Planning Professionals – LEAPP).

The greatest aircraft noise impact is predicted to occur when aircraft operations are assigned to Runway 03 and, to a lesser extent, when runway operations are split between Runway 03 and Runway 21. The preferred operational runway is Runway 21 as noise impacts on nearby dwellings is at its lowest as the air traffic is assigned to operate towards the south where the number of dwellings is lower.

Runway 21 is the primary runway at the airport and the runway favoured by prevailing winds during the peak air traffic time of the year, whereas Runway 03 is used when the winds are from the north and northeast. Therefore, normal operation of the airport would affect no more than 24 dwellings (noise levels greater than 51 dB(A)) when passenger jet aircraft are using the airport. However, 2 no. dwellings were identified as potentially having noise levels above 63 dB as a result of the proposed development by 2025 using the runway 03 scenario.

With respect to land use, residential uses should not be permitted where prolonged long-term noise exposure exceeds, or is predicted to exceed, 69dBA, and discouraged where noise exposure is predicted to exceed 63 dBA for periods of 16 hours or more. Based on such limits, the impact of aircraft noise from an extended runway with modest use by medium jet aircraft, on the lands surrounding Waterford Airport, and on dwellings under the flight paths of the runway, would be deemed to be moderate.

Ground noise will consist of taxiing aircraft, engine testing, aircraft auxiliary power units, building services, generators and ground vehicles used at the airport. All these activities have occurred at some stage in the past when commercial flights operated at this airport. The noise emissions from these operations will not result in a significant noise impact and have not been included in the noise model.

The noise impact from proposed runway extension is below the daytime noise limit at all locations. The predicted noise level from ground operations resulting from the proposed development is below daytime noise limit. However, this result is without the inclusion of engine testing.

The proposed development will result in an increase in passenger movements at Waterford Airport of up to 345,000 passengers. It is predicted that the majority of passengers using the airport will arrive or depart by road, generating increased road traffic volumes, however, the magnitude of impact is considered negligible in the short term and long term.

11.3 Cumulative Impacts

No cumulative impact is expected in relation to the proposed development and any other permitted or proposed development during construction. For operational phase, no other developments in the surrounding area of the airport were considered to have a potential cumulative effect in combination with the proposed development.

11.4 Mitigation Measures

It is recommended that mitigation measures for construction activities as per BS 5228-1:2009+A1:2014 should be implemented. There is potential exceedance during the installation of navigation lighting and utilities. However, these exceedances are limited to one dwelling and the duration of the impact is expected to be brief. To mitigate the noise at this receptor, where practicable, only one item of plant will operate at a given time.

The following mitigation measures will be implemented during construction in proximity to the sensitive receptor locations:

- While the noise from these activities is likely to be minimal (in most cases) and transient in nature, there is potential for greater impacts at a limit number of dwellings and it is recommended that construction activities shall be carried out during normal working hours, where possible.
- A site representative responsible for matters relating to noise should be appointed.
- Establishing communication channels between the contractor and the local authority and residents.
- Noise monitoring at noise sensitive receivers should be performed during critical periods.

General measures to reduce noise levels will include:

- Avoid unnecessary revving of engines and switch off equipment when not required.
- Keep internal haul routes well maintained and avoid steep gradients.
- Select equipment conforming to international standards on noise and vibration.
- Select equipment with quiet and low vibration emissions, and ensure equipment is regularly maintained ensuring it operates in an efficient manner. If possible, all mechanical plant will be fitted with effective exhaust silencers.
- Compressors will be of the "sound reduced" models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all pneumatic tools shall be fitted with suitable silencers.
- Locate equipment as far away as noise sensitive receivers as possible within constraints of the site.
- Erection of hoardings or temporary noise barriers, where practicable and necessary, to provide acoustic screening.
- Ensure road surfaces on-site and in the vicinity of the site are well-maintained and smooth. If this is the case, truck movements will be unlikely to cause perceptible structural vibration in nearby properties.
- Plant and/or methods of work causing significant levels of vibration at sensitive premises will be replaced by other, less intrusive, plant and/or methods of working where practicable.

The hours of construction activity will be limited to avoid unsociable hours where possible. Construction operations shall generally be restricted to between 07:00 hours and 19:00 hours Monday to Saturday. However, to ensure that optimal use is made of fair weather windows, or at critical periods within the programme, it could occasionally be necessary to work outside these hours. Any such out of hours working would be agreed in advance with the local planning authority.

Mitigation for the operational phase of the proposed development include the following:

- It is recommended that Runway 21 be utilised where possible as its use is the most favourable mode of operation as it lessens the impact of aircraft noise on the local community.
- Control the frequency of night flights at the airport so as to protect residential amenity
- Undertaken noise monitoring and track flights. The results of the noise and flight track monitoring shall be used to re-evaluate noise impacts and the application of mitigation measures. This data will be reviewed annually. This information will also be used to assess and address noise complainants should they arise.

- Where practicable, the airport will implement a variety of noise abatement procedures such as requiring aircraft to operate along pre-determined departure routes (noise preferential routes or NPR's) and to climb in a manner to minimise noise on communities on the ground. Approaching aircraft are required to ensure they do not encroach below the 3 degree glide slope operating at the airport. On touchdown, aircraft are required to avoid the use of reverse thrust during the hours of 23:00 to 07:00 except where operational or safety reasons dictate otherwise.
- If it is found that if the noise impact from the airport needs to be reduced, installation of earth bunds at specific locations could help mitigate the noise impact from ground operations.

11.5 Residual Impacts

In general, the construction noise impacts are expected to be below the noise limits of 65 dB $L_{Aeq,1hr}$. There is potential for construction noise levels to exceed 65 dB $L_{Aeq,1hr}$ but this is expected to be brief and at one dwelling. The construction noise levels are expected to be at a similar level to the ambient noise level but there may also be instances when the construction noise levels is above the ambient noise levels and the construction activity is expected to result in a moderate temporary residual impact.

It is envisaged that proposed development will result in additional residual air traffic impacts over and above the current operations at the airport. However, where these impacts are deemed unacceptable, mitigation measures are proposed to minimise the impacts.

12. BIODIVERSITY

An ecological impact assessment was carried out by Greenleaf Ecology Consultants on the likely effects on biodiversity (flora and fauna) within the receiving environment as a result of the proposed development at Waterford Airport.

12.1 Existing Environment

The lands surrounding the runway are dominated by semi-natural grasslands. Areas of bare/re-colonising ground are also present. Fields at the northern and southern ends of the site are bound by hedgerows and a woodland/scrub mosaic is present in two areas within the site. The Kilmacleague West watercourse runs south from within the proposed development site.

The proposed site does not comprise any protected areas. There are six European Sites within 15km of the proposed site as illustrated in Figure 12.1. The closest are Tramore Dunes and Backstrand SAC and pNHA and Tramore Back Strand SPA, located c. 1.7km to the south of the proposed site. A Natura Impact Statement for the proposed development, is presented separately to this EIAR.

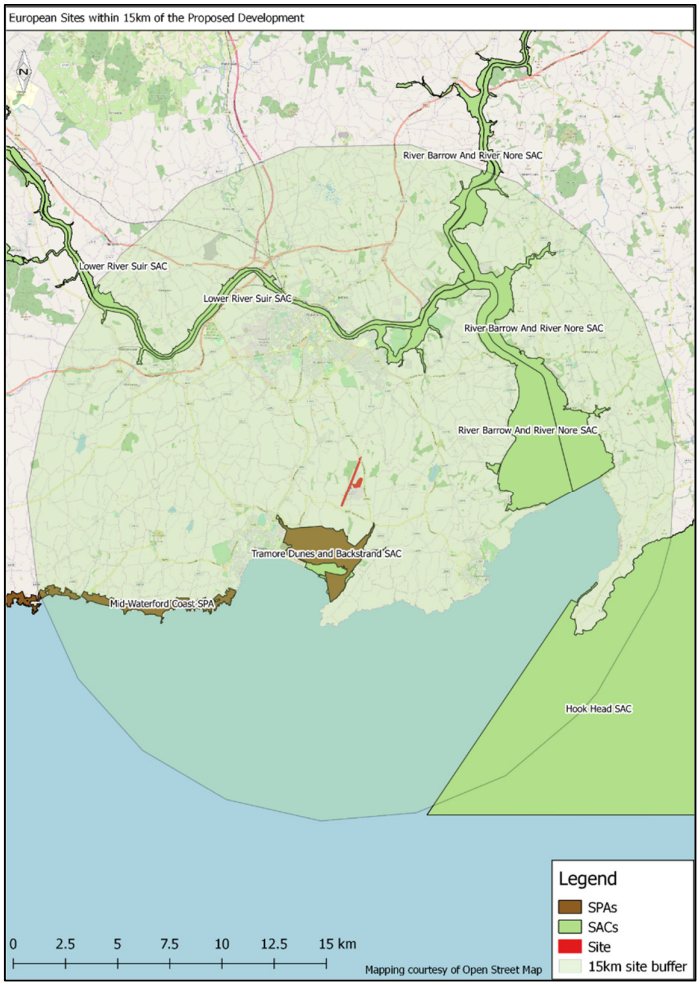

Figure 12-1: European Sites within 15km of the Proposed Development

The improved grassland and relatively species poor dry and wet grassland habitats at the proposed site are considered to be of relatively low ecological value in terms of botanical diversity and value. These habitats are considered to be of Local Importance (lower value) for mammals, invertebrates and avifauna.

Habitats such as streams, hedgerows, treelines, broadleaved woodland and scrub are considered to be of Local Importance (higher value) given their local importance to wildlife and biodiversity and their function as ecological corridors. The area of spoil and bare ground located to the south of the terminal building (outside of the development footprint) is considered to be of Local Importance (higher value) due to the presence of the Red List species Yellow-wort.

The built land within the development footprint is of negligible ecological value, however a structure outside of the development footprint, to the south-west of the site is noted as being of Local Importance (lower value) due to the presence of a swallows nest.

The faunal (mammals, avifauna, foraging bats, invertebrate) composition of the proposed site is considered to be of Local Importance (higher value), due to the presence of suitable badger habitat and the potential foraging and / or dwelling habitats for other species.

12.2 Potential Impacts

12.2.1 Potential Impacts – Construction

The construction of the proposed car park will result in the loss of the south-western corner of an area of broadleaved woodland and scrub that is of local conservation interest. The loss of this area of woodland/ scrub will not result in a significant adverse impact.

The construction of the runway and navigation lights corridor may result in the loss of some hedgerow, considered to be of local conservation interest.

Excavation and ground disturbance during the construction phase could potentially lead to suspended solids runoff to the Kilmacleague West waterbody. There is also potential for a range of pollutants to enter the Kilmacleague West waterbody during construction work and the transportation of materials to and from the construction site. This would be a significant adverse impact at the local geographic level.

There is potential for pipistrelle species (bat) in particular to forage and commute along the hedgerows to the north of the proposed site and the broadleaved woodland and scrub present on site. The removal of these habitats has the potential to reduce foraging and commuting habitat for bats. This would be a significant adverse impact on a local geographic level.

If the removal of broadleaved woodland/scrub is not timed appropriately, nests containing eggs or young chicks could be destroyed. There is also potential for temporary disturbance of bird species across the site during the construction phase. This would be a temporary significant adverse impact at the local geographic level. Removal of these broadleaved woodlands have the potential to impact on bats who could potentially forage and travel along the hedgerows.

Small heath butterfly, was recorded during the site survey, however, the extension of the runway would be on regularly mown grassland and, this area would be unlikely to sustain a population of small heath butterfly.

It is considered unlikely that the widening if the runway would result in a significant adverse impact on the small heath butterfly.

12.2.2 Potential Impacts – Operation

There is potential for the water quality of the Kilmacleague West waterbody to be reduced by contaminated discharge from the runway.

There is potential for contaminated run-off from the car parks to reduce the water quality of the Kilmacleague West, Ballygarran and Ballygunnermore watercourses.

For foul, the capacity of the WWTP has to be determined and if enough capacity for future numbers of passengers, ultimately the treated discharge is to the Keiloge Stream. There is potential for contamination of the Keiloge waterbody should there be insufficient treatment of foul water during the operational phase of the proposed development.

The risk of impacts on the Species of Conservation Interest for Tramore Back Strand SPA is considered separately in the AA that has been prepared for the proposed development.

Aircraft can pose a risk on avifauna as a result of bird strike. There is potential for ongoing mortality to birds of Moderate Conservation Concern (e.g. swallows and house martin) during the operational phase of the airport. No species of High Conservation Concern such as Light-bellied Brent Geese, have been listed in the bird strike data and it is unlikely that there would be a significant effect on these species due to differences in flight levels – the accompanying NIS assesses the potential for impacts to the special conservation interests of the Tramore Back Strand SPA. As noted, the rate of recorded bird strikes (2010- 2014) was not significant, however there is potential for mortality levels to increase with an increase in air traffic.

There is potential for the mortality rate of gulls to increase with an increase in air traffic. However, as detailed above, the results of the bird surveys undertaken at the proposed site indicates that there is a low level of gull flight activity within the site and its environs. Further, the recorded rate of bird strike between 2010 and 2014 included 2 gulls over the four year period. Even with an increase in air traffic, this rate of bird strike is not expected to result in a significant adverse impact to Annex I or red listed gull populations.

There is potential that light pollution would result in a significant negative impact to bats. In the absence of mitigation this would be significant at a local level.

12.3 Cumulative Impacts

A cumulative effects assessment was conducted for developments or plans that may have in-combination effects on ecological features with the proposed works at Waterford Airport. No permitted or proposed development, or existing plan was considered to have an in-combination effect arising from the proposed development.

12.4 Mitigation Measures

- The proposed works will be carried out in accordance with best practice construction measures and the specific mitigation measures detailed within the EIAR.
- The removal of hedgerows, shall be avoided where practicable. Where this is unavoidable, it is recommended that a hedgerow planting scheme is undertaken.
- Surface water emissions and sedimentation shall be controlled. During construction, site run off will be prevented from entering the drainage network and nearby watercourses through the use of suitable sediment control measures.
- The risks of spillage of hydrocarbons will be mitigated by strict site management whereby the contractor will not refuel vehicles on site.
- No invasive species have been identified on site, however it is recommended that a further invasive species survey prior to the commencement of construction.
- Where feasible, no scrub clearance, tree felling or other removal of vegetation will occur during the bird breeding season from 1st March to 31st August.
- It is recommended that the terminal building and dwellings to the north of the runway are surveyed prior to commencement of development to determine the presence or absence of bats.
- A pre-construction survey shall be undertaken prior to the commencement of construction to identify active badger setts occurring within the site.
- During the operational phase, drainage mitigation measures to ensure contaminants do not enter watercourses will be implemented. Sufficient capacity of the wastewater treatment plant will also be ensured prior to commencement. It is recommended that bird strike occurrences are monitored and bird scaring devices utilised as necessary. It is recommended to leave scrub areas at the site periphery for potential for bats to forage with bat activity surveys recommended during active seasons.

12.5 Residual Impacts

Potential effects on European sites are assessed separately in the Natura Impact Assessment (NIS). There will be no residual impacts on nationally designated sites from the proposed works.

The proposed works will not result in a significant negative impact on habitats or fauna subject to implementation of best practice construction methods and mitigation measures as outlined.

13. ARCHAEOLOGY, ARCHITECTURAL AND CULTURAL HERITAGE

The archaeological, architectural and cultural heritage assessment of the proposed development at Waterford Airport examines the potential significance and sensitivity of the existing environment and evaluates the potential impacts of the proposed development on the receiving environment.

13.1 Existing Environment

The proposed development site is located approximately 7.2km southeast of Waterford City, and approximately 4.5km north west of Tramore town. The proposed project extends over two landholdings of six fields.

The study area for the archaeological, architectural and cultural heritage assessment comprises the footprint of the proposed development and lands within a surrounding 1km wide area.

The desktop survey on archaeological resource within the study area revealed that there are 21 recorded archaeological sites within the vicinity of the application area, of which four records have been made redundant. No Record of Protected Structure or National Inventory of Architectural Heritage (NIAH) listing was found within the study area, nor was any features of potential architectural heritage significance identified during the site inspection.

13.2 Potential Impacts

Based on the desktop and field survey of the study area, it is concluded that there will be no predicted direct or indirect impacts on known or protected cultural heritage sites within the study area as a result of the proposed project during construction or operational stages. While there are no recorded archaeological sites on the direct footprint of the proposed development or any above ground indications of archaeological remains, the potential exists for the presence of unrecorded, sub-surface archaeological sites within the proposed development area.

13.3 Cumulative Impacts

Given that the proposed development will have no direct or indirect impact on known or recorded cultural heritage sites, there will be no cumulative impact on cultural heritage constraints arising from the proposed development.

13.4 Mitigation Measures

The potential exists for the presence of previously unrecorded sub-surface archaeological features and artefacts within undisturbed areas of the proposed development site. A programme of pre-development archaeological test trenching will be undertaken in accessible green-field areas. If archaeological deposits or features are encountered, it will be possible to mitigate through preservation in situ or by preservation-by-record (i.e. a programme of licenced archaeological excavation). The appropriate strategy will be formulated in consultation with the National Monuments Service and the planning authority.

No further potential impacts will occur on the cultural heritage resource once constructed related mitigation measures are introduced. As such, no mitigation during the operational phase is required.

A method statement outlining the nature and extent of archaeological test trenching will be submitted to NMS for approval as part of the statutory excavation licensing process. A report on the results of the site investigations will then be submitted to NMS and the planning authority for review in advance of the construction phase.

13.5 Residual Impacts

Adoption of the construction phase mitigation measures shall ensure there will be no residual effects on the cultural heritage resource during the operational phase of the proposed development.

14. ALTERNATIVES

Alternatives were considered for the proposed development. The purpose of the Alternatives Chapter is to provide details describing the site selection, layout, design and constraints for the proposed development.

14.1 Plan-Led Development

In relation to the alternatives for the proposed development, the Waterford County Development Plan 2011-2017 (as extended) and the Southern Regional Spatial and Economic Strategy provide the higher level, strategic framework and policy context for the proposed development. The 2017 Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) states that:

> *"Clearly in some instances some of the alternatives described … will not be applicable – e.g. there may be no relevant 'alternative location' for the upgrading of an existing road. Higher level alternatives may already have been addressed during the strategic environmental assessment of relevant strategies or plans. Assessment at that level is likely to have taken account of environmental considerations associated, for example, with the cumulative impact of an area zoned for industry on a sensitive landscape. Note also that plan-level/higher-level assessments may have set out project-level objectives or other mitigation that the project and its EIAR should be cognisant of."*

The development has been plan-led based on established Regional and Local Planning Policies, both of which have been subject to the SEA process. Moreover, this site comprises a range of existing infrastructure and services that would otherwise be underutilised in the absence of the proposed development.

14.1.1 Site Layout Alternatives

The proposed runway extension is located within a zoning designation for 'Airport Area' and 'Airport Reserve Area' with proposed navigation lights located on unzoned lands.

Two site layouts options were considered in the preparation of this application. Option 1 is the preferred car and terminal site layout option and planning permission is sought for this car park. This is chosen in order to allow reserve of lands closer to the terminal and allow an order expansion of the car parking area.

Further, the protected planted, Yellow Wort, was identified to be growing on lands in Option 2. Although it would be possible to initiate relocating of this plant to other lands within the airport area, it was considered avoidance of the potential impact should be applied.

Site Plan Option 2 locates the car parking south of the terminal building and provides an additional 242 spaces. Pedestrian connection to the car parking can be provide through the existing foot paths and a new zebra cross will need to be put in place.

Site Plan Option 2 was not chosen, as it could limit the development potential of lands adjacent to the terminal and would cause disturbance of the protected plant species, Yellow Wort.

14.1.2 Project and Process Design

The runway length has been determined by requirements to facilitate medium sized jet aircraft landing and take-off. Design options to achieve this are:

A. Split the runway extension, as proposed into a north and south extension (491m to the north and 363m to the south)
B. Extend entirely to the south, i.e. an additional 504m in addition to the previously permitted extension of 350m (Planning ref. 14/89)
C. Extend entirely to the north to provide the additional 854m required
D. Relocate the airport

Option A has been considered the preferred alternative as it would ensure further encroachment toward the Tramore Backwater SAC was avoided if the runway was extended to south and avoid re-alignment of the R685 road which would be required for Option B.

Avoid re-alignment of the R708 and use of lands on the northern side of the R708 for hardstanding runway, if the runway was extended by 854m to the north which was considered in Option C

Relocation of the airport would result in requirement to provide new road infrastructure to serve a relocated airport, together with construction of airport facilities and associated development. This would give rise to significantly wider environmental impacts in comparison to the listed alternatives.

14.1.2.1 Drainage Design

The drainage design seeks to adapt and enhance the existing drainage system. The provision of enhanced drainage routing on site together with use of gravel layers for ground water percolation is considered to provide a reasonable alternative to provision of a design that fully captures the run-off from the extended runway. This is due to the relatively low levels of additional run-off

14.1.2.2 Terminal Design

The proposed terminal extension seeks to provide additional passenger management and security facilities. The outline design presented has sought to achieve this with minimal disturbance to the existing terminal building in a cost effective manner.

The alternative to providing the extension would be a re-design of the entire building, to include demolition of parts of that building. Demolition and reconstruction of the terminal building is not considered to be a reasonable alternative.

A 'do nothing' scenario is not considered a reasonable approach as it would result in under provision of required airport infrastructure necessary to allow safe and efficient passenger movements through the airport.

15. INTERACTIONS OF THE FOREGOING

The potential for interactions between one aspect of the environment and another which can result in an impact, either positive or negative, as well as having varying levels of significance, has been considered as part of the EIAR.

The key interactions and inter-relationships between the environmental aspects of the proposed development are contained in Table 15.1 below. Table 15.2 provides further detail and examines the diverse range of interactions and inter-relationships between the project's key environmental aspects.

Based on the long-term positive impacts of the proposed development, and the low level of negative impacts (as mitigated), it is considered that the proposed development will not have a significant impact on the receiving environment.

15.1 Primary Interactions

Table 15-1: Summary of Interactions & Inter-relationships between the Key Environmental Aspects of the proposed development

	Population & Human Health	Land, Soils & Geology	Hydrology and Water Quality	Traffic & Transport	Landscape & Visual	Air Quality & Climate	Noise & Vibration	Biodiversity	Cultural Heritage
Population & Human Health		■	■	■		■	■		
Land, Soils & Geology	■		■	■		■		■	
Hydrology and Water Quality	■	■		■				■	
Traffic & Transport	■	■	■			■	■		
Landscape & Visual									
Air Quality & Climate	■	■		■			■	■	
Noise & Vibration	■			■		■			
Biodiversity		■	■			■			
Cultural Heritage									

■ = interaction or inter-relationship

□ = no interaction or inter-relationship

Table 15-2: Table of Interactions

INTERACTION	DESCRIPTION
Population and Human Health, Traffic and Transportation	The development of the Waterford Airport expansion will have an effect on population growth in the area due to new airlinks and potential economic investment that will provide new jobs. This will have a direct effect on traffic and road capacity. This has been considered in the EIAR. It has been established that the local road network has capacity to provide for the expected passenger numbers. Population growth is considered to be a long-term effect which will not negatively impact the local road capacity in the short-term.
Population and Human Health, Traffic and Transportation, Land, Soils and Geology	Soiling of public roads may occur due to spoil migrating to public roads due to construction traffic leaving the site. This may have implications on human safety as the soiling of public roads can have an effect on skid resistance for motor vehicles. This has been considered in the EIAR and mitigation measures will be in place to prevent soiling of public roads. This includes quality traffic management practices.
Population and Human Health, Air Quality, Noise and Vibration	During the construction phase, construction plant and works may cause noise and vibration nuisance and migration of dust effecting air quality. This could have a negative effect on residential amenity and human health in the locality. These effects are considered to be temporary in nature and due to lack of proximity to the proposed works, nearby receptors are not expected to be adversely affected.
Population and Human Health - Hydrology and Water Quality	Potential for fuel spills at the airport, on or adjacent to the runway, could potentially disperse into the surface water drainage system. Mitigation in the form of fuel spill protocols are identified as the means of avoidance.
Land, Soils and Geology, Hydrology and Water Quality	The use of construction machinery can cause soil to become compacted due to the heavy weight of machinery. This can cause extra surface water run-off due to lack of soil infiltration effecting the drainage of the land. This potential moderate/slight impact will be avoided with the use of a works corridor which machinery must stay within to avoid damage to soils outside this area. Temporary drainage infrastructure will be provided along these routes.
Land, Soils and Geology, Hydrology and Water Quality, Air Quality	Exposed soil during the construction phase may be eroded by wind and rain which can affect both air quality in the immediate area due to migration of dust and water quality due to migration of silt to local streams. This has been considered in the EIAR and mitigation has been set out. Silt fencing will be utilised where works will be taking place adjacent to streams. Spoil heaps will be removed to appropriate hard standing areas and covered where necessary.
Hydrology and Water Quality, Traffic and Transportation	Construction traffic may have a negative effect on water quality. Haul routes passing close by to ditches could allow migration of silt effecting water quality. Increased sediment loading of drains may occur due to increased traffic. This possible interaction has been considered in the EIAR and mitigation measures set out to avoid the sedimentation of streams.
Land, Soils and Geology, Hydrology and Water Quality, Biodiversity	The potential for suspended solids within streams caused by spoil and migration of dust due to the construction process may have a negative effect on aquatic habitats downstream from the construction site. Similarly, hydrocarbons have potential to effect water quality and biodiversity due to on-site spillage during construction. This has been considered in the EIAR and mitigation measures have been set out.

INTERACTION	DESCRIPTION
Land, Soils and Geology, Hydrology and Water Quality, Biodiversity	The potential for transfer of de-icing agents to the drainage system by surface water run-off from the runway pavement may have a negative effect to water quality to adjacent streams. This has been considered in the EIAR and mitigation measures have been set-out.
Land, Soils and Geology, Hydrology and Water Quality, Population and Human Health	Potential saturation of ground and ditches due to excessive run-off caused by the construction process has potential to cause risk to the safety of site personnel and the public. This has been considered in the EIAR. Mitigation includes proper site management and safety protocols to avoid risk to human safety.
Air Quality, Biodiversity	There is potential for emissions caused by additional air traffic to affect local ecosystems. The study set out in chapter 10 of the EIAR states that the forecasted emissions do not exceed the relevant air quality standards and therefore is not expected to negatively affect local ecosystems.
Air Quality, Traffic and Transportation, Population and Human Health	Increased passenger numbers to Waterford Airport is expected to bring with it increased traffic to the area. This may have a negative effect on emissions in the area which could have a negative impact on human health. This has been considered in the EIAR. The projected numbers expected to use the airport is not considered not to cause a significant negative impact on air quality in the area.
Noise and Vibration, Traffic and Transport, Population and Human Health	The additional traffic expected during the construction phase may have a negative effect on residential amenity and human health due to noise and vibration. This would most likely be caused by excavation work and lorry movements. This impact is temporary in nature and predicted noise levels are below 65db for nearby receptors, therefore, impacts on residential amenity due to noise and vibration from construction traffic will be negligible.
Noise and Vibration, Population and Human Health (land-use)	Development of the airport expansion will have an effect on land-use in that the development of certain land-uses will not be viable in close proximity to the airport due to noise caused by aircraft movements. For example, residential development must be within a 57db contour. Beyond this level noise may cause nuisance to living conditions, therefore, dwellings should not be sited where aircraft noise would negatively impact residential amenity. This has been considered in chapter 11 noise and vibration and chapter 5 in terms of human health and residential amenity.

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