

Appendix 12

Airport Masterplan



Waterford
City & County Council
Comhairle Cathrach
& Contae Phort Láirge

Waterford Regional Airport & Business Park Masterplan



1.0 Introduction

Waterford Airport and Business Park is located approximately 8km to the south of Waterford City Centre and approximately 5km north east of Tramore and is accessed from the R708 regional road which connects the facility to Waterford City. Since opening its doors in 1981, the Airport has, through a combination of both State and private capital investment, continually attempted to improved both the level of services available and the transport experience for its passengers.



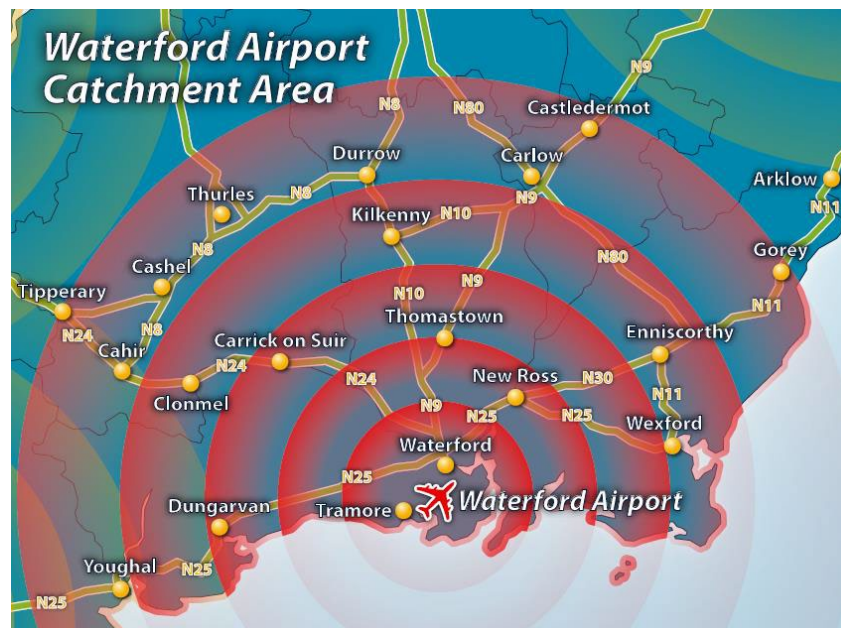
The Airport has the potential to provide a variety of passenger and general aviation services for the South East Region, and in particular cater for private business aircraft, leisure and training flights. The Airport's infrastructure also supports a range of other activities which include a Pilot Training College, an International Academy of Travel, an Irish Coastguard Sikorsky helicopter hanger, an aircraft maintenance centre and a number of small aviation related businesses. Waterford Airport intends to build on its success and provide further valuable air links to and from the South East Region, providing convenient flights for business, leisure and tourism traffic. This Master Plan provides a blueprint for the future development of the Airport and its environs, which aims to ensure that the Airport is ideally placed to play a key role in the continued development of both Waterford and the South East Region.

The Airport Business Park is located on zoned lands to the immediate south of Waterford Airport. The 138 acre park has seen rapid development over the last decade and it now provides developers with the option of either serviced sites or purpose built office units. Wireless broadband services and Voice over IP (VoIP) technologies are available at the business park.

1.1 Strategic Context

Waterford Airport is a key component of the transport infrastructure in the South East Region and is a key strategic enabler to the future development of Waterford City and County. The continuing existence and development of the facility at Waterford Airport is key to the future availability of convenient and increasingly frequent air services and capacity increase connectivity, and assists in attracting tourists to the Region. This service and proximity to the Airport Business Park assists in attracting inward investment and harnessing competitive advantage.

The potential for Waterford Airport to develop as a transportation hub for the entire Southeast region has been greatly enhanced in recent years in the light of much needed upgrades to the region's roads infrastructure. Within a 60 minute travel distance, Waterford Airport has one of the largest regional catchment areas, and is within easy commuting from other major urban centres in the Region (i.e. Carlow, Clonmel, Dungarvan, Kilkenny, Waterford and Wexford).



The Airport's mission statement is:

“To serve local and regional air transport needs in the South East, providing connectivity for citizens, business users and the inbound tourist market in a safe environment, to act as a local hub for air transport activity and to act as an energiser for business activity in the region.”¹

A new runway expansion programme identified by the Airport Board has the potential to meet the regional air travel demand by delivering the appropriate infrastructure to accommodate larger aircraft types that can deliver competitive offerings and opportunities to the people and businesses of the southeast.

The Council recognises the strategic importance of Waterford Airport to the future development of Waterford and the wider City Region, its central role in increasing the critical mass of Waterford City, and the improvement to the overall connectivity of the South East Region.

1.2 Policy Context

National Aviation Policy² states that “Ireland recognises the important role that regional airports play in their areas and in regional development” and sets out a number of actions which are intended to support regional airports, including Waterford Regional Airport.

The National Planning Framework (NPF) recognises regional airports as “key infrastructure for national and regional development”. Waterford Regional Airport is recognised in the NPF as a key strategic regional and national asset where it states that “*Waterford and the wider south-east region is served by a regional airport and the Port of Waterford at Belview and Rosslare-Europort, which are geographically close to EU trading partners and will be important in Ireland’s response to Brexit*”.

The Southern Regional Assembly’s Regional Spatial and Economic Strategy (RSES) states at section 6 that the return of scheduled passenger services to Waterford Airport and associated investment in Infrastructure is one of the key elements in making the Waterford Metropolitan Area a successful enterprising Economic Engine Driving Metropolitan and Regional Enterprise Growth.

The RSES goes on to state at section 6.3 that:

- *Waterford Airport is a key piece of strategic infrastructure for the Waterford MASP and Gateway for the wider South-East Area*
- *Investment in a runway extension would enhance the international connectivity of Waterford for Business (including the large multi-national companies involved in export trade), support the development of TUSE Research and Development with international partners and provide for increased tourist traffic.*

- *The runway extension of 500m sought by the Airport Authority would provide for the accommodation of up to 1,700 flights per annum including larger Boeing 737 and Airbus A320 aircraft.*

In addition, Waterford MASP Policy Objective 13 states that:

It is an objective to support the further development of Waterford Airport and, in particular, the development of:

- *an extension of the existing runway to accommodate larger aircraft;*
- *improved transport linkages and services between the airport, Waterford City and the entire South-East Region, i.e. roads and public transport;*
- *measures to encourage additional operators offering services from this location;*
- *the expansion and development of aviation related industries at the airport.*

In this regard, Development Plans should incorporate policies to protect longer-term flight path public safety zones and to control uses which could adversely impact on the airport's operations or the potential for new runway development and extensions sufficient to handle larger aircraft.

Local Authorities should ensure that consideration of airport-related infrastructure and facilities is informed by an adequate level of environmental assessment including assessment of potential impacts on designated European Sites.

Furthermore, Waterford MASP Policy Objective 15 states that:

It is an objective to support investment in infrastructure, including increased capacity of road, rail, ports and Waterford Airport to maximise the potential of tourism subject to the outcome of environmental assessments and the planning process.

The Waterford Planning, Land Use and Transportation Strategy (PLUTS) views the Airport as a regional asset which has the capacity to provide direct air links between the South East and major airline hubs in the UK and Europe. The strategy sees the diversification of the role of the Airport as a key facilitator to its future success.

1.3 Airport and Business Park Development

Waterford Airport opened in December 1981 with a 1,200 metre runway that could accommodate single and twin-engine light aircraft. The Airport has a runway that is 1,433 metres long and 30 metres wide, and is classed as a Code 2 facility in terms of the International Civil Aviation

Organisation (ICAO) Annex 14 standards. There are 2 aprons at the Airport, one serving the Sea Air Rescue Facility and one adjacent to the Terminal building. There are 200 car parking spaces directly adjacent to the Terminal building.

The genesis of the Business Park was due to its location adjacent to the Airport. It was proposed to channel development into the Park which would benefit from the close proximity of the airport. To acknowledge existing development, the area was zoned for commercial use in the 2005 County Development Plan.

The Business Park area has since been increased with a number of permissions granted in the last Plan period. The total area of the Business Park is 138.6 hectares. To date, a variety of uses have been permitted within the park. Given the strategic context of the Airport and associated Business Park, there is a need to ensure the strategic and appropriate focus of the type of development which is permitted into this area.

Stafford's Wholesale Ltd. T/A Stafford's Bonded, Lockheed Avenue, Airport Business Park is a Designated Lower Tier Seveso III Establishment and Trans-stock Warehousing and Cold Storage Ltd., Christendom, Ferrybank, Co Waterford is a Designated Upper Tier Seveso III Establishment under the Directive. With regard to such sites, consultation distances are established within which there is an obligation to consult with the Health and Safety Authority and Waterford City and County Fire service, in respect of any development proposals.

1.4 Infrastructure

1.4.1 Wastewater

There is no public sewerage scheme in the area, and wastewater is treated on site. Stormwater is attenuated and disposed of by the developers.

1.4.2 Water

The Airport and Business Park is served by the East Waterford Water Supply. It is considered that there is sufficient capacity to serve the development of the area. For emergency requirements, a supply of water is drained from the public supply over a 2 week period and is stored on site. This gradual extraction from the public water supply is necessary to ensure sufficient capacity or pressure to supply the Airport or Business Park in the event of an emergency.

1.4.3 Energy Supply

The ESB operates a 20kv power line along the route of the R875 & R685 and along part of the R708 adjacent to the site. There is also a 38kv network line running from Tramore to Butlerstown. The proximity of 3 no. 100kv stations at Butlerstown, Killoteran and Waterford suggests a reasonably reliable electricity supply to the industrial lands.

1.4.4 Road Network

The Airport and Business Park is served by the R708, which connects the R685 Tramore/Dunmore Road to the south to the Waterford Ring Road to the north. They are located 9km from Waterford City and Bellview Port and 5km from Tramore. Rosslare Port and Cork Port are located 85km and 137km away, respectively.

There are currently no public transport links to the Airport or Business Park.

1.5 Constraints on Development

Maps 1-5 provide details on the control zones surrounding the Airport. It is the policy of the Council to protect the Airport and surrounding lands from inhibiting or non-compatible development. To this end, the development of lands in the vicinity of the Airport for light industrial/commercial development must be mindful of its location adjacent to the Airport so as not to obstruct the safe and effective operation of the Airport function. The restrictions set out in the attached Maps will apply to any applications for development within the Airport Control Zones.

To further enhance the safety of residents in the area, the Council supports the establishment of Public Safety Zones at Waterford Airport.

1.6 Development Strategy

1.6.1 Waterford Regional Airport

The Council supports the development objectives of Waterford Regional Airport plc for the future development of the airport which are to:

- Increase the competitiveness of the South East Region and promote the balanced

- development of the Region in accordance with the National Spatial Strategy;
- Promote the accessibility and attractiveness of the Region for both business and inbound tourism;
 - Improve transport infrastructure for South East Region; and
 - Provide and promote cargo facilities to support industry and inward investment in the Region.

To achieve the policy objectives set out above, Waterford City and County Council, in partnership with Waterford Regional Airport PLC, have proposed the development of an extension to, and widening of, the existing runway at Waterford Regional Airport along with associated works including widening of the taxiway, extension to the car parking area, re-alignment of security fencing, new navigation lighting, underground holding tank, demolition of two existing houses to the north of the runway and alterations to site drainage.

The proposed development would comprise the following principal elements:

- a) Extension of the existing 1,433 metre long runway by 491 metres at its northern end and 363 at its southern end, resulting in a total runway length of 2,287metres;
- b) Widening of the existing and extended runway from 30 metres in width to 45 metres in width;
- c) Widening of the existing taxiway connecting the runway to the Airport Apron from 15 metres in width to 23 metres in width;
- d) New landing lights to the north of the R708 at Keiloge;
- e) Associated alterations to runway lighting, drainage and runway shoulders;
- f) Demolition of two detached houses fronting onto the R708 at Ballygarran, at the northern end of the extended runway;
- g) Construction of a new 205 space car park to the east of the existing car park, in front of the terminal building; and
- h) All associated, drainage, landscaping and site works.

An application for the above has been submitted to An Bord Pleanála, and a decision is awaited in respect of the proposal. All future development works will be designed to ensure full compliance with both the Irish Aviation Authority and international aviation safety standards. .

As the Airport develops and there is a subsequent increase in demand for surface transport facilities, the Council in conjunction with Waterford Regional Airport plc will liaise with bus operators to develop a public transport link between Waterford City and the Airport and Business Park.

Policies relating specifically to the Airport are included within the main Development Plan, such as in Chapter 4 (Economy, Education and Retail).

1.6.2 Business Park

The Airport Business Park offers an opportunity to facilitate not only airport-dependent

enterprises, but also the types of those which can offer long-term prospects for generating revenues in new technologies and knowledge based areas, such as Information and Communications Technology, Medical Devices, Biotechnology, Pharmaceuticals, the Green Economy and Renewable Energy. There is also a need to continue to focus on channeling airport-related industries, and those with specific locational requirements to be close to the Airport, into the Business Park.

Activities which would cause atmospheric obscuration, attract bird concentrations, or cause other nuisance or hazards so as to obstruct the safe and effective operation of the Airport function shall be excluded from locating within the Business Park. The Council will encourage the development of businesses which engage in activities that are complementary to the role of the Airport.

1.6.3 Zoning

To allow for the future expansion of both the Airport and Business Park, these have been zoned for Airport (GZT N1.3), and Light Industry, Enterprise & Employment (GZT C2.1) – refer to Development Management Standards Zoning Matrix.

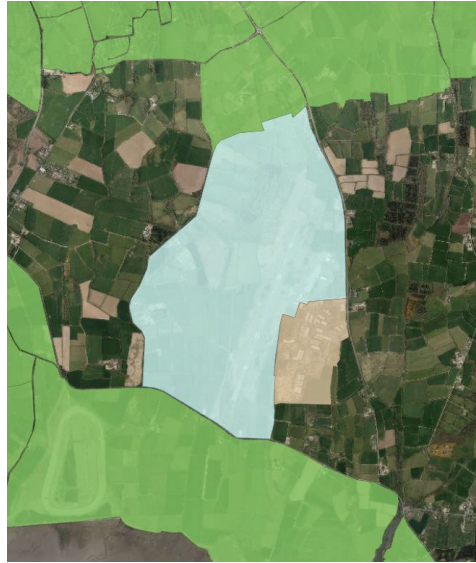
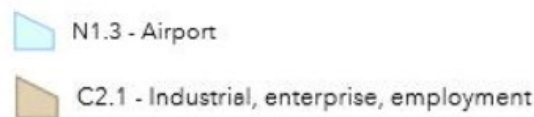


Figure 1 – Zoning



1.7 Development Management

1.7.1 Design, Layout and Materials

All future development works at the Airport and Business Park shall be in compliance with Appendix 1 - *Airport Control Zone – Explanatory Notes for Development Control in the Vicinity of Waterford Airport* and the Development Standards set out in Volume 2 (Development Management Standards) of the City and County Development Plan. In the application of this guidance material, the more stringent requirement will always apply.

1.7.2 Noise

Noise is a concern for persons living under flight paths or in close proximity to the Airport. Air noise refers to noise from aircraft in flight or on the runway during take-off or after landing. Ground noise is other types of noise generated at the Airport such as the ground running of aircraft engines. To minimise both air and ground noise associated with the Airport, future planning applications should address Airport noise mitigation measures.

1.7.3 Natural Heritage

The Tramore Dunes and Back Strand are located approximately 1.2km to the south of the Airport and Business Park. This area is designated as a Special Area of Conservation (SAC), a Special Protection Area (SPA) and is also a proposed Natural Heritage Area (pNHA). In assessing both Airport and Business Park development proposals the Planning Authority will have due regard to any potential adverse impacts such proposals may have on this area.

An Appropriate Assessment will be carried out at project level to ensure that there is no negative impact on the integrity (defined by the structure and function and conservation objectives) of the Natura 2000 site at Tramore Dunes and Backstrand and that the requirements of Articles 6 (3) and (4) of the EU Habitats Directive 92/43/EEC are fully satisfied.

1.7.4 Landscaping

Landscaping is a particularly important issue for Waterford Airport and Business Park due to the exposed and elevated nature of the area. Future development proposals at the Airport and Business Park shall be required to prepare landscape management plans that reduce the visual impact of development on the landscape. For reasons of aviation safety, deterring birds from the airfield is an important landscaping consideration.

1.7.5 Referrals of Planning Applications

Applications in the vicinity of the Airport will be referred to the Irish Aviation Authority for comment to ensure that proposed development does not have adverse technical or other implications for the safety and/or normal operation of the Airport.

APPENDIX 1: AIRPORT CONTROL ZONES

The purpose of this document is to provide the Council and the public, information to ensure that the lands surrounding the airport can be protected through the application of development and land use controls, so that the operation and future development of Waterford Airport can be safeguarded. This document defines the required land use protection for lands adjacent to and surrounding the airport in terms of protection against erection of obstacles that are hazardous to aviation, the presence of features and activities that have a negative effect upon propagation of radio frequency emissions from air navigation aids which are necessary for safe and accurate navigation in the airspace of Waterford Airport, and guide proper land uses for lands potentially subject to aircraft noise.

1.0 LAND PROTECTION FROM AIRCRAFT NOISE IMPACT

1.1 Aircraft Noise & Land Use Impacts

To protect the public from the adverse effects of aircraft noise, it is important to control development of certain land uses within those lands that potentially would be subject to various levels of aircraft noise. This will protect the community by ensuring that no new land uses are permitted that could cause disturbance to residents and users of those lands.

Contours of expected levels of aircraft noise have been developed and provide an illustration of the extent and location of areas that are potentially affected by specific aircraft noise levels. The noise contours are developed on the basis of forecasted aircraft movements at the airport for a peak period of operation using an internationally recognised Integrated Noise Model (INM).

The premise for land use zoning within the aircraft noise lands is that certain human activities can be permitted to exist, and to be developed further, where the predicted future level of aircraft noise would not cause serious noise disturbance, or result in adverse effects on the health of those living or working in areas subject to aircraft noise emissions.

Areas in which serious noise disturbance or mental health effects might be predicted to arise as a result of aircraft noise, would be classed as restricted, or even prohibited, from further development for human activities.

The following table, Table 1-1, lists the typical land uses permitted within areas affected by specific noise levels and should be read in conjunction with **Map 1**.

Table 1 -1: Typical Land Uses Permitted within Specific Noise Contour Levels

Aircraft Noise Contour	Permitted Uses and Development
< 57 dBA	Residential Outdoor Recreational Facilities Commercial Public Facilities Municipal Utilities Industrial Transportation Agriculture
57-63 dBA	Limited Outdoor Recreation Facilities Commercial Limited Public Facilities Municipal Utilities Industrial Transportation Agriculture
63-69 dBA	Limited Outdoor Recreation Facilities Commercial Municipal Utilities Industrial Transportation Agriculture
> 69 dBA	Limited Outdoor Recreation Facilities Limited Commercial Municipal Utilities Industrial Transportation Agriculture

Guidance on aircraft noise and land uses within lands around an airport that prevail in the UK specifies that development should not occur in a noise contour band where predicted noise levels could be greater than 72 dBA. Noise modelling carried out for Waterford Airport, based on forecasted air traffic levels, suggests that this level of aircraft noise emission would be unlikely to affect any of the lands outside the airport, and would be confined to the immediate area of/ surrounding the runway.

2.0 OBSTACLE LIMITATION SURFACES PROTECTION

2.1 Definition of Protected Obstacle Limitation Surfaces

Ireland has adopted the Standards and Recommended Practices of the International Civil Aviation Organization (ICAO) to control the existence and erection of obstacles to aviation that might endanger aircraft in flight. Under regulations established for this purpose, all public airports are to be safeguarded against erection of obstacles in accordance with Obstacle Limitation Surfaces (OLS) that restrict or prohibit obstacles around an airport, and especially within the safety-critical areas off the ends of the runway that serve to protect the runway approach and take-off operations.

The OLS are imaginary planes that define the maximum allowable height of obstacles within the approach and take-off areas of the runway (Approach and Take-Off Surfaces), along the sides of a runway strip (Transitional Surfaces), and for a distance around the airport (Inner Horizontal and Conical Surfaces). No obstacles are permitted to penetrate these surfaces unless a valid safety case can be made ensuring that aircraft will not be in danger should an obstacle protrude through the OLS.

The OLS specifications reflect the code of the runway, whether the runway has instrument guidance for approach and landing, and whether that guidance is provided in the vertical plane or not. In the case of Waterford Airport, the ultimate runway is classed as an ICAO Code 4 Runway with a precision instrument approach. The OLS referred to in this section as necessary for the protection of Waterford Airport are also illustrated in **Map 2**.

2.2 Instrument Approach and Missed Approach Protection

In addition to the established OLS surfaces and the obstacle protection required for them, the instrument approach procedures in place at an airport also have a need for protection against the effects of obstacles on flight operations. The airport must apply the ICAO Annex 14 OLS for the purposes of airport licensing and certification, and apply the ILS protection surfaces on top of these in order to protect the integrity of the ILS instrument approach for the runway(s) at Waterford Airport.

2.3 Obstacle Limitation Surface Protection

In the following section the required obstacle protection areas at and around Waterford Airport, and the limitations to be applied on the maximum height of obstacles existing or erected within these areas, are defined.

It should be noted that while the OLS establish the maximum elevation to which an obstacle may be erected within the various OLS areas, this does not mean that it is always safe to erect obstacles to the maximum permitted elevation, or to erect any obstacles. A proliferation of obstacles, even when fully compliant with the OLS, would be undesirable in the vicinity of an airport. Where an application is made to erect an obstacle within one of the protected OLS areas, reference will be made to the Irish Aviation Authority so that an aeronautical assessment may be made of the effect that such an obstacle may have on the safety of flight operations at the airport.

Map 2 illustrates the location and extent of the required obstacle limitation surfaces, within which assessment and control of obstacles is required under the applicable aviation regulations.

2.3.1 Sections 1 & 2 (Inner Horizontal Surface)

Within this zone the following are not permitted:

1. Buildings or structures exceeding the maximum height of the Inner Horizontal surface;
2. Facilities that may attract wildlife, especially birds, due to the proximity of low altitude aircraft operations

NOTE: No building or structure exceeding 25m in height should be erected within this area without consultation with the airport.

2.3.2 Sections 3 & 4 (Conical Surface)

Within this zone the following are not permitted:

1. Building or structures that exceed the allowable maximum elevation at a specified point in the conical surface as defined in Section 2.0.

2. Facilities that may attract wildlife, especially birds, due to the proximity of low altitude aircraft operations.

NOTE: No building or structure exceeding 40m in height should be erected within this area without consultation with the airport.

2.3.3 Sections 5 & 6 (Approach & Take-Off Surfaces – Sloping Sections)

Within this zone the following are not permitted:

- 1 Building or structures that exceed the maximum allowable elevation at a specified point within the approach or take-off surfaces as defined in Section 2.0;
- 2 Facilities that may attract wildlife, especially birds, due to the proximity of low altitude aircraft operations;
- 3 Buildings and structures constructed in compliance with the obstacle limitations of these surfaces may still pose a hazard to aircraft operations and all planning applications for buildings within the airport approach and take-off areas should be assessed in consultation with the airport.
- 4 Facilities that would increase the severity of an aircraft incident or accident, even though these facilities do not in themselves pose a safety hazard to aircraft operations. For example, sporting complexes that would accommodate large numbers of visitors should not be located within an approach or take-off area, even if the height of the structure is not in violation of the OLS.

NOTE: Noise contours and their associated uses should also be consulted when assessing land use for lands lying within Sections 5 and 6.

2.3.4 Sections 7 & 8 (Approach & Take-Off Surfaces – Horizontal Section)

Within this zone the following are not permitted:

- 1 Building or structures that exceed the elevation of the horizontal section of the approach surface.
- 2 Buildings or structure exceeding 15m in height should not be erected within this area without consultation with the airport.
- 3 Buildings and structures that may affect visibility or operations but which are constructed adjacent to but outside these areas may still pose a hazard to aircraft operations. Any

application for planning permission for lands on the edges of, but immediately adjacent to, the approach and take-off areas should be referred to the airport for consideration as to their potential impact on flight safety.

- 4 Facilities that may attract wildlife, especially birds, due to the proximity of low altitude aircraft operations should not be permitted.

2.3.5 Sections 9 & 10 (Transitional surfaces)

Within this zone the following are not permitted:

- 1 Buildings or structures that exceed the permitted elevation of the transitional surfaces should not be permitted in these areas;
- 2 Buildings or structures that exceed 25m in height should not be erected beneath a runway transitional surface;
- 3 Facilities that may attract wildlife, especially birds, due to the proximity of low altitude aircraft operations should not be permitted within an area restricted by a runway transitional surface

2.3.6 Sections 11 & 12 (ILS Transitional Surfaces)

Within this zone the following are not permitted:

1. Buildings or structures that exceed the permitted elevation of the ILS transitional surfaces.

2.3.7 Sections 13 & 14 (ILS Missed Approach Surface)

Within this zone the following are not permitted:

- 1 Buildings or structures in a location that results in their top elevation exceeding the permitted obstacle limitation surface for the ILS Missed Approach operation.

3.0 PUBLIC SAFETY ZONES

Public Safety Zones (PSZs) are areas beyond the ends of airport runways in which some form of land use control is deemed to be necessary in order to protect the public against the accident risk arising from overflying aircraft failing to remain airborne and impacting inside the high risk areas off the ends of a runway. The zones themselves are defined by contours of

individual risk and are created by computer modelling to map individual third party risk exposure for the nature and level of aircraft operations forecast for any particular runway, as well as the frequency of crash accidents and their consequences. Land uses within the Public Safety Zones are required by law to be controlled by planning authorities.

The shape of the PSZ is reflective of an “inverted triangle” due to the method in which risk is calculated and mapped. The base of the triangle is located along the runway threshold and represents a larger area of land due to the greater risk of an accident closer to the end of a runway. The tip, or apex, of the triangle is located farthest from the runway and represents the least amount of land protection due to the lower level of accident risk arising in this area.

Map 3 displays the PSZ contours applied for Waterford Airport.

The Public Safety Zones developed for Waterford Airport do not have any major development located within the two risk contour bands. The land beyond the ends of the runway is mostly used for agricultural purposes with sporadic dwellings and farm structures. As the implementation of the Public Safety Zones are not retro-active, existing dwellings are permitted to remain within the PSZ.

4.0 PROTECTION FOR NAVIGATIONAL AIDS

Waterford Airport currently has an instrument approach system that comprises an Instrument Landing System (ILS) localizer and glidepath installation. The electromagnetic energy broadcast from the localiser and glidepath installations is susceptible to interference from electrical discharge and presence of large metallic objects in close proximity to the antennae. As these instruments are used for navigational guidance in critical phases of flight, the environment surrounding the antennae structures must be protected from electromagnetic interference.

The following guidelines are provided for protection of navigational aids.

4.1 Instrument Landing System

4.1.1 ILS Localiser

The ILS localiser requires a safeguarded area that comprises 2 parts, with the following characteristics and restrictions:

Part A: Within a circle 75m radius centred on the localizer array

- No objects higher than 1.2m;

Part B: Within a rectangle 365m x 610m centred on the localizer array

- No metallic objects higher than 1.2m
- No objects higher than 2.5m

4.1.2 Glidepath Antenna

The ideal safeguarding for the glidepath antenna is a triangular shaped area commencing at the antenna array, extending out to a distance of 1500m towards the landing aircraft, and diverging at 150 from the origin. The area should be free of all metallic objects, power lines, telephone lines, and roads. However, this may not always be achievable and, as a result, a minimum clear distance of 600m is stipulated in front of the glidepath antenna.

4.1.3 VHF Omni-directional Range

The VOR will require an object-free area of 300m radius centred on the VOR. This area cannot include any natural or man-made objects. However, any existing object that cannot be relocated outside this radius will require study to ensure that the object does not cause electromagnetic interference or obscures the VOR transmission in critical directions used for air navigation.

Map 4 illustrates the protected flight zones for Navigational Aids for Waterford Airport.

5.0 Establishment of Laser Protected Flight Zones

Laser protected flight zones are established around an airport in accordance with ICAO Annex 14 to mitigate the effect of laser operations on low flying aircraft.

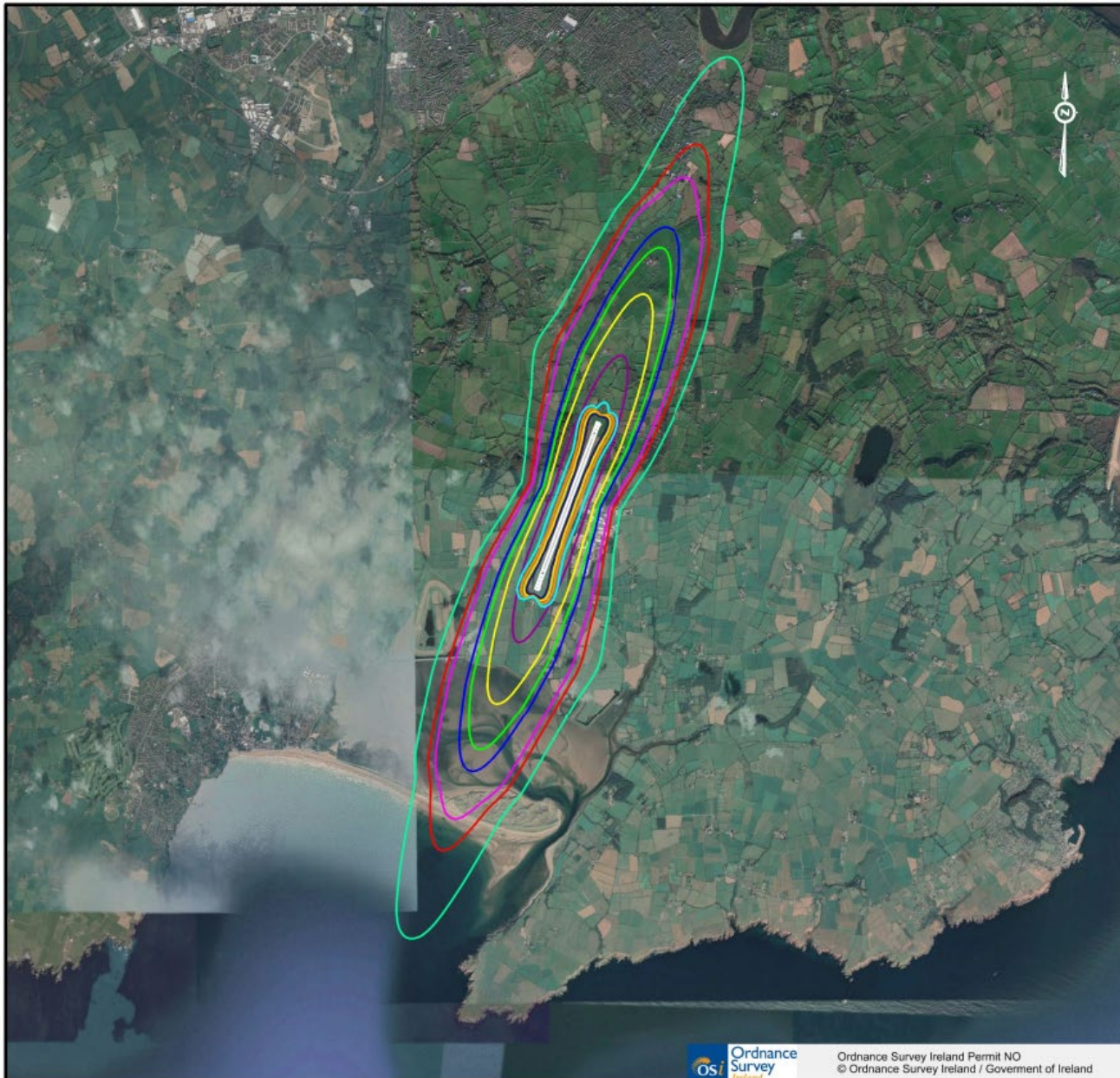
There are three zones located around the airport:

- Laser-Beam Free Flight Zone (LFFZ): Laser irradiance level to not exceed 50nW/cm²
- Laser-Beam Critical Flight Zone (LCFZ): Laser irradiance level to not exceed 5μW/cm²
- Laser-Beam Sensitive Flight Zone (LSFZ): Laser irradiance level to not exceed 100μW/cm²






Map 5 illustrates the Laser Beam Protection Areas for Waterford Airport.

The dimensions vary depending on the type of zone. Both the LFFZ and the LCFZ have defined dimensions stated in the aviation safety regulations, however the LSFZ is determined based on the area surrounding the airport.

Laser operations may be conducted within these areas so long as the irradiance of the laser does not exceed the stated value for the flight zone. Notification to the airport and the IAA of laser operations may also be required. The airport may be required to issue a NOTAM should it be deemed that laser operations may affect critical areas of flight, regardless of the laser irradiance level.



Legend

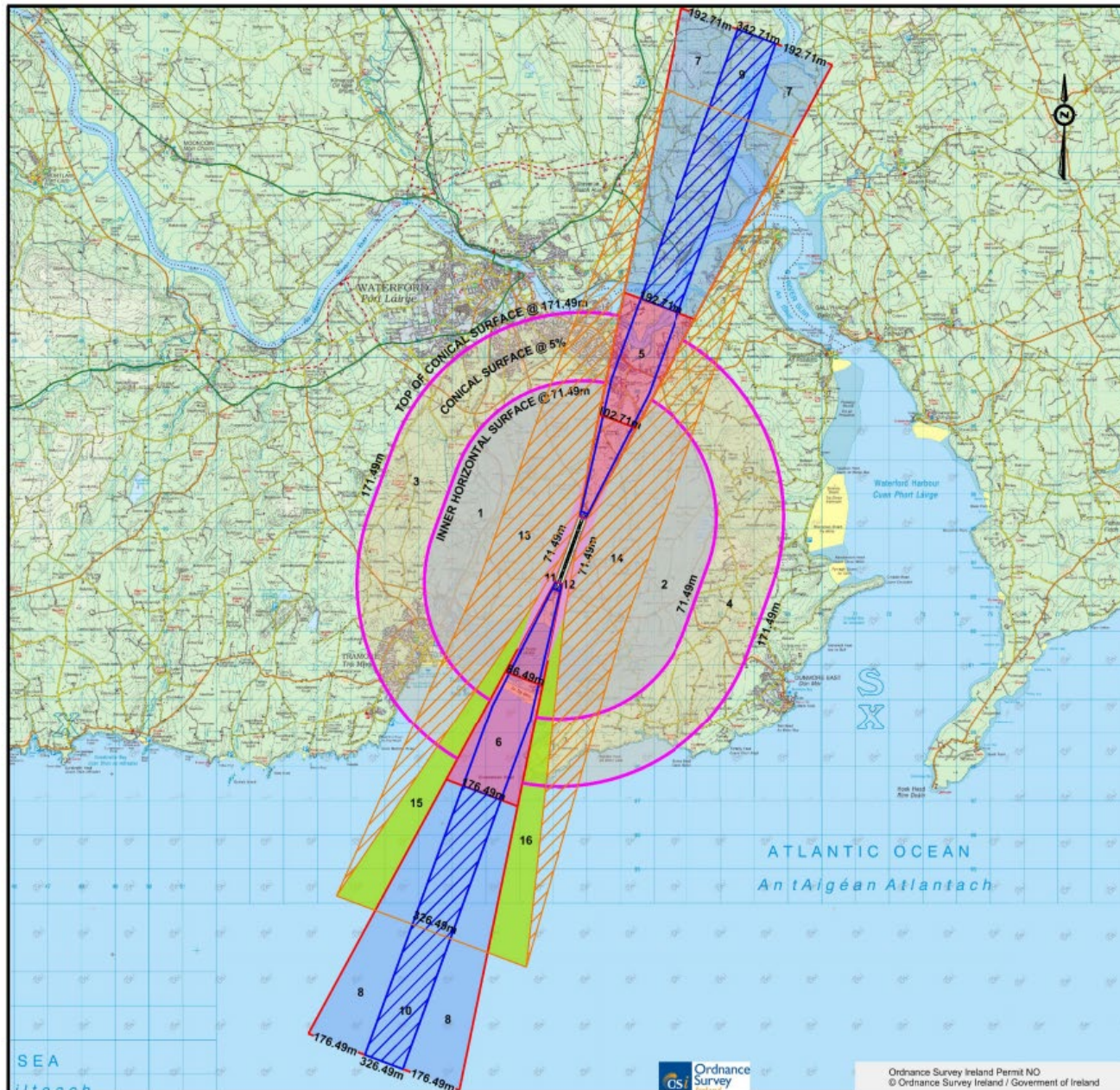
-  48 dB LAeq
-  50 dB LAeq
-  51 dB LAeq
-  54 dB LAeq
-  55 dB LAeq
-  57 dB LAeq
-  60 dB LAeq
-  63 dB LAeq
-  66 dB LAeq
-  69 dB LAeq
-  72 dB LAeq

Map 1

Waterford Airport
Composite Aircraft Noise Impact Contours
for Purposes of Land Use Zoning

Scale





Waterford Airport

- Notes:
1. Obstacle Safeguarding Surfaces based on Code 4 aircraft operations with Precision Approach for Runway 21 and Non-Precision Approach for Runway 03 (Reference: EASA Regulation EU No.139/2014, Chapter J Obstacle Limitation Surfaces CS ADR DSNJ.475, 480 & 485)
 2. ILS Obstacle Protection surfaces based on ILS Surfaces defined in ICAO Doc 8168 OPS/611 Procedures for Air Navigation Services Volume 2.
 3. All elevations are expressed in metres above mean sea level.

Legend

- 1 & 2 Inner Horizontal Surfaces
Maximum Elevation 71.49m
- 3 & 4 Conical Surfaces
Maximum Elevation 171.49m @ 5%
- Approach Surfaces
5 - Maximum Elevation 192.71m
6 - Maximum Elevation 176.49m
- Horizontal Approach Surfaces
7 - Maximum Elevation 192.71m
8 - Maximum Elevation 176.49m
- Take-Off Surfaces
9 - Maximum Elevation 342.71m
10 - Maximum Elevation 326.49m
- 11 & 12 Transitional Surfaces
Maximum Elevation 71.49m
- 13 & 14 ILS Transitional Surfaces
Maximum Elevation 326.49m
- 15 & 16 ILS Missed Approach Surfaces
Maximum Elevation 326.49m



Map 2
Waterford Airport
Safeguarding





Waterford Airport

Legend

-  Boundary of area subject to Individual Risk of 1 in 10,000 per year or greater
-  Boundary of Public Safety Zone subject to Individual Risk of 1 in 100,000 per year or greater


Map 3

Waterford Airport
Public Safety Zones

Scale










 Comhairle Cathrach & Contae Phort Láirg
Waterford City & County Council

Waterford Airport

Legend

-  Airport Property Boundary
-  Glidepath Protection Area
-  VOR Critical Area
-  Localiser Critical Area
-  Localiser Sensitive Area

Map 4
Waterford Airport
Protection for Navigational Aids

Scale
0 250m 500m 1000m



Waterford Airport

Map 5

Waterford Airport
Laser Beam Protection Areas



