



Environmental Report



Strategic Environmental Assessment of the Draft Ireland West Airport Knock Local Area Plan 2012-2018

**Mayo County Council
Comhairle Contae Mhaigh Eo**

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Non Technical Summary

Section 1 **SEA Introduction & Context**

Mayo County Council has prepared a draft Local Area Plan for Ireland West Airport Knock (IWAK), namely the Draft Ireland West Airport Knock (IWAK) Local Area Plan 2012-2018. The draft Local Area Plan sets out a framework for IWAK to:

- enable the development of Ireland West Airport Knock as a strategically important international gateway to the Region through the continued growth of the Airport as a major transportation hub
- enable the full development potential of Ireland West Airport Knock as a strategic economic/enterprise hub for the Region, to be fully realised in a sustainable, co-ordinated and plan led manner whilst ensuring the efficient and effective operation of the Airport.
- support the designation of the IWAK LAP area as a Strategic Development Zone

Strategic Environmental Assessment (SEA) is a formal process that is being carried out in parallel with the preparation of the IWAK LAP. SEA is the systematic, ongoing process of evaluation of the likely significant environmental effects of implementing a plan or programme (such as the IWAK LAP) in order to ensure that these effects are appropriately addressed before a decision is made to adopt it. It also gives the public and other interested parties an opportunity to comment and to be kept informed on decisions that may impact on the environment and on how they were made. This report records the process and findings of the SEA and its preparation is part of the SEA process.

The SEA is being carried out in order to comply with EU SEA Directive 2001/42/EC. This Directive was transposed into Irish law through the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations (S.I. No 435 of 2004) and the Planning and Development (SEA) Regulations (S.I. No. 436 of 2004).

In order to ensure that the proposed IWAK LAP does not have any adverse effects on any designated conservation site, the Natura 2000 network, a separate assessment called a Habitats Directive Assessment (HDA) was also carried out.

Section 2 **Methodology**

The Methodology used in the SEA of the draft LAP complies with the requirements of EU Directive 2001/42/EC. As part of the SEA process it is necessary to engage in consultation with the public and various agencies to ascertain the environmental issues of relevance to the LAP.

Mayo County Council carried out a scoping exercise in conjunction with the prescribed Environmental Authorities¹ to establish the scope and level of detail to be included in the ER and to identify environmental issues which would require further consideration during the SEA process. In this regard, a scoping consultation document was submitted to the Environmental Authorities in August 2010. The document gave an outline of the geographic area involved; the nature of the LAP and its intended lifespan; the likely scale, nature and location of development within the LAP area and predicted significant environmental impacts. The Environmental Authorities were invited to make written submissions on the scope and level of detail of the information to be included in the ER.

In addition to consultation with the prescribed authorities, prior to preparing the LAP, the Council held a “Pre-Draft Public Consultation Open Day” in Charlestown on the 29/9/2010 for the IWAK LAP. The public were invited to attend to discuss the process involved in the

¹ Environmental Protection Agency; Department of Environment, Heritage and Local Government; Department of Communications, the Marine and Natural Resources.

preparation of the Local Area Plan and make their views known. Written submissions from the public were also invited as part of the pre-draft consultation process.

An inter-departmental multi-disciplinary SEA Team was established within the Council incorporating a broad range of expertise to ensure relevant environmental issues were identified and addressed. This group consisted of representatives from Water Services; Environment; Planning; Roads; Regional Design Office and GIS and other sections with expertise relating to the built and natural heritage. Meetings were held at key stages of the process and the SEA team participated in establishing baseline data; identifying significant environmental issues and environmental protection objectives, targets and indicators; consideration of alternatives and the assessment of the policies and objectives in the draft LAP; identification of mitigation measures and monitoring. The forward planning Section co-ordinated the SEA process and compiled the Environmental Report.

The main output of the SEA process is the preparation of an Environmental Report (ER) which sets out the findings and results of the SEA process on the likely significant effects on implementing the draft LAP. It also set out mitigation measures to prevent or reduce significant adverse effects likely to arise from implementation of the LAP together with the various alternatives considered and measures relating to monitoring following the adoption of the LAP.

The ER is an important tool that provides the decision makers, the elected members of Mayo County Council as well as the public and relevant agencies with a clear understanding of the likely environmental consequences of decisions taken in the implementation of the draft Ireland West Airport Knock Local Area Plan. Therefore the ER should be read in conjunction with the draft LAP.

Section 3 Context of the Draft IWAK Local Area Plan

In 2008 Mayo County Council, pursuant to the Planning and Development Act 2000 – 2010, applied to the Minister (DoEHLG), to designate the lands in the vicinity of Ireland West Airport Knock as a Strategic Development Zone (SDZ). In response, the DoEHLG suggested adopting a best practice approach similar to other SDZ designations by first preparing a Local Area Plan. It is intended that the Local Area Plan will identify any development issues that may require to be addressed before proceeding with the SDZ designation proposal.

The primary aims of the draft IWAK Local Area Plan are:

- to enable the development of Ireland West Airport Knock as a strategically important international gateway to the Region through the continued growth of the Airport as a major transportation hub
- to enable the full development potential of Ireland West Airport Knock as a strategic economic/enterprise hub for the Region, to be fully realised in a sustainable, co-ordinated and plan led manner whilst ensuring the efficient and effective operation of the Airport.
- to support the designation of the IWAK LAP area as a Strategic Development Zone

The draft LAP is set within (and has been guided by) a hierarchy of policies, strategies and plans relating to environmental protection and spatial planning at the EU, national, regional and local levels. The draft LAP is at the lower level of a hierarchy of land use and spatial plans which include the National Spatial Strategy 2000-2020; Regional Planning Guidelines for the West Region 2010-2022 and the Mayo County Development Plan 2008-2014.

In addition, there is an overarching legislative framework which provides the statutory basis for the preparation of plans and strategies and for the protection of the environment at the international, EU and national levels. The policies and objectives of the draft LAP comply with the above hierarchy of plans.

Section 4 The Baseline Environment

In order to assess the environmental effects of the draft Local Area Plan, it is necessary to understand the current state of the environment (the baseline environment) of the LAP area. The baseline information outlines the environmental context within which the LAP will operate and the opportunities, constraints and targets that this context puts on the LAP. Current environmental issues likely to be significantly affected by the implementation of the LAP are identified at this stage of the process in order to more accurately assess potential future impacts.

The base line data is required to:

- allow environmental problems to be identified
- provide a baseline against which future monitoring can be carried out
- provide a basis for impact prediction.

The environmental baseline is set out in terms of the following environmental components; biodiversity, flora and fauna; population and human health; soils and geology; water; air quality and climatic factors; material assets; cultural heritage and landscape.

Bio-diversity, Flora and Fauna

There are no designated sites within the proposed IWAK LAP area. However, the River Moy candidate Special Area of Conservation (cSAC) is located approximately 2km to the north and south of the study area. Two proposed Natural Heritage Areas (pNHA) are located within 4km of the plan area, namely Killaturly Turlough pNHA and Lough Gower pNHA.

The River Moy SAC is located approximately 4.5km to the northwest, northeast and southwest of the LAP area. It comprises almost the entire freshwater element of the Moy and its tributaries, including both Loughs Conn and Cullin. The site is designated as a cSAC for a variety of reasons, from priority habitats in Annex I of the EU Habitats Directive to numerous species on Annex II of the Habitats Directive. There are a number of streams and watercourses located within the LAP area that are tributaries of rivers in the area, some of which eventually lead to the River Moy. There is potential that the LAP may impact on the conservation objectives of the protected area. Such potential impacts are highlighted in the Habitat's Directive Article 6 Appropriate Assessment of the LAP.

Killaturley Turlough, located 4.9km to the northwest of the LAP area, is a permanent lake and surrounded by bog, the site is of value as a composite wetland and therefore warrants NHA status. Lough Gower NHA is located 4.1km to the southeast of the LAP area. This small lake lies in the catchment of the Boyle River. The lake is of importance as a lake of low nutrient status, which shows no sign of eutrophication.

Detailed habitat mapping has not been carried out for the IWAK LAP SEA study area. A CORINE land cover map is available of the main habitats in the area. Corine Land Cover (CLC) is a map of the European environmental landscape based on interpretation of satellite images. The main habitats within the plan area have however been identified and described as part of the Ireland West Airport Knock Cumulative EIS, prepared by the Airport Authority, and classified according... They include cutover bog; wet grassland; wet heath; dry humid acid grassland; and improved agricultural grassland. Also present are eroding upland rivers; dry siliceous heath; exposed siliceous rock and buildings.

There are no mature trees within the study area which would provide suitable roosting sites for local bat populations. However, neighbouring old buildings, bridges and mature woodlands on the banks of the Sonnagh River may provide suitable roosting sites. The stream valleys would also provide an adequate food supply of insects. Bats have been recorded within the River Moy catchment, and there may be a possibility of bat activity in the area. A number of hares were observed in the heathlands to the south of the study area on the day the survey was carried out.

Badger setts were not located within the study site. Badger setts may be found in the hedgerows and farmland of the surrounding landscape and the habitats within the SEA study area site may provide badgers with suitable foraging habitat. There was no evidence of otter within the study area. The presence of adequate supplies of fish is the critical factor determining the presence of this species. Otter have been recorded in the River Moy catchment, therefore the tributaries that drain the site may support this species.

Few birds were recorded on the day of the field visit, particularly within the confines of the airport. This is a result of the airport's bird control measures, which comprises a gun shot being sounded intermittently. Birds seen and heard in the hinterland of the airport include common farmland birds. The wooded ravines of the Sonnagh River and agricultural land surrounding the site may support good number of common and farmland bird species. Old farm buildings can also provide valuable roosting sites for bird species.

The baseline study identified a number of environmental problems relating to bio-diversity, flora and fauna. The heath and bogland habitats within the study area are sensitive to changing conditions or influences. The area of cutover bog directly north of the existing Airport Terminal and car park has been extensively drained and is vulnerable to scrub encroachment. It is also severed from similar habitats by a series of access roads, which have also contributed to the drying out the bog. Other areas of bog habitats have been subject to extensive turbary activities and some grazing pressure. Also one of the environmental problems is the effect of the operation of the airport on birds in the area and the potential for bird strikes.

Population and Human Health

To establish baseline data to determine any effect the LAP may have on population, it is necessary to identify a catchment area for the airport. It is considered that a 25km radius about the airport would be a realistic local catchment area for the airport. A wider area would include the regionally important towns of the adjoining counties. The most recent census was carried out in 2011, for which preliminary results are only available therefore the 2006 Census data was used in this report.

To analyse the demographic profile of the local catchment area for the airport, all of the urban areas with a 25 km radius were examined, these towns include; Charlestown, Swinford, Knock, Kiltimagh, Ballyhaunis, Tubercurry, Ballaghderreen, Castlerea and Claremorris. These towns only represent part of the receiving population as there is a significant rural area within the catchment, but it is considered that using the data for the towns only would give an overall trend to the demographic profile of the catchment area.

The population changes for the local catchment area and the wider catchment area are illustrated as follows:

Population at State, County, and Catchment Areas between 2002 – 2006, 2011

Area	Total Population		% Change	Population	% Change
	2002	2006		2011	
State	3,917,203	4,239,848	+8%	4,581,269	+8.1%
Mayo	117,446	123,839	+5%	130,552	+5.4%
Local Catchment Area	20,862	22,966	+9%	not available	
Wider Catchment Area	28,730	30,695	+6%	not available	

Source: Census of Population 2002 and 2006, 2011 Preliminary Results

Human health has the potential to be impacted upon by environmental factors including water, soil and air. These factors are examined in greater detail under the relevant environmental topics of this environmental report. In relation to airport activities Public Safety Zones (PSZs) are used to protect the public on the ground from the small, but real possibility that an aircraft might

crash Public Safety Zones (PSZs) are used to protect the public on the ground from the small, but real possibility that an aircraft might crash. Public Safety Zones are used to prevent inappropriate uses of land where the risk to the public is greatest. These zones run parallel to the runway with triangular sections tapering away from the end of the runways. The inner zones are located closest to the runways. The ground area located within these inner zones has the greatest likelihood of an aircraft accident occurring. The likelihood of an accident to occur in the outer public safety zones is less than the inner zones.

A report was prepared for Mayo County Council to establish PSZs for Ireland West Airport Knock. The report recommends a policy that relates to permissible uses to the third party risk from the possibility of aircraft crashing near an airport. The Inner PSZ extends a maximum of 1325m from the runway thresholds and is never more than 96 metres wide. The Outer PSZ extends a maximum of 5647m from the runway thresholds and is never more than 261m wide. The permissible uses and restrictions relating to the PSZs are set out in Appendix 1

A report was prepared for Mayo County Council to establish noise contour mapping for Ireland West Airport Knock. The report determines airborne aircraft noise contours based on existing and future aircraft traffic movements as a result of implementation of the IWAK LAP. The scope of the work includes prediction of noise contours for a 92 day summer period for scenarios based on existing and future aircraft movements. The noise contours are predicted based on actual and predicted aircraft movements using the federal Aviation Administration (FAA) Integrated Noise Model (INM) Version 7.0b aircraft noise prediction software. The contour methodology is recognised worldwide and is in accordance with the methodology used for strategic noise mapping under European Directive 2002/49/EC.

Soils and Geology

The soil associated with the study area of Ireland West Airport Knock (IWAK) mainly consists of blanket peat, with areas of exposed bedrock in places throughout the blanket peat, and various types of till. The runway and associated developed areas of the airport itself are comprised of made ground. There are also areas of sandstone sands and gravels, bordering the north and south of the study area

The study area comprises mostly of the Ordovician volcanic sequence of the Charlestown Inlier. This sequence runs from oldest to youngest as follows: Horan Formation basalts with chert and siltstone, Carracastle Formation of andesitic volcanoclastic rocks and Tawnyinah Formation of quartz-felspar crystal tuffs and fine felsic tuffs. The Oakport Limestone formation lies to the northwest of the study area and the Boyle Sandstone formation dominates to the south of the study area. Finally there are slight occurrences of minor intrusive bodies of Caledonian Age – Feldspar Quartz Porphyry and Pyroxene Diorite.

There are no apparent existing environmental problems relating to soils and geology in the study area. There has been no recorded landslide in the area, but peat is prone to saturation and when disturbed may become saturated and unstable.

Water

The Water Framework Directive (WFD) (2000/60/EC) set the framework for the comprehensive management of water resources in the European Community. The fundamental objective of the directive aims at maintaining “high status” of waters where it exists, preventing any deterioration in the existing status of waters and achieving at least “good status” in relation to all waters by 2015. The risk statuses assigned to this IWAK study area are *at significant risk* and *probably at significant risk* of not achieving the principal objective of the WFD, which is to maintain good and high status where feasible and to improve current moderate, poor and bad water bodies’ status to at least good status by 2015.

The water body ecological status of the IWAK study area and catchments in its vicinity are not very satisfactory with a large proportion of the study area deemed at poor status, with

approximately 30 % designated as good status. This water body, located in the south east of the study area contains a tributary of the River Lung catchment, not considered as noteworthy as a sector of the Moy catchment, that which is identified as poor status. Completing the assessment for this study area is a water body which is of moderate status. This small pocket is located in the south west.

In terms of sensitive waters listed under Part 1 of the Third Schedule of the Urban Waste Water Treatment Regulations, 2001 (S.I. 254 / 2001), there are no designations within the study area or bordering catchments. In contrast, the first and second order streams in the study area are tributaries of the River Moy, a designated Salmonid river under EC (Quality of Salmonid Waters) Regulations (S.I. No. 293/1988). The fresh water ecology baseline data relating to River Moy is set out in the bio-diversity, flora and fauna section.

Currently there are no IPPC licenses or Section 4 licences within study area. The Knock Airport WwTP is currently operating at approximately half the existing capacity and discharges to the Sonnagh River. A screening document is proposed for this Plant, but has not been undertaken to date, hence the obligation for an AA is not known at present.

The primary challenge identified within the study area is the protection and/or restoration of the water bodies in the vicinity of the IWAK study area. Maintaining the quality of the good (or alternatively a high) status water body is potentially more problematic than restoring a water body, since measures with associated objectives to restore a less-than-good water body are likely to be more achievable than those to maintain a good (or high) status. For example, a small loading of phosphorus will likely have a much more damaging impact on the ecology of a good or high status system than a similar introduction into an already eutrophic system of less-than-good status. Similarly, small increases in silt inputs, hydromorphological pressures or priority substances will have an apparently disproportionate impact on good or high status systems relative to the impact of the same inputs to an already degraded system, which must be restored. It is therefore critical that measures to protect good and high status water bodies from becoming degraded are developed and implemented with due diligence.

Air Quality and Climatic Factors

Air Quality

Air quality is dependent on many factors including local and national weather conditions as well as emissions of substances to air from within and outside the study. On assessment of the geographic location for the IWAK Local Area Plan it was noted that no significant pollution emission sources are located within the area and existing air quality monitoring information is considered to be within current air quality standards, based on published EPA data. The primary influences on the existing air quality at IWAK include transport emissions from vehicles using the site and vehicles using the N17 national road to the east of the site. The prevailing westerly wind from the Atlantic Ocean ensures good dispersion of pollutants and background air pollutant concentrations are low.

Air quality can be affected by the introduction of pollutants which can chemically react in the atmosphere to produce secondary pollutants such as acid rain or ozone. One of the major features of air pollution is the trans-boundary dispersion of pollutants. Therefore it is important to consider impacts both on the local and wider environment. The primary environmental threats with regard to air quality are: road traffic; heat generation and emissions from extractive industries.

Noise

The IWAK study area is located on an elevated site in a rural setting. The predominant influences on the noise climate in this area include road traffic noise from the N17 and R367 road network and intermittent aircraft related noise from the airport. Noise from a gravel quarry which is located to the northwest of the complex may also contribute to the noise climate in the area due

to movement of vehicles associated with the quarry. Noise levels were influenced primarily by road traffic noise. Local road traffic noise in particular is dominant intermittent source at certain locations.

Climate Change

Climate Change is recognised as the most serious and threatening global environmental problem. While natural variation in climate over time is normal, it is recognised that the rate of climate change is increasing as the emission of greenhouse gases into the atmosphere increases. The primary greenhouse gas is carbon dioxide CO₂ generated by the burning of fossil fuels. It is generally accepted that in order to reduce greenhouse gas emissions it is necessary to increase the use of energy from renewable sources. The current strategy for the reduction in the use of fossil fuel and an increase in renewable energies stems from the Kyoto Protocol, an international agreement linked to the United Nations Framework Convention on Climate Change. The Kyoto Protocol sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas emissions. The targets amount to an average of five per cent against 1990 levels over the five-year period 2008-2012. Specific baseline data on greenhouse gases is not available for Co. Mayo therefore National data is used as an indicative template for Mayo until specific data becomes available. The increasing rate of climate change is intensifying existing environmental problems arising from more extreme and unstable weather conditions.

Flooding

'The Planning System and Flood Risk Management Guidelines 2009' were issued by the Minister of the Environment, Heritage and Local Government under Section 28 of the Planning and Development Act 2000, as amended. The Guidelines introduce comprehensive mechanisms, such as Strategic Flood Risk Management (SFRA), for the incorporation of flood risk identification, assessment and management into the planning process. Implementation of the Guidelines is achieved through actions at national, regional, local and site specific levels.

The main risk of flooding in the study area is from the Pluvial – Extreme category. Pluvial flooding can be defined as flooding which results from rainfall generated overland flow and / or ponding which may occur during or immediately after intense rainfall events, before the runoff enters any water course or sewer. A Strategic Flood Risk Assessment was carried out and the results of which are set out in Appendix 2.

Material Assets

Roads

Access to the Plan Area is from the National Primary Route (N17) via the R376 Regional Road. The N17 links the Gateways of Galway to Sligo and also joins the National Primary Route N5 Dublin to Westport approximately 7km to the North of the Airport.

The R376 Regional Road runs through the centre of the Plan area. To the North of the Regional Road are undeveloped lands, whilst the lands to the South contain the Airport Campus. The Airport is accessed off the R376 by a roundabout with a spur leading to the Airport. Passenger circulation is through the existing car park. The situation is not ideal as the drop off and pick up areas are not separate from the airport parking area.

Airport

The original passenger terminal was built in 1986 and is located north of the runway directly west of the current passenger apron. A 3000m² extension to the terminal building was opened in 2009 which has resulted in creating more circulation space for passengers, new security screening areas, extended check in facilities, an increased departure lounge space as well as new retail, catering and other facilities.

The existing runway (27-09 runway) is 2300 metres long and 45 metres wide. The runway has turning circles, 80 metres in diameter at each end, symmetrical about the runway centreline. The runway strip is a defined area which includes the runway and stopway and is intended to reduce

the risk of damage to aircraft running off a runway and to protect aircraft during take off and landing operations.

Energy

The airport is supplied by 10 kV from the Charlestown 38kV/MV station via an outlet located at Charlestown (Airport Outlet). Standby provisions from this outlet are located at Swinford and Tubercurry. Electricity feeds to a 600 kVA substation located on the airport property which supplies the airport and adjoining industrial park with power.

Waste Water

The existing Waste Water Treatment Plant was commissioned in 2004 with a design Population Equivalent (PE) of 700. Taking the current usage into consideration, the treatment plant has a spare capacity for PE of 370. The treatment plant uses a Sequencing Batch Reactor design which utilises the activated sludge process to treat the incoming waste water. The final effluent is discharged through a 100mm rising main outfall pipe (length 2,750m) to the Sonnagh River in the townland of Killeen.

The existing treatment plant can easily be expanded to double the capacity to cater for a PE of 1400. Any further expansion would require the construction of a completely new Waste Water Treatment Plant. To enable the LAP area to develop to its full potential it is expected that a Waste Water Treatment Plant capable of accommodating a population equivalent of at least a 5000 PE.

Drinking Water

The current water supply is sourced from a well, which is in the ownership of Mayo County Council. Tests on the supply indicate that the safe yield from the supply is 350m³/day. The current usage from this supply is from two sources, the Airport (50m³/day) and the Cloonllyn Group Water Scheme (14m³/day).

In terms of water supply for the LAP Area, this is not a sustainable option as this source will only facilitate development in the short term. In the intermediate term upgrading the Kilkelly Water Supply to provide a link to the area would yield an additional 300m³/day of water. The long term aim is to provide a link to the Lough Conn East Mayo Regional Water Supply Scheme which would guarantee a sufficient supply of water.

Waste Management

County Mayo forms part of the Connaught waste management region. Mayo County Council is the lead and nominated authority in the Region. The current plan 'Replacement Waste Management Plan for the Connaught Region 2006-2011' details the regions integrated waste management approach and policies with specific targets that are to be achieved by 2013. The targets are derived from the EU waste Hierarchy and require that of waste arising, 48% is recycled, 33% is used for energy recovery and 19% of residual waste is sent for disposal.

Cultural Heritage

Archaeological Heritage

Co. Mayo has a rich archaeological heritage. This wealth is reflected in the RMP which lists and protects monuments and places in Co. Mayo under Section 12 of the National Monuments (Amendment) Act, 1994. Nearly 6,000 areas of archaeological importance (representing almost 8,000 elements) are included in the RMP for Co. Mayo spanning over 7,000 years. This RMP is constantly updated as new sites and monuments are discovered. There are 51 National Monuments in the ownership or guardianship of the State in Co. Mayo and a further 11 National Monuments that are subject to Preservation Orders.

There are 12 (twelve) RMP's within the Strategic Environment Assessment Area of the Proposed Ireland West Airport Knock (IWAK) Local Area Plan (LAP)

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National Monuments within the study area	
RMP. No	Monument Type
MA072-030	Enclosure
MA072-031	Enclosure and Souterrain
MA072-032	Enclosure- Site
MA072-033	Enclosure and Children's Burial Ground
MA072-034	Enclosure
MA072-085	Wedge Tomb
MA072-117	Fulacht Fiadh
MA072-118	Ecclesiastical Remains Possible Graveyard-Possible Children's Burial Ground-Possible House Site
MA072-119	Megalithic Tomb
MA072-120	Fulacht Fiadh
MA073-002	Enclosure and Children's Burial Ground
MA073-034	Mound

Architectural Heritage

There are no protected structures within the Strategic Environment Assessment Area of the Proposed Ireland West Airport Knock (IWAK) Local Area Plan (LAP). The IWAK Catchment Area extends into Co. Roscommon and Co. Sligo. The following urban areas in Co. Mayo form part of this catchment area; Ballina, Ballyhaunis, Castlebar, Charlestown, Claremorris, Foxford, Kilkelly, Kiltimagh, Swinford. The urban areas of Ballaghadreen, Ballyhaunis, Boyle, Castlerea and Tubbercurry fall within the catchment area and are in adjoining counties. The relevant plans for these areas can be consulted for further details.

Landscape

The airport has been established at this location since 1985. The location is on elevated lands adjoining the N17 approximately 8km South of Charlestown. The existing airport facilities and adjoining business park are located on an upper plateau that gently slopes to the West and steeply to the North. The upper plateau consists mainly of peat land with the various component parts of the airport on reclaimed lands. The runway is located on the upper platform as is an Ordnance Datum of approximately 200m above sea level. On the northern and eastern side of the airport the topography falls steeply. The lands to the eastern side of the airport also have extensive areas of coniferous forestry. Extensive views from the north and northern east are available from the Regional Road. (R367)

There is limited tree cover within the environs of the Local Area Plan study area. There are areas of coniferous forests to the Eastern side of the airport and on either side of the Regional Road (R367) from the N17. To the North of the R367 the steeply dipping fields consist of poor grassland and post and wire/stone ditch field boundaries. The predominant vegetation cover within the areas of permitted and proposed development is a mixture of existing hardstand, upland grassland and heath.

County Mayo's Landscape Appraisal (Mayo County Development Plan 2008-2016) subdivides the County into sixteen distinct landscape character units each containing an area of land with similar character-giving elements such as slope, vegetation and land use. The appearance of the landscape is relatively uniform within each Character Unit.

IWAK is located within Area K designated in the landscape appraisal as "East – Central Drumlin Spine". This area is made up of glacial drumlins that are uniform at its western end near its transition with the distinct drumlins of Clew Bay. In the east, these become less uniform and

severe, and the terrain merges into several sets of geologically distinct and isolated hills as the unit encapsulates the towns of Castlebar, Swinford, and Charlestown. The land cover is a mixture of bog/moorland, poor quality pasture and transitional woodland scrub with better quality pasture to the east and south.

This area is characterised by a mixed land use pattern which includes peat bogs and agricultural lands with significant areas of natural vegetation and transitional woodland scrub. There are also significant areas where pasturelands represent a major land use. Charlestown, Castlebar and Swinford towns display the significance of urban settlement areas in this region of the County.

An environmental problem associated with regard to the environmental component of landscape is the visual impact on the landscape. The airport campus is located in a prominent location to the summit of a hill. The existing buildings and associated lighting can be viewed from a considerable distance. There is very little attempt to screen development on the landscape with the topography of the area offering some form of screening.

Interrelationships between Environmental Factors

The interrelationship between each environmental factor has been assessed to identify areas of consistency in relation to each factor. This is important as it examines how each environmental factor relates to each other, which gives a greater understanding in determining Environmental protection objectives under each factor and developing appropriate mitigation. In general the eight factors are compatible with each other. There is potential that disposal of soils would impact on ecology sensitive environmental receptors and that soil run-off could impact on ecologically sensitive watercourses. Any change to the natural landscape will impact on water quality (and quantity, in some cases) by diversion of drain flow, increase/reduction of water volume, slope steepness and orientation. In some cases there will be no obvious relationship between environmental factors such as there is no obvious link between archaeology and climate factors. Also some factors will be in conflict with each other, for example material assets such as new infrastructural development will impact on archaeological sites and monuments.

The interrelationship between environmental factors is an important step in the development of environmental protection objectives. If the factors are consistent or mutually exclusive then the environmental protection objectives will support each other, which will feed into the policies and objectives of the Local Area Plan. Where they are in conflict with each other, mitigation measures will be suggested by the SEA. Again this will feed into the policies and objectives of the LAP.

Consideration of Impacts of the IWAK LAP on Adjoining Authorities.

Environmental Impacts do not recognise administrative boundaries and therefore the potential impacts of the LAP on adjoining authorities must also be taken into consideration. Having regard to Department guidance, a study area extending 15km from the IWAK study area was established in order to take into account the potential for in combination effects with other plans or projects inside and outside the LAP area.

Section 5 Environmental Protection Objectives

Environmental objectives are broad, overarching principles which specify a desired direction of environmental change. In the SEA process, Environmental Protection Objectives (EPOs) are the methodological measures against which the environmental effects of the LAP can be tested. These have been developed from international, national and county policy.

The EPOs are linked to indicators which serve to assess/measure the success of the EPOs and facilitate monitoring and the implementation of the LAP. They are also linked to targets which the RES can help work towards. The EPOs established for the SEA process are as follows:

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EPO Code	Environnemental Protection Objectives
Biodiversity, Flora and Fauna	
B1	Conserve and protect designated habitats and protected species
B2	Maintain the biodiversity of interdependent habitats and species in the wider landscape
Population and Human Health	
HP1	To improve the working populations quality of life based on a high quality working environment, reduction in commuting distances and the promotion of sustainable modes of transport within, to and from IWAK.
HP2	To protect human health from incompatible land uses associated with locating at or adjoining airports
Soils and Geology	
SG1	To identify and protect areas which may be deemed to have a risk of landside
Water	
W1	To prevent deterioration of surface water bodies of good or high status
W2	To restore states of water bodies of moderate, poor and bad to good status
W3	To reduce surface water pollution from priority substances
W4:	To achieve water-related designated protected area objectives and to support the achievement of favourable conservation status wherever such plans exist.
Air & Climatic Factors	
Air Quality	
AR1	Maintain good air quality status in line with CAFÉ Directive requirements and the National Climate Change Strategy.
Noise	
N1	To promote appropriate noise control measures on operations within the IWAK LAP area
N2	To encourage the implementation of control measures on road traffic noise within the IWAK LAP area
Climate	
C1	To maximise the areas contribution to the national decrease in greenhouse gas emissions.
Flooding	
F1	To prevent development on lands which pose – or are likely to pose in the future – a significant flood risk.
Material Assets	
Roads and Transport Infrastructure	
R1	To protect the road network
R2	To prevent any interference with the safety and efficiency of airport operations in the vicinity of the airport
Energy	
E1	To reduce the reliance on non sustainable energy sources by the promotion and use of renewable energy resources
Waste Water	
WW1	To provide adequate waste water infrastructure to meet existing and future demands for such provision
Drinking Water	
DW1	To prevent deterioration of the status of water bodies with regard to quality, quantity and to improve water body status of rivers, lakes and ground water to at least good status as appropriate to the WFD, providing good sources of abstraction for drinking water
Waste Management	
WM1	Minimise waste production and maximise recycling and recovery through the introduction of sustainable waste management practices.
Cultural Heritage	
Archaeology	
CH1	To protect the archaeological heritage and especially sites identified in the Record of Monuments and Places, National Monuments in the ownership or guardianship of the State and National Monuments that are subject to Preservation Orders and to safeguard the integrity of the archaeological sites in their setting.
Architectural	

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Heritage	
CH2	To protect the architectural heritage of County Mayo with regard to protected structures, Architectural Conservation Areas and other elements highlighted in the baseline data (Section 4)
Landscape	
L1	To protect the landscape character of the area

Section 6 Alternative Scenarios

Article 5 of the SEA Directive requires the Environmental Report to assess the likely significant effects of implementing a plan and “reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme”. A total of six scenarios were devised and each was assessed in terms of the planning and environmental implications on the various environmental factors (Biodiversity, flora and fauna, Soils and Geology, Population and Human Health, Water, Material Assets, Cultural Heritage and Landscape). Each Scenario was then evaluated against the Environmental Protection Objectives.

The scenarios were established taking into consideration the strategic aims of the LAP which are:

- to enable the development of Ireland West Airport Knock as a strategically important international gateway to the Region through the continued growth of the Airport as a major transportation hub
- to enable the full development potential of Ireland West Airport Knock as a strategic economic/enterprise hub for the Region, to be fully realised in a sustainable, co-ordinated and plan led manner whilst ensuring the efficient and effective operation of the Airport.
- to support the designation of the IWAK LAP area as a Strategic Development Zone (SDZ)

The Alternative Scenarios Considered were:

- Do Nothing Scenario: Retain Mayo County Development Plan Policies and Objectives
- Scenario 1: Expand existing situation
- Scenario 2: Expanding Business Park Development to the East and relocate airport to the West of the campus
- Scenario 3: Provides a larger plan area and expand development naturally around the existing campus
- Scenario 4: Airport Development Zone to the North with a large buffer zone of rural character
- Scenario 5: Smaller buffer zone and an expanded Airport Development Zone.

The Assessment of Scenarios 1 and 2 indicates ‘Probable Conflict with the status of the EPOs – unlikely to be mitigated’. Scenario 3 is limited in terms of improvement of most of the EPS. Scenario 4 and 5 emerge as the most environmentally sustainable of the 5 alternatives as regards all EPOs’. However, Scenario 5 emerges as the most sustainable overall. All though the developable area in Scenario 5 is greater than Scenario 4, it offers more scope to locate development in areas with less impact on the environment. It also offers a greater area for the development of energy, waste, surface water, conservation initiatives and renewable energy projects. Scenario 5 scored highest in the ‘Likely to improve the status of the EPO’ category as it offers more scope for the development potential of the LAP area.

Section 7 Evaluation of the Policies and Objectives in the draft LAP

In this section the detailed policies and objectives of the draft LAP are evaluated in an evaluation matrix in order to identify areas of conflict between the draft LAP and the EPOs. The process of evaluation enables the likely significant effects of implementing the draft LAP to be identified and also for mitigation measures to be incorporated into the LAP where appropriate to address potential adverse impacts.

Section 8 Mitigation Measures

This section outlines mitigation measures designed to avoid/prevent, minimise/reduce or as fully possible offset/compensate for any significant adverse effects on the environment as a result on implementing the LAP.

Section 9 Monitoring Measures

The SEA directive requires significant environmental effects of the implementation of plans and programmes are monitored. This environmental report puts forward proposals for monitoring implementation of the LAP which are adopted along with the LAP. Monitoring is based around the indicators which were chosen for the purpose of measuring changes to various environmental components. They allow quantitative measures of trends and progress over time relating to the EPOs used in the evaluation process.

Section 1: SEA Introduction & Context

1.1 Introduction

Mayo County Council has prepared a draft Local Area Plan for Ireland West Airport Knock (IWAK), namely the Draft Ireland West Airport Knock (IWAK) Local Area Plan 2012-2018. The draft Local Area Plan sets out a framework for IWAK to:

- enable the development of Ireland West Airport Knock as a strategically important international gateway to the Region through the continued growth of the Airport as a major transportation hub
- enable the full development potential of Ireland West Airport Knock as a strategic economic/enterprise hub for the Region, to be fully realised in a sustainable, co-ordinated and plan led manner whilst ensuring the efficient and effective operation of the Airport.
- support the designation of the IWAK LAP area as a Strategic Development Zone

This is the Environmental Report (ER) on the Strategic Environmental Assessment (SEA) of the draft LAP. The purpose of the ER is to identify, evaluate and describe the likely significant effects on the environment of implementing the draft LAP. The preparation of the ER has been integrated into and informed the preparation of the draft LAP. Accordingly it should be read in conjunction with the draft LAP.

1.2 Strategic Environmental Assessment (SEA)

SEA is the systematic, ongoing process of evaluation of the likely significant environmental effects of implementing a plan or programme in order to ensure that these effects are appropriately addressed before a decision is made to adopt it. The overall aim of SEA is to:

- provide a high level of protection of the environment
- integrate environmental considerations into the preparation of LAP from the outset
- increase public participation in environmental decision making
- improve the environmental sustainability of the LAP
- raise awareness of the potential environmental consequences of its implementation so that these consequences may be mitigated or avoided altogether

This ER records the process and findings of the SEA and its preparation is also part of the SEA process.

1.3 Legislative Context

The SEA is being carried out in order to comply with EU SEA Directive 2001/42/EC. This Directive was transposed into Irish law through the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations (S.I. No 435 of 2004) and the Planning and Development (SEA) Regulations (S.I. No. 436 of 2004).

The SEA is being undertaken under the EC (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. No. 436 of 2004) as amended. The Habitats Directive Assessment (HDA) process has also informed the SEA.

1.4 Content of the Environmental Report

The Environmental Report is required to contain information as set out in Schedule 2 of the EC (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. No. 436 of 2004) as amended. Table 1.1 outlines the information that is required and the relevant sections of this ER in which the information is located.

Table 1.1 Information Required in the Environmental Report

Information Required in the Environmental Report	Relevant Section in this Report
Outline of the contents and main objectives of the plan, and of its relationship with other relevant plans and programmes	Section 3
Description of relevant aspects of the current state of the environment and the evolution of that environment without implementation of the plan	Section 4
Description of the environmental characteristics of areas likely to be significantly affected	Section 4
Identification of any existing environmental problems which are relevant to the plan, particularly those relating to European protected sites	Section 4
Environmental protection objectives, established at international, EU or national level, which are relevant to the plan and describe how those objectives and any environmental considerations have been taken into account when preparing the plan	Sections 1, 3, 4, 5, 6 and 7
Describe the likely significant effects on the environment (biodiversity, human health, fauna, etc.)	Sections 4, 6 and 7
Describe any measures envisaged to prevent, reduce and as fully as possible offset any significant adverse environmental effects of implementing the plan	Section 8
Give an outline of the reasons for selecting the alternatives considered, and a description of how the assessment was undertaken (including any difficulties)	Section 6
A description of proposed monitoring measures	Section 9
A non-technical summary of the above information	Included at front of this Report

1.5 Implications for Mayo County Council and the Elected Members

This Environmental Report (ER) will be submitted to the Elected Members with the Draft LAP. The Members must take account of the ER before the LAP is adopted. When the LAP is adopted a statement will be made public, summarising, inter alia, how environmental considerations have been integrated into the LAP and the reasons for choosing the LAP as adopted over other alternatives described in the ER.

Section 2: SEA Methodology

2.1 Introduction

The methodology used in the SEA of the draft LAP complies with the requirements of EU Directive 2001/42/EC as transposed into Irish law by the EC (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. No.435 of 2004) and the Planning and Development (SEA Regulations) 2004 (S.I. No. 435 of 2004). This methodology also reflects national guidance relating to SEA including the following documents:

- Implementation of SEA Directive (2001/42/EC) Assessment of the Effects of Certain Plans and Programmes on the Environment – Guidelines for Regional Authorities and Planning Authorities” DoEHLG 2004
- Development of Strategic Environmental Assessment (SEA) Methodologies for Plans and Programmes in Ireland – Synthesis Report, EPA 2003
- SEA Process Checklist Consultation Draft 2008 EPA 2008
- Strategic Environmental Assessment (SEA) And Climate Change: Guidance For Practitioners (EPA 2004)
- SEA Pack and Scoping Guidance Document, EPA Updated Version 2010
- Strategic Environmental Assessment (SEA) SEA Process Checklist EPA Consultation Draft Document January 2008

There are 4 main stages involved in the SEA Process:

1. Screening
2. Scoping
3. Identification, Prediction, Evaluation and Mitigation of Potential Impacts
4. Consultation, Revision and Post Adoption Activities (Monitoring)

2.2 Screening

Where SEA is not mandatory, it is necessary to establish whether a plan would have a significant environmental effect on the environment. Given the rural location of the IWAK LAP area and the scale of development required to fulfil its’ potential as a key economic driver for the Region, in addition to the proximity of the area to the river Moy Special Area of Conservation, Mayo County Council made a determination that the draft Local Area Plan would require an SEA.

2.3 Scoping

Where it has been determined that SEA is required, the contents of the Environmental Report (ER) need to be scoped. The purpose of scoping is to ensure that the relevant environmental issues are identified so they can be addressed appropriately in the ER.

Mayo County Council carried out a scoping exercise in conjunction with the prescribed Environmental Authorities² to establish the scope and level of detail to be included in the ER and to identify environmental issues which would require further consideration during the SEA process. In this regard, a scoping consultation document was submitted to the Environmental Authorities in August 2010. The document gave an outline of the geographic area involved; the nature of the LAP and its intended lifespan; the likely scale, nature and location of development within the LAP area and predicted significant environmental impacts. The Environmental Authorities were invited to make written submissions on the scope and level of detail of the information to be included in the ER. Submissions were received from the Environmental Authorities and are summarised in Table 2.1

² Environmental Protection Agency; Department of Environment, Heritage and Local Government; Department of Communications, the Marine and Natural Resources.

Table 2.1 Summary of Submission from Environmental Authorities

Department of Agriculture, Fisheries and Food:

No submissions or observations to make

Environmental Protection Agency (EPA):

SEA Pack and SEA Scoping Guidance Document were submitted to assist in undertaking the SEA. The SEA team are referred to the EPA's web based Environmental Mapping / GIS ENVision and required to take account of maps and data and additional information associated with the WRBD and Protected Areas within the WRBD. The EPA also requested the following matters to be considered in the preparation of the LAP and SEA:

- 1) In advance of any statutory requirement under the Noise Directive to carry out Strategic Noise Mapping, consideration should be given to increasing annual noise monitoring at the airport from annually to a six month or quarterly basis to increase greater baseline information to inform predictions of likely future noise levels.
- 2) Consideration should be given to establishing an integrated Environmental Management Plan for the Plan area, to address issues of Waste, Wastewater, Drinking Water, Integrated Traffic Management and Air Quality Issues, Surface Water / Groundwater Quality, Flooding, Landscaping and upkeep etc.
- 3) Habitat mapping including flight paths should be carried out and reported on.
- 4) Consideration should be given to inclusion of appropriate buffer zones between airside, landside and business park areas and also between the Plan area and its environs.

Inland Fisheries Ireland:

The existing waste water treatment plan for the airport discharges to the Sonnagh River which is a tributary of the River Moy (SAC). Suggest that a more regular monitoring and maintenance programme be put in place for the wastewater treatment plant to ensure that no polluting discharges occur.

Department of Communications, Energy and Natural Resources:

No submissions of Observations to make

Department of Environment, Heritage and Local Government:

Architectural Heritage

- 1) Noted that setting out a LAP could have a significant effect on the architectural heritage of the locality and the wider region. The present environment consists largely of open terrain at an elevated location upon which an airport has been built. The Challenge is to develop a built environment of distinction at IWAK which benefits its status of being the international gateway to the West of Ireland. New development should enhance the local environment and contribute to creating a place of distinction. And it is advised a need to develop an architectural framework for the LAP which will guide development within its area of immediate influence and ensure good quality design which will enhance the public realm. While the LAP may only relate to the immediate area the associated SEA may need to extend to a much wider area.
- 2) It is also highlighted that it is frequently overlooked in SEA that it is significant effect on architectural heritage must taken into account and not just effects on protected structures. It is pointed out that reference in SEA to significant effects on just protected structures or the content of the National Inventory of Architectural Heritage county survey is likely to lead to short comings in any assessment which might leave the validity of the SEA process for a particular plan open to challenge.

Appropriate Assessment

- 1) Concurs with the need for Appropriate Assessment (AA) as there are risks to Natura 2000 sites and their conservation objectives, arising from the LAP alone and in combination with other plans and projects. A key concern is the potential for indirect or cumulative impacts on river systems in the area, particularly River Moy cSAC (site code 2298) in the north and south-west.
- 2) Key guidance documents relating to the AA are listed.
- 3) Potential effects of the LAP on Natura 2000 include: Infrastructure to support the airport and business park; energy supply; telecommunications; water regulation and flood

prevention; quarrying and extraction; peat excavation, storage, disposal and geotechnical stability; zoning, changes in land use and habitat loss and fragmentation; noise; lighting; air pollution.

- 4) AA should examine, assess and inform the LAP and any risks of significant effects on Natura 2000 sites removed by omitting/revising policies/objectives/targets, further scientific study and assessment, or plan-level mitigation to be incorporated into the LAP.
- 5) In the event that policies, objectives etc. are made conditional on adequate evaluations & assessments being undertaken at lower plan/project level, it is advised that, as a minimum, these situations should be noted clearly in the LAP & that a statement be included of the issues being addressed without favouring a specified solution; and also set out other matters in consideration of Article 6 (3) regarding AA of issues that may arise, consideration of alternative solutions & compensatory measures.
- 6) AA should be undertaken by/in conjunction with suitably qualified ecologists in conjunction with the Biodiversity, Flora and Fauna section of the SEA.
- 7) Any amendments / changes to the LAP must also be subject to AA and SEA Screening.

SEA

- 1) The Biodiversity, Flora and Fauna section of the SEA should be undertaken by or in conjunction with suitably qualified ecologists, and in conjunction with the AA to ensure full integration of biodiversity issues and concerns, particularly in relation to protected ecological sites and species, and Article 10 of the Habitats Directive.
- 2) The scope of the SEA should include: all protected ecological sites; available information on habitats and protected species; all watercourses, water bodies and associated wetlands, including flood risk areas; Local biodiversity areas; ecological networks and stepping stones
- 3) Where habitat mapping is available, this should be used to inform and assess the potential impacts of any zoning or other proposed land uses. Where habitat mapping is not available, habitat surveys should be carried out for the plan area. No currently undeveloped lands should be zoned, rezoned or reserved for development, or included in master plans in the absence of information on the ecological sensitivities of the lands in question, including a review of nature conservation designations and habitat mapping.
- 4) Strategic environmental objectives should be included for protected ecological sites, protected species and for habitats of ecological significance, including all Habitat Directive Annex 1 habitats.

The LAP

- 1) The LAP should: give a positive and proactive commitment to affording the highest level of protection to Natura 2000 sites, and other protected ecological sites, through the proper application of the Habitats Directive; ensure the conservation and protection of all protected species; ensure the conservation, protection and enhancement of ecological corridor and networks and of stepping stones in line with the Habitats Directive; include a list and map of any protected ecological sites; Include objectives for the conservation and protection of all conservation sites over the lifespan of the LAP
- 2) Compliance with the requirements of the Habitats directive and other wildlife legislation should permeate all sections of the plan and all policies and objectives.
- 3) No undeveloped areas should be zoned, rezoned or reserved for development in the absence of information on the ecological sensitivities of the lands in question, including a review of nature conservation designates and habitat mapping.

Archaeology

- 1) Outlines policies and objectives to be included in the LAP for the protection of Archaeological Heritage
- 2) The procedures for dealing with applications for development are outlined

In addition to consultation with the prescribed authorities, prior to preparing the LAP, the Council held a “Pre-Draft Public Consultation Open Day” in Charlestown on the 29/9/2010 for

the IWAK LAP. The public were invited to attend to discuss the process involved in the preparation of the Local Area Plan and make their views known. Written submissions from the public were also invited as part of the pre-draft consultation process. Environmental issues/concerns raised during the pre-draft consultation phase related to:

- deficiencies in the public water supply to the area
- concerns about surface water run-off from the runway onto public roads
- concerns relating to increase in traffic movements to the area

2.4 Establishing the Environmental Baseline

Before future environmental impacts can be predicted, it is necessary to achieve an understanding of the current state of the environment. Therefore, a baseline description of the current physical environment must be established, with particular reference to those aspects of the environment which are experiencing existing environmental problems, or are likely to be significantly affected by implementation of the LAP. Such baseline data is required to:

- allow environmental problems to be identified
- provide a baseline against which future monitoring can be carried out and
- provide a basis for impact prediction.

Baseline data relating to the environmental parameters identified in the SEA Regulations was collected from a variety of existing known environmental and other relevant data sources, including from within the Council in order to establish the current state of the environment.

2.5 Consideration of Alternatives

Article 5 of the SEA Directive requires the Environmental Report to assess the likely significant environmental effects of implementing a plan and *“reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme”*. Such alternatives are required to be realistic and capable of implementation and should therefore represent a range of different possible approaches within the statutory and operational requirements of the County Development Plan and the Local Area Plan. Five alternative scenarios were considered having regard to the objective to further develop the area as an economic driver and to secure designation of the LAP area as a Strategic Development Zone. These are discussed and evaluated in Section 6.

2.6 The Environmental Report

The Environmental Report (ER) sets out the findings and results of the SEA process on the likely significant effects of implementing the draft LAP. It also sets out mitigation measures to prevent or reduce significant adverse effects likely to arise from implementation of the draft LAP, together with alternatives considered and measures relating to monitoring following its adoption.

The Environmental Report is an important tool that provides the decision makers, the elected members of Mayo County Council, who decide on the LAP to adopt, as well as the public, with a clear understanding of the likely environmental consequences of decisions taken in order to develop the airport as an economic driver for the Region.

2.7 The SEA Statement

After the plan is made, Mayo County Council will prepare and make available for inspection an Environmental Statement which will include:

- a summary of how environmental considerations have been integrated into the LAP
- how the ER, submissions and consultations have been taken into account
- the reasons for choosing the LAP as adopted over other alternatives dealt with
- measures to monitor the significant environmental effects of implementation of the LAP or amended LAP.

2.8 Difficulties Encountered in Compiling the Required Information

There were a number of areas where there was insufficient data available or where the level of detail was inadequate for the purpose of establishing baseline data. Details of difficulties encountered are detailed in respect to the various environmental components set out below:

Biodiversity, Flora and Fauna

The principal problems in relation to baseline data include the lack of detailed information on the habitats and species of the area. Detailed habitat mapping was not available for the SEA study area, but information contained in an EIS prepared for the Airport Authority as part of a planning proposal was used in this regard. There is a need to identify and collect information on all areas of local biodiversity value and ecological corridors in this area and also in the wider county. Baseline information on the location and condition of habitats is fundamentally important for habitat management and conservation. This information is necessary to inform future planning policy and conservation policies, and for creating awareness among the public. Habitats of high conservation value can be avoided when planning developments and can be targeted for biodiversity conservation or enhancement measures.

Population and Human Health

Population figures are extracted from the Census of population 2006. The next Census figures are due in 2012 (preliminary data only available). Given the change in the economy since 2006, the figures in this report may not accurately reflect the current population and population distribution. The details in relation to unemployment are based on Social Welfare office location which involves a considerably larger catchment area than the towns in which they are located.

Soil and Geology

Information relating to soils and geology is available for the area. No significant difficulties were encountered.

Water

Specific challenges encountered in sourcing the information related to the large volume of local, national and international material. In particular the Western River Basin Management Plan 2009 to 2015 and associated Programmes of Measures (PoM) contain extremely informative data, but this information is modified and updated regularly. Mapping data provided from the WRBD to Mayo County Council varied subtly from that on the WRBD website, resulting in occasional differing water body borders and delineations. WFD datasets are not yet finalised for Mayo (some water bodies are currently not classified), so that water body status data used in producing this report are drafts and may still be subject to change.

Air and Climate Factors

There is no data available to accurately describe potential air pollution hotspots without the need for monitoring and compiling the information specifically for the area. Specific baseline data on greenhouse gasses has not been conducted for Mayo, so national data is used for this report.

Material Assets

In relation to roads, there are no traffic counts available along the local roads that lead to the airport, therefore there is no baseline data to determine impact of traffic movements along these roads. There is also a lack of data relating to location, quality and quantity of private drinking water sources in the area.

Cultural Heritage

No detailed survey work has been carried out in the area to determine if any building or structure is of architectural interest.

Landscape

Currently there is no accurate contour survey of the existing lands within the LAP area and beyond.

2.9 Co-Ordination of the SEA Process

An inter-departmental multi-disciplinary SEA Team was established within the Council incorporating a broad range of expertise to ensure relevant environmental issues were identified and addressed. This group consisted of representatives from Water Services; Environment; Planning; Roads; Regional Design Office; and GIS and other sections with expertise relating to the built and natural heritage. Meetings were held at key stages of the process and the SEA team participated in establishing baseline data; identifying significant environmental issues and environmental protection objectives, targets and indicators; consideration of alternatives and the assessment of the policies and objectives in the draft LAP; identification of mitigation measures and monitoring. The Forward Planning Section co-ordinated the SEA process and compiled the Environmental Report.

Section 3: Context of the Draft IWAK Local Area Plan.

3.1 Introduction

Ireland West Airport Knock (IWAK) is located in the townland of Kilgarriff West and is centrally located in the Region along the National Route (N17 Galway / Sligo) and 7km from the National Primary Route N5 which links Mayo to Dublin. IWAK has the potential to be a key economic driver for the Region. In 2008 Mayo County Council, pursuant to the Planning and Development Act 2000, as amended, applied to the Department of Environment, Heritage and Local Government (DOEHLG), to designate the lands in the vicinity of IWAK as a Strategic Development Zone (SDZ). In response the DOEHLG advised adopting a best practice approach similar to other SDZ designations by the preparation of a Local Area Plan. The IWAK LAP is intended as a first step towards securing the designation of the Plan area as a SDZ.

3.2 Contents and Policies of the Draft IWAK LAP

In accordance with the requirements of the SEA Directive an outline of the contents (by Section) of the draft LAP and the main policies and objectives of the draft LAP are set out below.

Outline of Contents of the Draft LAP for IWAK

Section 1: Introduction: sets out the purpose of the LAP and outlines the statutory context for the LAP. It highlights the LAP area and the format of the Plan as well as the public consultation process and the environmental assessments required for the preparation of the plan.

Section 2: Strategic Planning Context and Considerations: sets out the legislative and policy framework at EU, National, Regional and Local levels which set the context for and informed the preparation of the LAP.

Section 3: Profile of IWAK: sets out the existing profile of the Plan area in terms of infrastructure provision, natural and cultural heritage and other information related to the airport.

Section 4: Development Strategy for Ireland West Airport Knock: sets out the Council's overall strategy for the future sustainable development of Ireland West Airport Knock.

Section 5: Policies and Objectives: sets out the policies and objectives which the Council consider necessary to implement the Development Strategy for IWAK, and thus guide the future development of IWAK

Section 6: Development Management Standards and Guidance: sets out development management standards and guidance that will be applied by Mayo County Council in the assessment of planning proposals in the Plan area.

Main Objectives and Policies of the Draft LAP for IWAK

Aim of the LAP:

The LAP sets out an overall strategy for the future sustainable development of IWAK. The primary aims of the Local Area Plan are :

- to enable the development of Ireland West Airport Knock as a strategically important international gateway to the Region through the continued growth of the Airport as a major transportation hub
- to enable the full development potential of Ireland West Airport Knock as a strategic economic/enterprise hub for the Region, to be fully realised in a sustainable, co-ordinated and plan led manner whilst ensuring the efficient and effective operation of the Airport.
- to support the designation of the IWAK LAP area as a Strategic Development Zone

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Mayo County Council will implement the development strategy for IWAK through policies which are set out in the LAP relating to Strategic Development, Land Use, Sustainability, Transport, Infrastructure Provision; Airport Infrastructure and Operation; Heritage; Landscape; Environment and Economic Activities. These Policies are underpinned by detailed objectives as set out below

Policy	Strategic Development
SDP1	It is the policy of the Council to promote and support the development of Ireland West Airport Knock (IWAK) as a strategically important international gateway to the Region through the continued growth of the Airport as a major transportation hub.
SDP2	It is the policy of the Council to support and promote the development potential of the IWAK LAP area as a strategic economic/enterprise hub for the Region.
Objective	
SDO1	It is an objective of the Council to facilitate the sustainable development of the LAP area as a transportation and economic/enterprise hub of strategic importance for the Region through the implementation of the policies; objectives and design standards/guidance of this LAP.
SDO2	It is an objective of the Council to request the Minister for Environment, Community and Local Government to designate the area of the IWAK Local Area Plan as a Strategic Development Zone following the adoption of this LAP
SDO3	It is an objective of the Council to ensure that there are sufficient appropriately zoned lands to facilitate the sustainable development of the IWAK LAP area as a strategic transportation and economic/enterprise hub for the Region.
SDO4	It is the objective of the Council to promote the orderly development of all lands zoned within the IWAK LAP area by encouraging, where necessary, land assembly and shared access arrangements.
SDO5	It is an objective of the Council to ensure that the development all lands zoned as 'Airport Development' in Section 4 of this LAP is managed in a sustainable way through the framework of a masterplan (outlined in Section 4 of this LAP)
SDO6	It is an objective of the Council to promote a high quality working environment to ensure that the LAP area is an attractive place to work and visit.
SDO7	It is an objective of the Council to promote the development of the IWAK LAP area in terms of the 'Green Economy' through the policies; objectives and design standards relating to sustainability outlined throughout this LAP
SDO8	It is the objective of the Council to ensure that all development proposals comply with the Design Standards and Guidance set out in Section 6 of this LAP

Policy	Land Use
LP1	It is the policy of the Council to rationalise the use of lands within the IWAK LAP area through appropriate land use zoning objectives as outlined in Section 4 of this LAP
Objective	
LO1	It is an objective of the Council to ensure that all development proposals comply with the land use zoning objectives outlined in Section 4 of this LAP; other uses may only be considered where it is demonstrated that they do not conflict with the primary land use zoning objective.

Policy	Sustainability
SP1	It is the policy of the Council to promote the use of sustainable options for all development proposals to support the 'Green Economy' concept within the IWAK LAP area.
Objective	
SO1	It is the policy of the Council to promote the use of sustainable options for all development proposals to support the 'Green Economy' concept within the IWAK LAP area.
SO2	It is the policy of the Council to promote the use of sustainable options for all development proposals to support the 'Green Economy' concept within the IWAK LAP

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	area.
SO3	It is an objective of the Council promote the reduction of energy consumption through innovative design and layout with the appropriate use of materials and new technology in developments within the IWAK LAP area and to increase public awareness of best energy efficiency practices
SO4	It is an objective of the Council to encourage a high quality design and layout of all development proposals to reduce the reliance on the motor car, support movement by pedestrians and cyclists, provide adequate and convenient access to public transport and connect well with the wider locality.
SO5	It is an objective of the Council to require that all new development proposals make adequate provisions for the reduction, reuse and recycling of waste, in both construction and post-construction stages and to implement the recommendations outlined in the Replacement Waste Management Plan for the Connacht Region 2006-2011 and any subsequent Waste Management Plan

Policy	Transport
TP1	It is the policy of the Council to encourage and support the use of more sustainable modes of transport to, from and within the IWAK LAP area including public transport; walking and cycling and to ensure that new developments accord with this aim
TP2	It is the policy of the Council to support the improvement of accessibility and vehicular movements to, from and within the IWAK LAP area.
TP3	It is the policy of the Council to secure the implementation of the N17 Charlestown Bypass
Objective	
TO1	It is an objective of the Council to protect lands adjoining the route of the proposed N17 Charlestown Bypass, within IWAK, from unsuitable and/or inappropriate development which could jeopardise the project
TO2	It is an objective of the Council to comply with the requirements of the National Roads Authority in relation to National Roads in the Plan area
TO3	It is an objective of the Council to review, as the need arises, the circulation of traffic within the Plan area and to support the provision of any alterations in order to provide for the safe and efficient movement of vehicular and/or pedestrian traffic and to implement appropriate traffic management measures as required.
TO4	It is an objective of the Council to assess, as the need arises, the adequacy of the road network in the LAP area in terms of capacity, width, alignment or surface condition in order to cater for increased traffic. Any deficiencies identified should be addressed within a reasonable timeframe by the relevant authority.
TO5	It is an objective of the Council encourage the used of shared access points onto the public road network.
TO6	It is an objective of the Council to co-operate with relevant interests to encourage the provision of a high standard of public transport services to the IWAK LAP area.
TO7	It is an objective of the Council to support the reinstatement of the Western Rail Corridor and to support the provision of a rail link from the Western Rail Corridor to the LAP area
TO8	It is an objective of the Council to support the provision of car parking facilities, as the need arises, for the LAP area
TO9	It is an objective of the Council to identify, support and secure a footpath and cycle path network for the LAP area

Policy	Infrastructure Provision
IP1	It is the policy of the Council to support the provision of all infrastructure as appropriate, including water, waste, energy and communications, necessary to support the existing and future sustainable development of the LAP area in accordance with all national and EU Legislation
Objective	
IO1	It is an objective of the Council to co-operate/co-ordinate, as appropriate, with the relevant Water Services Authority to ensure that an adequate supply of water is available to meet the current and future needs of the LAP area.

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IO2	It is an objective of the Council to co-operate/co-ordinate, as appropriate, with the relevant Water Services Authority to ensure high water quality standards are maintained by implementing the relevant European Community Water Quality Directives
IO3	It is an objective of the Council to co-operate/co-ordinate, as appropriate, with the relevant Water Services Authority to ensure that all drinking water in the area complies in full with the European Communities (Drinking Water) (No. 2) Regulations, or any subsequent regulations.
IO4	It is an objective of the Council to co-operate/co-ordinate, as appropriate, with the relevant Water Services Authority in providing sufficient medium to long term supplies of potable water and waste water treatment facilities for the LAP area
IO5	It is an objective of the Council to monitor the situation regarding adequacy of piped water supply, as well as wastewater collection and treatment of the LAP area. Where the Council considers there are existing deficiencies in the provision of water supplies or sewerage facilities to meet the needs of a proposed development, such a development may be considered premature
IO6	It is an objective of the Council to ensure surface water systems are managed in a sustainable manner by encouraging the re-use of surface water where possible and to require that all new development proposals provide surface water drainage systems designed in accordance with Sustainable Urban Drainage Systems (SuDS)
IO7	It is an objective of the Council to ensure that surface water is adequately and safely disposed of in a manner compatible with achieving and maintaining 'salmonid water' quality in the receiving waters. (S.I. No. 293/1988: European Communities (Quality of Salmonid Waters) Regulations
IO8	It is an objective of the Council to support the appropriate expansion and upgrading of the Electricity Network to meet the needs of the LAP area.
IO9	It is an objective of the Council to support the appropriate expansion of the Metropolitan Area Networks (Communication System) to meet the needs of the LAP area.
IO10	It is an objective of the Council to support the introduction of appropriate new information and communication technologies to meet the needs of the LAP area
IO11	It is an objective of the Council to assess any future provision of telecommunications infrastructure having regard to National policies, as well as interests of social and economic progress; public health; environmental quality and the protection of amenities and local heritage.
IO12	It is an objective of the Council to support the appropriate extension of the gas network to meet the needs of the LAP area.
IO13	It is an objective of the Council to implement the Development Contribution Scheme and any Supplementary Contribution Schemes for future infrastructure upgrades for the LAP area.

Policy	Airport Infrastructure and Operations
AP1	It is the policy of the Council to support the current and future operational, safety, technical and development requirements of the Airport, as deemed appropriate
AP2	It is the policy of the Council to promote appropriate land uses at IWAK by implementing the recommendations of the report "Public Safety Zones and Noise Contour Maps for Ireland West Airport Knock", prepared for Mayo County Council by APD Ltd
Objective	
AO1	It is an objective of the Council to support the extension to the existing runways and to safeguard the potential for future runway development, as deemed appropriate
AO2	It is an objective of the Council to support the development of new taxi-ways as deemed appropriate
AO3	It is an objective of the Council to support the orderly expansion of aircraft apron areas, to provide for improved aircraft facilities, as deemed appropriate
AO4	It is an objective of the Council to encourage the on-going augmentation and improvement of appropriate freight / cargo facilities at IWAK.
AO5	It is an objective of the Council to ensure that there are sufficient appropriately zoned lands on the airfield with good access to the aircraft apron area and to the road network

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	to cater for freight / cargo and other aircraft apron facilities
AO6	It is an objective of the Council to encourage the on-going development of terminal facilities at IWAK, as appropriate.
Policy	Heritage Landscape and Environment
HP1	It is the policy of the Council to preserve, protect and enhance the character of the LAP area as defined by its natural heritage and biodiversity, its built environment, landscape and cultural heritage.
HP2	It is the policy of the Council to support and encourage a high standard of environmental awareness throughout the LAP area
HP3	It is a policy of the Council preserve, enhance and conserve designated sites such as Candidate Special Areas of Conservation and Special Protection Areas through the implementation of Article 6(3) of the EU Habitats Directive, and to subject any future plan (e.g. masterplan) or project arising from the Plan likely to impact on Natura 2000 or European Sites (SACs, SPAs), whether directly, indirectly or in combination with other plans or projects, to an appropriate assessment in order to inform the decision making process.
HP4	It is the policy of the Council to have regard to the Convention Biological Diversity and support the implementation of the National Heritage and Biodiversity Plan; the County Heritage Plan and Local Biodiversity Action Plan and to encourage the 'halt biodiversity loss by 2010 – and beyond' campaign in accordance with the 2006 EU Biodiversity Action Plan
HP5	It is the policy of the Council to prevent the spread of, aquatic and terrestrial, invasive and alien invasive species
Objective	
HO1	It is an objective of the Council to protect the archaeological heritage and especially sites identified in the Record of Monuments and Places, National Monuments in the ownership or guardianship of the State and National Monuments that are subject to Preservation Orders and to safeguard the integrity of the archaeological sites in their setting.
HO2	It is an objective of the Council to require that planning applications within the zones of archaeological potential as outlined on the Record of Monuments and Places include an archaeological assessment set out in accordance with the requirements of the Mayo County Council. Any archaeological assessment shall also have regard to natural heritage legislation.
HO3	It is an objective of the Council to require that all significant planning applications (i.e. development of lands on 0.5ha. or more and 1km. or more in length) include an appropriate archaeological assessment in accordance with the requirements of the Council. Any archaeological assessment shall also have regard to natural heritage legislation
HO4	It is an objective of the Council to require an ecological assessment, undertaken by a suitably qualified person, to inform decision making of all proposed significant planning applications, where it is considered that the proposed development may have an adverse impact on the environment of designated site.
HO5	It is an objective of the Council to ensure that any development proposals, alone or in combination with other developments, do not have an adverse impact on any Natura 2000 site in the wider area. The Council may require Appropriate Assessment in accordance with Article 6(3) of the EU Habitats Directive
HO6	It is an objective of the Council to continue to protect all watercourses, in this regard any proposed development adjacent or close to watercourses shall be carefully assessed to ensure that there is no adverse impact to the watercourse or to any other water body into which it flows.
HO7	It is an objective of the Council to implement the relevant policies and objectives outlined in the Western River Basin District Management Plan.
HO8	It is an objective of the Council to prevent deterioration of water bodies of good status and to improve those water bodies to status of at least good in accordance with national and EU legislation, within the Plan area
HO9	It is an objective of the Council to comply with the EU Floods Directive 2007/60/EC

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	and S.I. No. 122/2010: European Communities (Assessment and Management of Flood Risks) Regulations
HO10	It is an objective of the Council to protect areas prone to flooding within the LAP area from inappropriate development and to ensure that all new developments do not result in an increased risk of flooding within the site or on other lands. All new development proposals within or close to flood risk areas shall submit a flood risk assessment which should incorporate flood protection and mitigation measures, as appropriate
HO11	It is an objective of the Council to ensure that any proposed development is absorbed into the surrounding landscape so that it does not impinge in any significant way upon the character, integrity or uniformity of the landscape and that all development proposals consider that aspects of access, permeability and open space respond to the key landforms features and rural character of the LAP area.
HO12	It is an objective of the Council to promote the retention, where possible, of all features of historic, architectural or natural interest, such as stone walls, hedgerows and/or bridges or other features, as appropriate, within the LAP area.

Policy	Economic Activities
EP1	It is the policy of the Council to promote and support the development of the LAP area as an attractive location for economic investment as well as a desirable place to work and visit
Objective	
EO1	It is an objective of the Council to support the development of appropriate airport related activities within the LAP area in accordance with the land use objectives set out in Section 4.
EO2	It is an objective of the Council to support the location of tourist related activities, where it is demonstrated that such an activity would be appropriate to an airport location
EO3	It is an objective of the Council to protect the core function of LAP area as an airport and that future economic development is compatible with this aim.

3.3 Relationship of the draft IWAK LAP with other relevant Plans or Programmes

The draft IWAK Local Area Plan is at the lower lever of a hierarchy of land use and spatial plans which include the National Development Plan 2007-2013; the National Spatial Strategy 2002-2020; the National Climate Change Strategy 2007-2012; the Regional Planning Guidelines 2010-2020 for the West Region; and the Mayo County Development Plan 2008-2014.

The preparation and implementation of the Local Area Plan is also guided by a number of Planning Guidance Documents, mostly prepared by the Department of Environment, Heritage and Local Government, and legislation.

The hierarchy of land-use plans means that certain strategic issues in the Plan may already have been determined at national, regional and county level. However, such issues will normally require to be dealt with in greater detail in the LAP.

In accordance with SEA legislation this Environmental Report includes information that may reasonably be required taking into account a number of factors, one of which is the extent to which certain matters are more appropriately assessed at Local Area Plan level in order to avoid duplication of environmental assessment.

The National Development Plan 2007 – 2013 (NDP)

The National Development Plan 2007 – 2013 sets out Ireland's future as an enlarged urbanised society within a defined urban hierarchy. The NDP aims to promote balanced regional development, social inclusion and enhanced economic competitiveness. The NDP provides general policies for infrastructure development for all Regions of Ireland. The NDP acknowledges the role of regional airports.

“Regional airports play an important role in improving access to more remote areas of the Country particularly for business and tourist interests. Within the BMW Region, the contribution of the four regional airports (Donegal, Galway, Knock and Sligo) to improving tourism and business access to the Region can be enhanced by upgrading of the existing infrastructure”.

The National Spatial Strategy 2002 – 2020 (NSS)

The National Spatial Strategy outlines an overall National approach to spatial planning. Its aim is to facilitate balanced regional development throughout the Country. In Mayo, the NSS identifies the towns of Ballina and Castlebar as a linked hub, the aim of which is to complement the nearby gateways of Galway and Sligo, whilst also providing services to its associated catchments.

The NSS highlights Ireland West Airport Knock (IWAK) in an International Spatial Context with links to International Air Hubs (London) and reinforcing its importance within the Regional context with links to Dublin. The NSS outlines the importance of IWAK due to its proximity to the hub towns of Castlebar, Ballina and Tuam and its central location between the Gateways of Sligo and Galway.

“Castlebar, Ballina and Tuam, as hubs, will perform important roles within the National structure at the regional and county level. Critical factors will include improvements in regional accessibility through advanced communications, infrastructure, by road and public transport and through the regional airport at Knock”

The NSS highlights that appropriate infrastructure may need to be provided ahead of actual need in order to readdress existing imbalances of development between the East and West of the Country and states that

“Knock airport should be developed as an industrial hub for East Mayo”

Regional Planning Guidelines for the West Region 2010-2022

The Regional Planning Guidelines for the West Region 2010 – 2022 (RPG's) set out a framework for the long term strategic development of counties Mayo, Galway and Roscommon (West Region). The Guidelines aim to deliver balanced regional development in the Region with specific objectives to stimulate social, economic and cultural development.

Specifically in relation to Ireland West Airport Knock the guidelines outline a strategic role for IWAK in the following terms:

The strategic importance of IWAK as an amenity and an important transportation link to facilitate the growth and connectivity to the West Region

To develop hubs for industry and commerce adjacent to or in the region around the airport

To support the designation of a Strategic Development Zone at IWAK

To facilitate the appropriate and sustainable development of industrial/commercial lands and structures adjacent or close to the airport.

Mayo County Development Plan 2008-2014

The Mayo County development Plan was adopted in 2008 and sets out a policy framework for development within the County until 2014. The Plan sets out a long term vision for the County to develop by employing the principles of sustainable development and social partnership. The Plan was varied in 2011 to incorporate a Core Strategy, the purpose of which is to set out an evidence based strategy for spatial development of the County and to demonstrate that the development objectives in the development plan are consistent, as far as practicable, with national and regional development objectives set out in the NSS and RPGs. A central component of the Core Strategy is the County Settlement Strategy based on a settlement hierarchy which is consistent with the spatial structure, aims and objectives of the NSS and RPGs. The

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development of the strategic role of IWAK as a driver of economic development supports the aims, policies and objective of the Mayo County Development Plan 2008-2014.

The County Development Plan specifically identifies the future growth of IWAK through the following aims, polices and objectives.

Development Aims	Policies /Objectives
Transportation and Infrastructure <ul style="list-style-type: none"> To support and promote the development of the transportation assets of the County, including Ireland West International Airport Knock, and the strategic road and rail corridors as critical elements of the intra/inter regional linkages. County Development Strategy <ul style="list-style-type: none"> The sub-regional role of Ballina / Castlebar as a linked hub development hub and Westport as its natural extension necessitate the provision of appropriate levels of physical and social infrastructure including: <ul style="list-style-type: none"> Public transport connections between the hub towns, Westport and Ireland West Airport Knock Improvement and development of Ireland West Airport Knock 	Policies P/TI-A 1 It is the policy of the council to support the development of Ireland West Airport Knock in accordance with the principles of proper planning and sustainable development. Objectives O/TI-A 1 It is an objective of the Council to request the Minister of the Environment, Heritage and Local Government to designate the area around Ireland West Airport Knock as a Strategic Development Zone. O/TI-A 2 It is an objective of the Council to prepare a Public Safety Zone Map for Ireland West Airport Knock O/TI-A 3 It is an objective of the council to create and enforce an exclusionary zone of a 13km radius of Ireland West Airport Knock. The 13km exclusionary zone shall define a volume of airspace, by means of Obstacle Limitation Surfaces, above which no new objects shall be permitted. The 13km exclusionary zone shall define an area within which no new conventional or residual landfills shall be constructed. O/TI-RL 1 It is an objective of the Council to actively seek and support the reinstatement of the western Rail Corridor and associated railway stations, including the section from Claremorris to Collooney, as a strategic transport corridor linking Mayo with Sligo, Galway and Limerick, emphasising the potential link to Ireland West International Airport from Swinford, Kiltimagh, Charlestown or whichever route is deemed the most suitable for such a link.

Other policy documents at the county level which have informed the LAP include:

Mayo County Housing Strategy 2008	Mayo County Retail Strategy 2008
The IWAK LAP will not impact on the provision of housing supply in the County as it is not proposed to provide for residential uses in the LAP area. The policies and objectives of the Mayo County Development Plan will continue to apply to lands outside of the LAP boundary.	The Retail Strategy outlines retail policies for the County which includes strengthening the role of the linked hub towns of Castlebar and Ballina through the support of the Second Tier Towns identified in the County Development Plan. The future development of IWAK is key to the future development of Mayo in terms of the strategic importance of the Airport as an amenity and important transportation hub to facilitate the growth and connectivity to the West Region. Therefore the implementation of the IWAK LAP indirectly supports the overall objectives of the Retail Strategy.
Mayo County Development Board 10-year Integrated Strategy	
“Maigh Eo Le Cheile le Neart – Mayo County Development Board 10-year Integrated Strategy” sets out a ten year strategy for economic, social and cultural development of the County. The Strategy highlights the importance of Ireland West International Airport and stresses the need for “the further development of Knock Airport, including the development of land for industrial purposes”	

National Planning Guidelines

There are a number of relevant National Planning Guidelines which have guided the strategy and objectives set out in this Local Area Plan. These include, but are not limited to, the following:

- Architectural Heritage Protection Guidelines - Guidelines for Planning Authorities.
- Implementing Regional Planning Guidelines - best practice guidelines (2005)
- Landscape and Landscape Assessment (2000)
- Development Plans Guidelines - June 2007
- Retail Planning Guidelines
- Implementation of Strategic Environmental Assessment Directive: Assessment of the Effects of Certain Plans and Programmes on the Environment. (2004)
- Appropriate assessment of Plans and Projects in Ireland: Guidance for Planning Authorities (2009)
- The Planning System and Flood Risk Management - Guidelines for Local Authorities (Nov 09)

3.4 Legislative Context

A Local Area Plan is made under the Planning & Development Act (as amended) and a number of Regulations including the Local Government (Planning & Development) Regulations and Planning & Development (SEA) Regulations. In addition to the above strategic policy framework documents, the LAP and SEA have had regard to the following environmental legislation:

- The Wildlife Act, 1976 and the Wildlife Amendment Act, 2000
- EU Birds Directive (79/409/EEC) Council Directive 79/409/EEC
- EU Habitats Directive (92/43/EEC)
- The Flora (Protection) Order 1999
- UN Convention of Biological Diversity 1992 (ratified 1996)
- Convention on Wetlands of International Importance (Ramsar Convention 1971)
- The Local Government Water Pollution Acts 1977 as amended
- Water Services Act 2007
- The Directive 2000/60/EC establishing a framework for Community action in the field of water policy (also known as the Water Framework Directive)
- S.I. No. 9 of 2010 – European Communities Environmental Objectives (Groundwater) Regulations 2010
- European Communities (Water Policy) Regulations, 2003
- European Communities Environmental Objectives (Surface Waters) Regulations, 2009
- European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations, 2009
- European Communities (Quality of Salmonid Waters) Regulations, 1988
- Urban Waste Water Treatment Regulations, 2001
- Waste Water Discharge (Authorisation) Regulations, 2007
- Air Pollution Act 1987 as amended.
- The Environment Protection Agency Act 1992 (Ambient Air Quality Assessment and Management) Regulations 1999 and the Air Quality Standards Regulations 2002
- Protection of the Environment Act 2003
- Waste water discharge (Authorisation) Regulations 2007
- Dangerous Substances Regulations (S.I. No. 12 of 2001)
- Environmental Protection Agency Act 1992
- Environmental Noise Regulations 2006
- The Waste Management (Amendment) Act, 2000
- Waste Management (Collection Permits) Regulations S.I.820 of 2007

- Waste Management (Collection Permits) Amendment Regulations S.I. no. 87 of 2008
- Waste Management (Facility Permit & Registration) Regulations 2007
- Waste Management (Facility Permit & Registration) (Amendment) Regulations 2008
- Waste Management (Movement of Hazardous Waste Regulations 1998 -2000
- Waste Management (Prohibition of Waste Disposal by Burning) Regulations 2009
- The European Directive on the Assessment and Management of Flood Risks (2007/60/EC of 23 October 2007) (The Floods Directive)
- EIA Directive (85/337/EEC as amended by 97/11/EC and 2003/35/EC) EIA Directive (85/337/EEC as amended by 97/11/EC and 2003/35/EC)
- The Heritage Act 1995
- European Convention on Protection of the Archaeological Heritage 1992 (Also known as the Valletta Convention)
- Convention for the Protection of the Architectural Heritage of Europe (Granada Convention), European Treaty Series no.121, 1985
- The Venice Charter 1964
- The Washington Charter 1987
- The Burra Charter 1979/ 1981/ 1988
- The Nara Document on Authenticity 1994
- The European Landscape Convention
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999
- National Cultural Institutions Act 1997
- The National Monuments Acts 1930 to 2004
- The Kyoto Protocol Flexible Mechanisms Regulations 2006 (S.I. 244 of 2006)
- Emissions Trading Directive (2003/87/EC)
- SI 437 of 2004: European Communities (Greenhouse gas emissions Trading) Regulations 2004
- SI 706 of 2005: European Communities (Greenhouse gas emissions Trading) Amendment Regulations 2005

Section 4: The Baseline Environment.

4.1 Introduction

In order to assess the environmental effects of the draft Local Area Plan, it is necessary to understand the current state of the environment (the baseline environment) of the LAP area. The baseline information outlines the environmental context within which the LAP will operate and the opportunities, constraints and targets that this context puts on the LAP. Current environmental issues likely to be significantly affected by the implementation of the LAP are identified at this stage of the process in order to more accurately assess potential future impacts. This section describes the environmental baseline in terms of the following environmental components; biodiversity, flora and fauna; population and human health; soils and geology; water; air quality and climatic factors; material assets; cultural heritage and landscape. This section also describes the interrelationship between these components and the likely evolution of each environmental component without the implementation of the LAP.

Ireland West International Airport (IWAK) is located in the townland of Kilgarriff West and is centrally located in the Region along the National Primary Route (N17 Galway / Sligo) and 7 km for the National Primary Road (N5) which links Mayo to Dublin. The location is 55km from the Gateway Town of Sligo and 90km from the Gateway town of Galway. Its location is pivotal in the Mayo context as it is 50km from the linked Hub of Ballina / Castlebar.

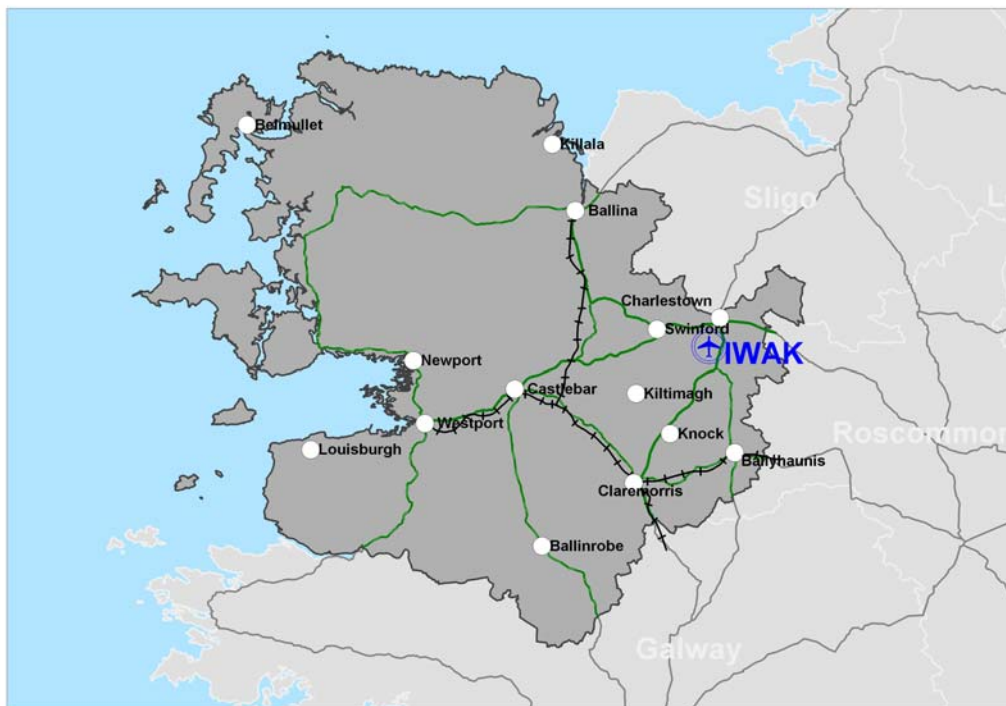


Fig 4.1 Location of IWAK

4.2 Biodiversity, Flora and Fauna

4.2.1 Introduction

County Mayo has a particularly rich and diverse natural heritage. Mountains and upland areas are concentrated in the north and west of the county, which is characterised by a mosaic of peatland, heath and forestry plantations. More fertile farmland is found in the low-lying and undulating landscapes of east Mayo. There are several large lakes in the county and numerous medium to small lakes. Lough Conn and Mask are among the largest lakes in the country. Mayo is drained by an extensive network of rivers and streams. The main rivers of the county include the Moy, Deel, Owenmore, Owenduff, Newport, Bunowen, and the Erriff. The long and varied Mayo coastline contains a wide range of coastal habitats from cliffs to estuaries, mudflats, machair, sandy beaches and offshore islands. The richness and diversity of Mayo's habitats and species contribute to the character of the landscape. Biodiversity can be defined as the variability among living organisms and the interactions between them. It can include diversity within species, between species and of ecosystems. Almost a third of County Mayo's land area is designated for the protection and conservation of flora and fauna. This high percentage reflects the international and national significance of Mayo's wealth of natural heritage.

Candidate Special Areas of Conservation (cSACs) and Special Protection Areas (SPAs)

There are 18 sites in County Mayo designated and protected under the Birds Directive (2009/147/EC) as Special Protection Areas (SPAs) due to their conservation value for birds of importance in the European Union. There are 52 candidate Special Areas of Conservation (SACs) in County Mayo, designated and protected under the Habitats Directive 1992 (92/43/EEC) due to their conservation value for habitats and species of importance in the European Union. SPAs and SACs form Natura 2000, a network of protected areas throughout the EU.

Natural Heritage Areas

There are 15 Natural Heritage Areas (NHAs) and 48 proposed NHAs in County Mayo. NHAs are established and protected under the Wildlife Acts, 1976-2000, due to their conservation value for ecological and/or geological/geomorphological heritage in a national context.

4.2.2 Designated Sites at IWAK

There are no designated sites within the proposed IWAK LAP area. However, the River Moy cSAC is located approximately 2km to the north and south of the study area. Two proposed NHAs are located within 4km of the plan area, namely Killaturly Turlough pNHA and Lough Gower pNHA.

Descriptions of the sites are given below:

Table 4.1
Designated Sites (candidate Special Areas of Conservation (cSAC) and proposed National Heritage Areas (pNHA)) within a 5km radius the IWAK LAP study area

Designation	Site Code	Site Name
cSAC	002298	Moy Complex
pNHA	000511	Killaturly Turlough
pNHA	000523	Lough Gower

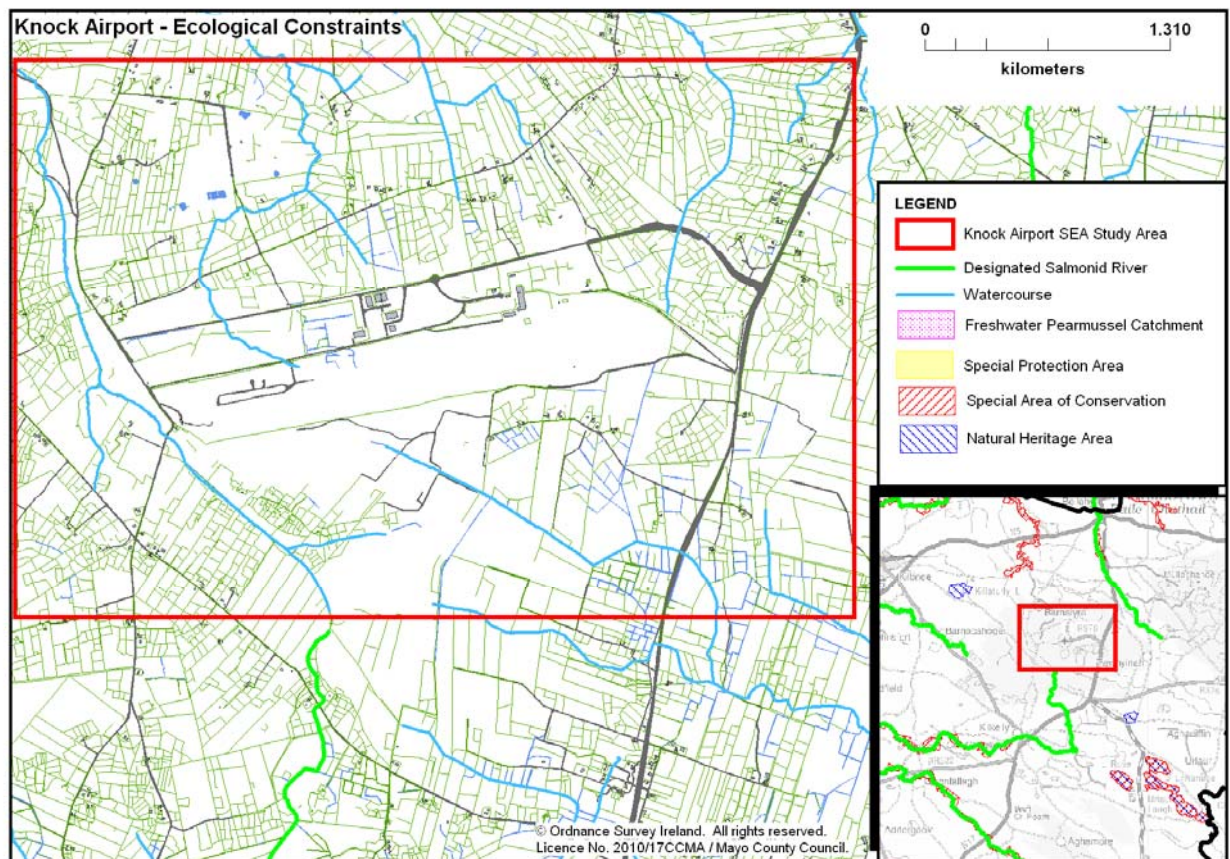


Fig. 4.2 Map showing sites designated for nature conservation in vicinity of LAP area.

Killaturley Turlough Natural Heritage Area: Site Code NHA 000511

Killaturley Turlough, located 4.9km to the northwest of the LAP area, is a permanent lake set in a hollow between moraines and surrounded by bog. The main water source for the basin seems to be a swallow hole at the eastern end and a stream which flows from the southeast. Where peat has been largely removed, there are reeds (*Phragmites australis*) and sedges (*Carex diandra* and *C. serotina*). Towards the southwest, this community merges into a denser reedbed (*Phragmites australis* and *Typha latifolia*), which is surrounded by rushy fields and patches of peat moss (*Sphagnum* spp). Snipe and water rail nest in the area, while other water fowl are often present. Despite the small area of strictly Turlough vegetation, the site is of value as a composite wetland and therefore warrants NHA status.

Lough Gower Natural Heritage Area: Site Code NHA 000523

Lough Gower NHA is located 4.1km to the southeast of the LAP area. This small lake lies in the catchment of the Boyle River. The surrounding land is mostly flat or gently undulating bog or improved pasture. The lake bottom is sandy and colonised by aquatic mosses (*Drepanocladus* spp.). The lakewater is a brownish colour, stained by peat and mineral substances, and shows no sign of eutrophication. At its western end, the open water is colonized by swamp vegetation. Floating Bur-Reed (*Sparganium angustifolium*) is of note in that it is not commonly found in low-lying areas such as this. The northern lakeshore is bordered by sloping grassland, which is partially colonized by Gorse (*Ulex europaeus*). Grassland species include Yorkshire fog (*Holcus lanatus*) and Sweet vernal grass (*Anthoxanthum odoratum*). Towards the top of the slope this grades into wet heath, with abundant sphagnum mosses and Ling heather (*Calluna vulgaris*). South of the lake are fields, which have been heavily improved for agricultural use. Perennial rye grass (*Lolium perenne*) is abundant in these grasslands. Lough Gower is of importance as a lake of low nutrient status, which shows no sign of eutrophication. Such lakes are uncommon in low-lying agricultural areas such as this. In addition, it is fringed by semi-natural reed bed/swamp vegetation.

River Moy candidate Special Area of Conservation: Site Code cSAC 002298

The River Moy SAC is located approximately 4.5km to the northwest, northeast and southwest of the LAP. It comprises almost the entire freshwater element of the Moy and its tributaries, including both Loughs Conn and Cullin. The system drains a catchment area of 805 sq km. The site is a cSAC selected for alluvial wet woodlands and raised bog, both priority habitats on Annex 1 of the EU Habitats Directive. The site is also selected for old oak woodlands, degraded raised bog and Rhynchosporion, all habitats listed on Annex I of the Habitats Directive. The site is also selected for the following species, listed on Annex II of the Habitats Directive – Atlantic salmon, otter, Sea and Brook Lamprey and White-clawed crayfish. Within the site are a number of raised bogs, including those at Kilgariff, Gowlaun, Derrynabrock, Tawnaghbeg and Cloongoonagh. The Moy system is one of Ireland's premier waters and it also encompasses two of Ireland's best lake trout fisheries in Loughs Conn and Cullin. In addition, the site also supports many more of the mammal species occurring in Ireland. Those which are listed in the Irish Red Data Book include Pine Marten, Badger, Irish Hare, Common Frog and Daubenton's Bat.

There are a number of streams and watercourses located within the LAP area that are tributaries of rivers in the area, some of which eventually lead to the River Moy. There is potential that the LAP may impact on the conservation objectives of the protected area. Such potential impacts are highlighted in the Habitat's Directive Article 6 Appropriate Assessment of the LAP.

Along with sites designated for nature conservation, Mayo has many other areas of local ecological importance including broadleaved woodlands, scrub, hedgerows, tree lines, cutover bog and wet grassland. Many of these areas are important, helping to form wildlife corridors and ecological networks across the landscape. These corridors and networks allow animal species to move freely from one habitat to another.

4.2.3 Local Biodiversity Areas & Ecological Networks

Article 10 of the Habitats Directive recognises the importance of ecological networks as corridors and stepping stones for wildlife, including for migration, dispersal and genetic exchange of species of flora and fauna. Ecological networks are important in connecting areas of local biodiversity with each other and with nearby designated sites so as to prevent islands of habitat from being isolated entities. Ecological networks are composed of linear features, such as treelines, hedgerows and rivers/streams, which provide corridors or stepping stones for wildlife species moving within their normal range. They are particularly important for mammals, especially for bats and small birds.

The Habitats Directive requires that ecological connectivity and areas of ecological value outside the network of designated ecological sites are maintained and it recognises the need for the management of these areas through land use planning and development policies.

Mayo County Council began the process of mapping the habitats of Mayo in 2008. Habitat survey and mapping has been carried out within and around nine towns in the county and a number of Local Biodiversity Areas (LBAs) have been identified. Many LBAs correspond to sites already designated as SACs, SPAs or NHAs. Ecological corridors linking high biodiversity areas have also been identified.

4.2.4 Main Habitats of the SEA study area

Detailed habitat mapping has not been carried out for the IWAK LAP SEA study area. A CORINE land cover map of the main habitats in the area is shown in Figure 4.3. Corine Land Cover (CLC) is a map of the European environmental landscape based on interpretation of satellite images. The main habitats within the plan area, have however been identified and described as part of the Ireland West Airport Knock Cumulative EIS, and classified according to Fossitt (2000). They include cutover bog (PB4), wet grassland (GS4), wet heath (HH3), dry humid acid grassland (GS3) and improved agricultural grassland (GA1). Also present are eroding upland rivers (FW1), dry siliceous heath (HH1), exposed siliceous rock and buildings (BL3).

Currently, a relatively small proportion of the SEA study area is taken up by the existing airfield, airport terminal buildings and associated landside facilities. The airfield itself comprises the hard surfaces of runways, taxi-ways, aprons, hard stands, associated with airport developments.

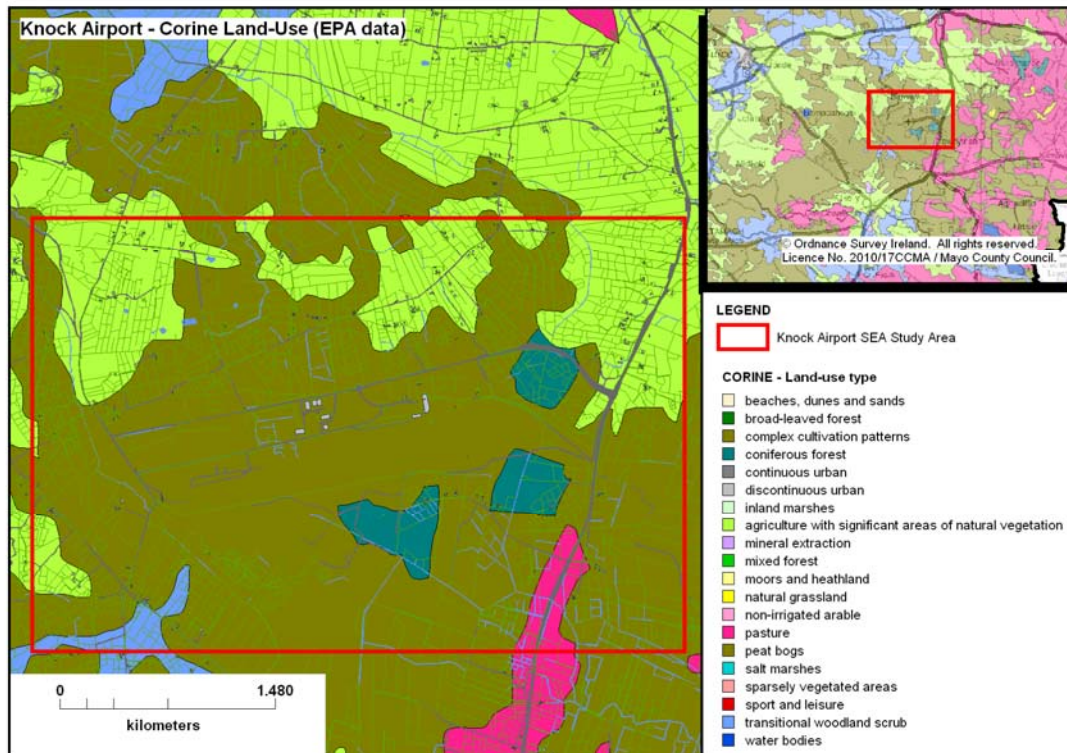


Fig. 4.3: Corine Land Cover map of IWAK and surrounding area.

A description of the main habitats and associated species is given in the Cumulative IWAK EIS, prepared by the airport authority, as follows:

A number of small fast flowing streams drain the site through the northern and southern boundaries of the LAP study area. The blanket bog habitats that surround the airport have been significantly modified by human activity, including through turf cutting, drainage and reclamation for agriculture. These drainage ditches are connected to the small streams. The streams which flow to the north and southwest are tributaries of the Sonnagh and Trimogue rivers respectively, which form part of the River Moy cSAC. Improved agricultural grassland occurs in areas where peatland around the airport has been reclaimed for agriculture, comprising a grassy sward of typical agricultural grasses, including *Lolium perenne*, *trifolium repens*, *Dactylis glomerta*, *Festuca* spp, *Holcus lanatus* and *Poa* spp. Where drainage is impeded, vegetation is dominated by *Juncus* spp.

Dry humid acid grassland occurs on shallow free draining soils on the steeper slopes of the site, forming intimate mosaics with dry heath, wet heath and cutover bog. This habitat is characterised by a short sward with tussocks of rushes (*Juncus* spp) prevailing. This habitat is degraded in areas as a result of heavy poaching by grazing cattle. The habitat exhibits a good species diversity of vascular plants, herbs, mosses and a scattering of shrubs including Hawthorn (*Crataegus monogyna*), Gorse (*Ulex europaeus*) and Heather (*Calluna vulgaris*).

Wet Grassland occurs throughout the site, generally on the lower slopes where drainage is impeded and also within the confines of the airport. This habitat occurs within the airport on the lands where excavated peat was reused within the site. This habitat is characterised by rushes (*Juncus articulatus/ acutiflorus*), sedges (*Carex* spp), Purple Moor-grass (*Molinia caerulea*), Tormentil (*Potentilla erecta*), Devil's-bit scabious (*Succisa pratensis*), Bog Asphodel (*Narthecium ossifragum*) and Heath Milkwort (*Polygala serpyllifolia*). Bog mosses (*Sphagnum* spp.) can be found in the damp

hollows throughout. This habitat often forms mosaics with wet heath and cut over bog. The Wet Grassland habitats found within the study site do not correspond to the EU Habitats Directive Annex I Habitat: 'Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinia caerulea*)' (6410).

Wet dwarf scrub heath and grassland habitats form a complex mosaic throughout the lands surrounding the airport. Wet Heath vegetation typically occurs on shallow peat, generally under 0.5 metres in depth and occurs on areas of Cutover Bog PB4. The wet heath species include Ling Heather (*Calluna vulgaris*) and Crossed-leaved Heath (*Erica tetralix*), bilberry (*Vaccinium myrtillus*), Purple Moor-grass and Cotton grass (*Eriophorum vaginatum*). Mosses such as *Rhytidiadelphus loreus*, *Hylocomium splendens* and *Polytrichum commune* are common, with Sphagnum species and Star Sedge (*Carex echinata*) occurring in the flushed areas. Wet heath corresponds to the Annex 1 habitat 'northern Atlantic wet heaths with *Erica tetralix* (4010)'. This vegetation type occurs throughout the site and is considered to be of moderate conservation value.

Turf banks occur throughout the peatlands surrounding the airport. Bare banks are still evident where turbarry harvesting of peat is ongoing. The areas of modified Upland Blanket Bog habitat PB2, that have been cut have re-vegetated with varying assemblages of species, depending on hydrology, depth of peat remaining, nature of the peat and underlying substratum. The peat banks as a result of natural succession have been colonised with heath vegetation. However, the wetter hollows are usually dominated by Deer Grass (*Trichophorum cespitosum*), Bog Cotton Grasses (*Eriophorum angustifolium*) and Bog Asphodel (*Narthecium ossifragum*). The Sphagnum species occur throughout. The annexed habitat 'depressions on peat substrates of the Rhynchosporion (7150)' can occur in pockets on cutover bog. However this habitat type is more commonly associated with cutover raised bog rather than blanket bog. There is no evidence of this occurring at the site of interest.

No rare or protected plant species were identified within the study area.

Mammals

There were no mature trees within the study site which would provide suitable roosting sites for local bat populations. However, neighbouring old buildings, bridges and mature woodlands on the banks of the Sonnagh River may provide suitable roosting sites. The stream valleys would also provide an adequate food supply of insects. Daubenton's Bats have been recorded within the River Moy catchment, and there may be a possibility of bat activity in the area. A number of hares were observed in the heathlands to the south of the study area on the day the survey was carried out.

Badger setts were not located within the study site. Badger setts may be found in the hedgerows and farmland of the surrounding landscape and the habitats within the SEA study area site may provide badgers with suitable foraging habitat.

No evidence of otter was identified during the survey. Otter is listed in Annex II and IV of the EU Habitats Directive and as a 'protected fauna species' in Annex III of Bern Convention. The Irish population is also listed in the 'Irish Red Data Book 2: Vertebrates' (Whilde, 1993) as being of international importance. No evidence of otter was found on-site. The presence of adequate supplies of fish is the critical factor determining the presence of this species. Otter have been recorded in the River Moy catchment, therefore the tributaries that drain the site may support this species.

The Acid Grassland (GS3), Wet Grassland (GS4), Wet Heath (HH3) and Cutover Bog (PB4) habitats may provide suitable habitat for a range of butterfly species including the Wood White (*Leptidea sinapis*), Green-Veined White (*Pieris napi*), Orange Tip (*Anthocharis cardamines*), Peacock (*Inachis io*), Ringlet (*Aphantopus hyperantus*) and Meadow Brown (*Maniola jurtina*). The Marsh Fritillary (*Euphydryas aurinia*) was also recorded in the 10X10km square relevant to the SEA study area and is considered one of the most threatened species in Europe and is the

only Irish butterfly species protected under the EU Habitats Directive. Devil's-bit Scabious, a favoured food of the Marsh Fritillary was identified in the heath and acid grassland habitats surrounding the site. There was no evidence of the species during the site visit; the species should be surveyed again at a more suitable time of year, between March and October.

Birds

Few birds were recorded on the day of the field visit, particularly within the confines of the airport. This is a result of the airport's bird control measures, which comprises a gun shot being sounded intermittently. Birds seen and heard in the hinterland of the airport include common farmland birds including; Jackdaw (*Corvus monedula*), Chaffinch (*Fringilla coelebs*), Rook, Meadow Pipit, Lapwing (*Vanellus vanellus*) and Snipe (*Gallinago gallinago*) have also been recorded in the heathlands surrounding the airport. The wooded ravines of the Sonnagh River and agricultural land surrounding the site may support good number of common and farmland bird species. Old farm buildings can also provide valuable roosting sites for bird species. Bird's nests, possibly Swallow (*Hirundo rustica*), were found within the farm buildings to the south west of the airport.

4.2.5 Existing Environmental Problems relating to Bio-diversity, Flora and Fauna

While Mayo has a rich and diverse natural heritage, many of our habitats and species are however under threat. The main threats to biodiversity in the county are habitat destruction and fragmentation, land clearance and development pressure, poorly-managed commercial forestry, drainage, pollution, invasive alien plant and animal species and climate change.

The heath and bogland habitats within the study area are sensitive to changing conditions or influences. The area of cutover bog directly north of the existing Airport Terminal and car park has been extensively drained and is vulnerable to scrub encroachment. It is also severed from similar habitats by a series of access roads, which have also contributed to the drying out of the bog. Other areas of bog habitats have been subject to extensive turbary activities and some grazing pressure.

In relation to IWAK or indeed any airport, one of the environmental problems is the effect of the operation of the airport on birds in the area and the potential for bird strikes.

4.2.6 Evolution of Bio-diversity, Flora and Fauna in the absence of a LAP for IWAK

Currently, the area consists of a functioning airport, surrounded by habitats that have been subject to varying degrees of disturbance. The habitats comprise a mosaic of cutover bog, wet heath and grassland habitats. Any future proposed developments at the airport would have to have regard to the policies and objectives of the County Development Plan and current national and EU legislation pertaining to the protection of biodiversity.

In the absence of a LAP it is likely that any development at the airport would take place in an ad hoc piecemeal manner. Without an overall habitat/landscape strategy for the area, development could have a negative impact on biodiversity, including ecological connectivity, in the area. Applications likely to impact on designated sites would be subject to Appropriate Assessment under Article 6(3) and 6(4) of the Habitats Directive.

Population Change

The population of Ireland in 2006 was 4,234,925 persons compared with 3,917,203 persons in 2002, which represents an increase of 8% in four years. The population of Mayo in 2006 was 123,839 persons, compared with 117,446 persons in 2002. Despite the population growth recorded in the County between 2002 and 2006, Mayo's share of the West Region population continued to decline - from 31% in 2002 to 30% in 2006. The Regional Planning Guidelines for the West 2010-2022 set out population targets for Mayo of 143,640 for 2016, which is 30% share in the West Regions pollution, and 150,800 in 2022, which is 29% share of the West Regions population.

The population changes for the local catchment area and the wider catchment area are illustrated in Table 4.2

Table 4.2
Population at State, County, and Catchment Areas between 2002 – 2006, 2011

Area	Total Population		% Change	Population	% Change
	2002	2006		2011	
State	3,917,203	4,239,848	+8%	4,581,269	+8.1%
Mayo	117,446	123,839	+5%	130,552	+5.4%
Local Catchment Area	20,862	22,966	+9%	not available	
Wider Catchment Area	28,730	30,695	+6%	not available	

Source: Census of Population 2002 and 2006, 2011 Preliminary Results

The population growth rate for the local catchment area is slightly greater than the national rate but for the wider catchment area the growth rate is closer than that of the County.

Age Profile

The Age Profile for the State, Mayo and the Catchment Areas are illustrated in Table 4.3

Table 4.3
Age Profile for State, County and Catchment Areas 2006

Area	Age Cohort					Dependent 0-14 & 65+	Working Age 15-64
	0-14	15-24	25-44	45-64	65+		
State	20%	15%	32%	22%	11%	31%	69%
Mayo	21%	13%	27%	25%	14%	34%	66%
Local Catchment Area	20%	13%	27%	23%	17%	37%	63%
Wider Catchment Area	19%	15%	30%	22%	14%	34%	66%

Source: Census of Population 2006

The figures indicate that the dependent age cohort (0-14 and 65+) is lower in the state than in the local catchment area around the airport. The dependent age cohort in the wider catchment area is less than in the local catchment area and is the same as the County. The dependency age cohort is more pronounced in the local catchment area at 37%. The working age population of the local catchment area is lower than the wider catchment area and the County as a whole.

Travel and Distance to Work

The 2006 census of population gives an estimate for travelling to work for each Electoral Division. Taking each of the towns in the local catchment and wider catchment area and approximating the distance from these towns to the airport, a percentage of the working

population travelling at distances equal to and greater than the distance to the airport can be established. The airport area includes the Electoral Divisions of Sonnagh, Kilbeagh, Urlar and Kilkelly, which includes the town of Charlestown and the village of Kilkelly.

Table 4.4
Percentage of working peoples distance travel to work for each of the catchment towns

Area	Distance to Work (km)							
	0	1	2-4	4-9	10-14	15-24	25-49	50+
Airport Area	1%	7%	13%	22%	16%	14%	14%	12%
Charlestown	1%	15%	18%	21%	12%	11%	14%	8%
Swinford	1%	20%	29%	10%	7%	8%	16%	8%
Knock	1%	12%	16%	21%	20%	11%	13%	5%
Kiltimagh	1%	33%	19%	8%	7%	11%	15%	6%
Ballyhaunis	1%	30%	30%	13%	7%	9%	6%	4%
Tubercurry	1%	25%	21%	6%	4%	8%	31%	4%
Ballaghaderreen	1%	36%	28%	8%	4%	8%	31%	4%
Castlerea	3%	28%	27%	10%	4%	5%	14%	9%
Claremorris	1%	18%	35%	10%	5%	9%	15%	8%
Castlebar	1%	23%	44%	9%	3%	7%	75	6%
Ballina	1%	15%	42%	11%	7%	4%	6%	6%
Boyle	1%	30%	28%	5%	5%	11%	15%	5%
Strokestown	2%	22%	23%	8%	9%	21%	10%	5%
Roscommon	1%	27%	38%	9%	5%	4%	12%	5%
Carrick on Shannon	1%	27%	29%	11%	8%	9%	8%	7%

Source: Census of Population 2006

Taking the above details and the average distance from each area to the airport, the percentage of people travelling a greater distance to work than to the airport can be calculated. Table 4.5 shows the percentage of worker travelling a distance to work great than the approximate distance to the airport.

Table 4.5
Approx distance to airport and % of people travelling a greater distance to work.

Area	Approx distance to airport (km)	% of workers travelling a greater distance to work than the distance to the airport
Airport Area	9	56%
Charlestown	9	45%
Swinford	19	24%
Knock	20	18%
Kiltimagh	20	21%
Ballyhaunis	20	10%
Tubercurry	20	35%
Ballaghaderreen	23	17%
Castlerea	25	23%
Claremorris	30	23%
Castlebar	46	6%

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Ballina	48	6%
Boyle	52	5%
Strokestown	62	6%
Roscommon	69	5%
Carrick on Shannon	69	7%

Employment

The 2006 Census of Population was examined to determine trends in relation to employment including the number of persons at work and the sectoral composition of the population based upon principal economic status.

Table 4.6
Employment levels in 2006

Area	Employment Levels (2006)
State	1,930,042
Mayo	52277
Local Catchment Area	4495
Wider Catchment Area	6661

Source: Census of Population 2006

Table 4.7
Unemployment figures at October 2010 by social welfare office within the catchment areas.

Area	Live Register Figure October 2010
State	429,553
Mayo	12,520
Local Catchment Area	
Swinford	1,587
Tubercurry	892
Castlerea	1,738
Claremorris	1,302
Wider Catchment Area	
Castlebar	2,332
Ballina	3,089
Boyle	1,000
Roscommon	1,196
Carrick On Shannon	2,648

Souse: CSO website

Finally principle occupations give an indication of the sector that the population of the areas are engaged in. The CSO classifications are as follows:

- A** Farming, fishing and forestry
- B** Other Agricultural workers
- C** Manufacturing workers
- D** Building and Construction workers
- E** Clerical, office and office workers
- F** Administrative and government workers
- G** Transport workers
- H** Sales workers
- I** Professional workers

J Services workers
K Other workers.

Table 4.8
Principle Occupation

Area	A	B	C	D	E	F	G	H	I	J	K
State	4%	1%	13%	10%	10%	5%	6%	10%	18%	12%	12%
Mayo	8%	1%	14%	12%	7%	6%	5%	12%	15%	12%	9%
Local Catchment	4%	1%	16%	14%	7%	6%	5%	13%	13%	12%	8%
Wider Catchment	2%	0%	12%	12%	8%	8%	5%	16%	16%	15%	7%

Source: Census of Population 2006

On a county level, professional workers are the predominant employment category, with manufacturing, constructions, sales and services s making up the remaining employment categories. In the local catchment area it is the manufacturing and construction workers that are predominant with sales, professional and service workers being the predominant employment category in the wider catchment area.

4.3.2 Human Health

Human health has the potential to be impacted by environmental factors including water, soil and air. These factors are examined in greater detail under the relevant environmental topics of this environmental report. In terms of human health, public safety and noise are important considerations in relation to airport activities. Public Safety Zones (PSZs) are used to protect the public on the ground from the small but real possibility that an aircraft might crash. Noise contour maps are used to determine effects of aircraft noise, particularly during take off and landing procedures.

Public Safety Zones

Public Safety Zones (PSZs) are used to protect the public on the ground from the small, but real possibility that an aircraft might crash. Public Safety Zones are used to prevent inappropriate uses of land where the risk to the public is greatest. These zones run parallel to the runway with triangular sections tapering away from the end of the runways. The inner zones are located closest to the runways. The ground area located within these inner zones has the greatest likelihood of an aircraft accident occurring. The likelihood of an accident to occur in the outer public safety zones is less than the inner zones.

A report was prepared for Mayo County Council to established PSZs for Ireland West Airport Knock. The report recommends a policy that relates to permissible uses to the third party risk from the possibility of aircraft crashing near an airport. The extent of suitable Inner and Outer Public Safety Zones have been determined for IWAK (see Fig. 4.5). The Inner PSZ extends a maximum of 1325m from the runway thresholds and is never more that 96 metres wide. The Outer PSZ extend a maximum of 5647m from the runway thresholds and is never more that 261m wide. The permissible uses and restrictions relating to the PZSs are set out in Appendix 1

Noise Contour Mapping

A report was prepared for Mayo County Council to establish noise contour mapping for Ireland West Airport Knock. The report determines airborne aircraft noise contours based on existing and future aircraft traffic movements as a result of implementation of the IWAK LAP. The scope of the work includes prediction of noise contours for a 92 day summer period for scenarios based on existing and future aircraft movements. The noise contours are predicted based on actual and predicted aircraft movements using the federal Aviation Administration (FAA) Integrated Noise Model (INM) Version 7.0b aircraft noise prediction software. The contour methodology is recognised worldwide and is in accordance with the methodology used for strategic noise mapping under European Directive 2002/49/EC. The noise contour maps

are shown of Fig. 4.5 and details of implications for development proposals are set out in Appendix 1.

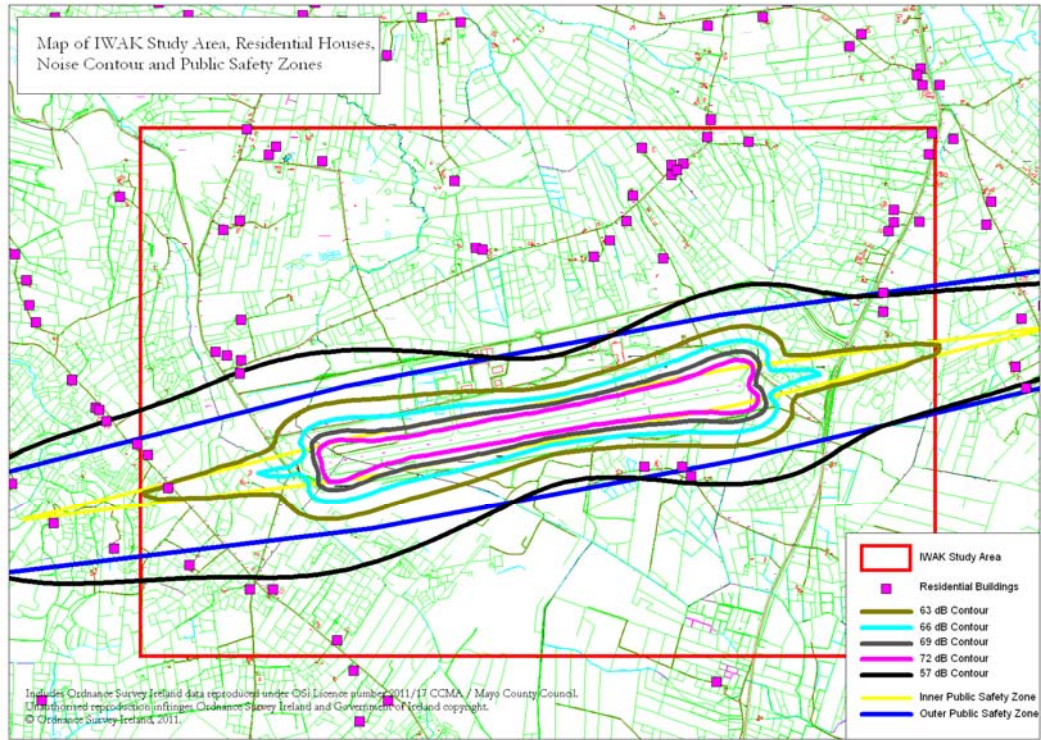


Fig 4.5: Public Safety Zones and Noise Contour Maps

4.3.3 Existing Environmental Problems relating to Population and Human Health

Incompatible land uses and the restrictions relating to PSZs and Noise Contours could cause a risk to human health. Traffic using the local road network as opposed to the National and Regional routes could also have an impact on pedestrian safety.

4.3.4 Evolution of Population and Human Health in the absence of a LAP for IWAK

It is not envisaged that population location trends would substantially change in the absence of a Local Area Plan for Ireland West Airport Knock. In the absence of the LAP, human health may be compromised by development of incompatible land uses within the vicinity of the airport. The natural expansion of the airport with an increase in traffic movements would occur haphazardly without any safeguards in place for the protection of the environment, which may impact on human health in an indirect manner.

4.4 Soils and Geology

4.4.1 Soils

Soil is the top layer of the earth's crust, formed of mineral particles, organic matter, water, air and living organisms. It is considered a non renewable natural resource, as it is formed by a complex series of processes which occur over long timescales. Soil is an extremely variable and living medium and performs many vital functions including food and other biomass production, storage, filtration and transformation of many substances including water, carbon and nitrogen. Damage to soil structure has repercussions to other environmental media and ecosystems. Although soil is not yet protected, provisions in favour of soil protection are spread across many policy areas and are usually designed to safeguard other environmental media. EU Habitats directive protecting areas of peat – raised bogs and blanket bogs are designated as Special Areas of Conservation, SAC's.

In 2006 the European Commission adopted a soil thematic strategy, which is designed to halt and reverse the process of soil degradation, ensure healthy soils for future generations and remain capable of supporting the ecosystems on which our economic activities and well being depend. (Environment fact sheet: soil protection – a new policy for the EU, European Commission 2007).

Topography

Based on the OSI 1:50,000 Discovery Series Map No. 32 series and site topography maps, the site is located on elevated terrain and falls from the southern boundary at an elevation ranging from approximately 201 m OD (metres above Ordnance Datum) along the airport entrance road to the northern boundary at approximately 189 m OD. The regional link road is raised above the northern boundary of the site at approximately 193 m OD. The majority of the area comprises heathland scrub, wet grassland and blanket bog with some areas of bedrock exposure and numerous cobbles / boulders

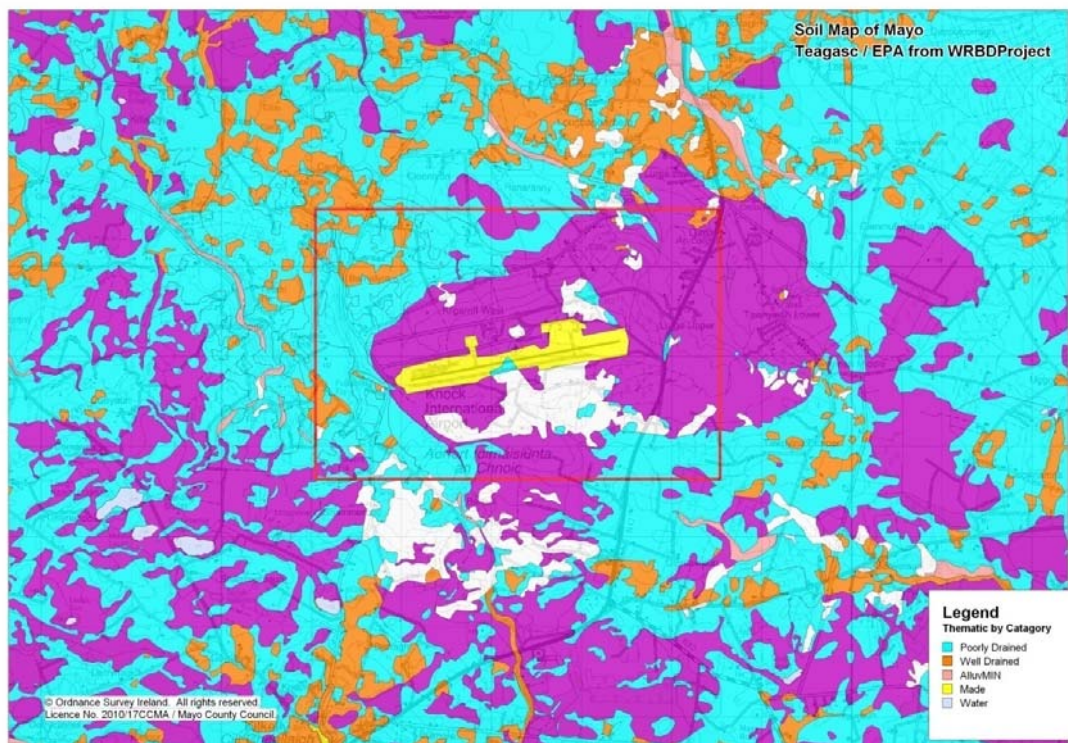


Fig 4.6 Soils: Thematic by Category

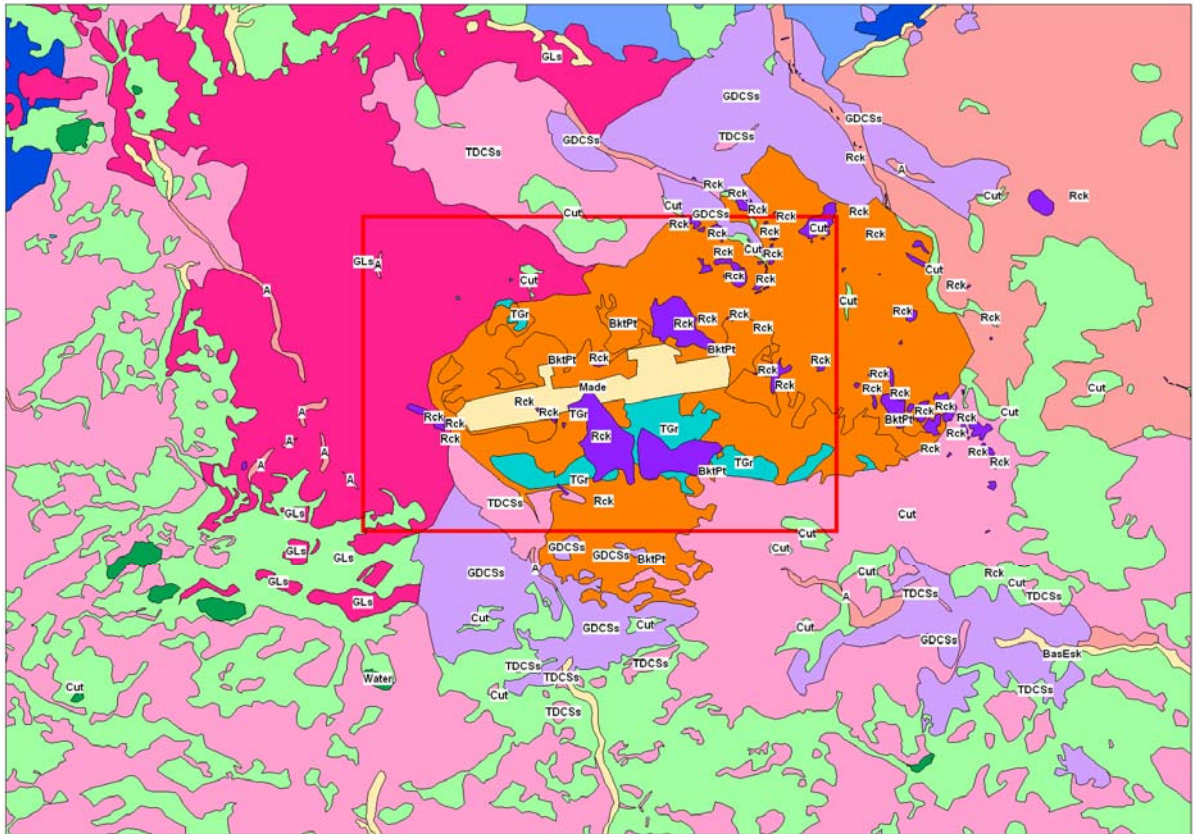


Fig 4.7 Soil Classification

The soil associated with the study area of Ireland West Airport Knock (IWAK) mainly consists of blanket peat, with areas of exposed bedrock in places throughout the blanket peat, and various types of till. The runway and associated developed areas of the airport itself are comprised of made ground. There are also areas of sandstone sands and gravels, bordering the north and south of the study area

4.4.2 Geology

The study area comprises mostly of the Ordovician volcanic sequence of the Charlestown Inlier. This sequence runs from oldest to youngest as follows: Horan Formation basalts with chert and siltstone, Carracastle Formation of andesitic volcanoclastic rocks and Tawnyinah Formation of quartz-felspar crystal tuffs and fine felsic tuffs. The Oakport Limestone formation lies to the northwest of the study area and the Boyle Sandstone formation dominates to the south of the study area. Finally there are slight occurrences of minor intrusive bodies of Caledonian Age – Feldspar Quartz Porphyry and Pyroxene Diorite.

The Sand and gravel deposits to the west and southwest are classified as a Locally Important Sand and Gravel Aquifer. The Geological Survey of Ireland have records of four wells in the study area. The source of the IWAK water scheme is located to the northeast of the study area. There are also a number of operational quarries within the vicinity.

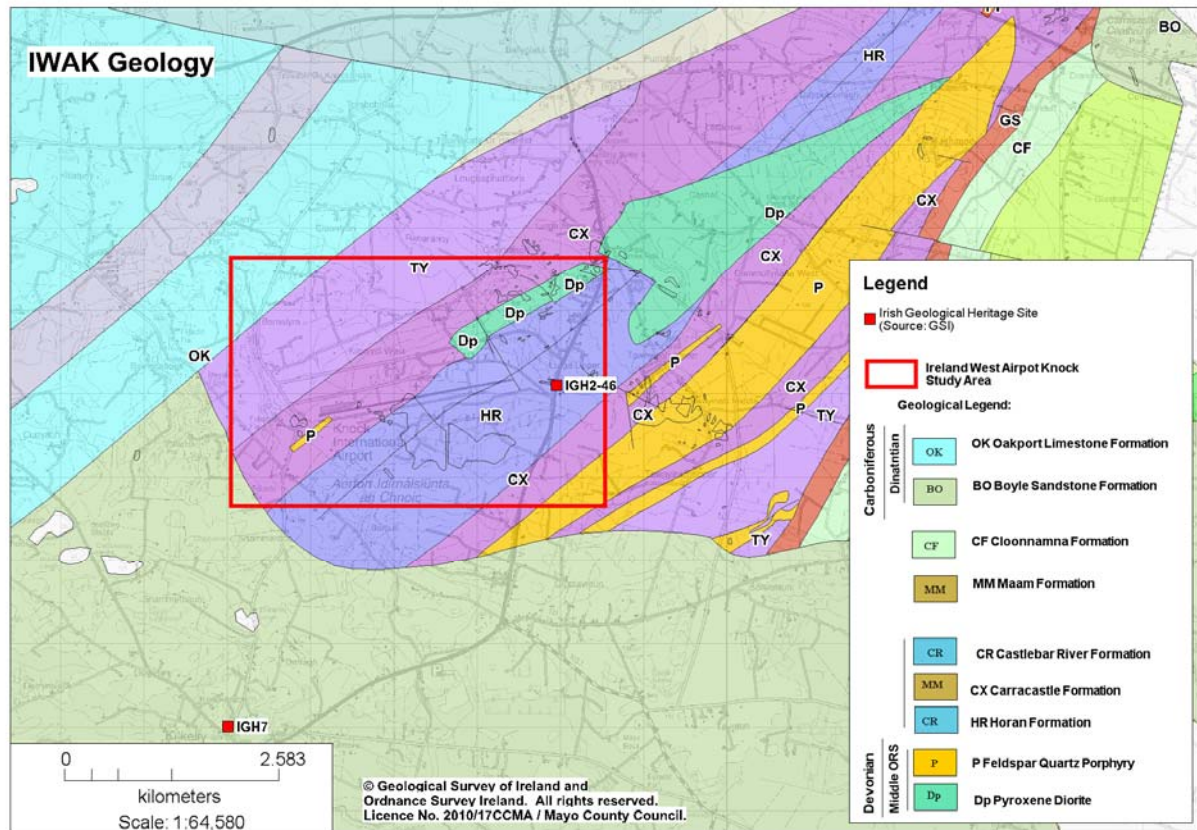


Fig 4.8 IWAK Geology

4.4.3 Existing Environmental Problems relating to Soils and Geology

There are no apparent existing environmental problems relating to soils and geology in the study area. There have been no recorded landslides in the area, but peat is prone to saturation and when disturbed may become saturated and unstable.

4.4.4 Evolution of Soils and Geology in the absence of a LAP for IWAK

In the absence of a Local Area Plan, the airport and associated areas would develop in an ad-hoc manner and not have mitigation for soil/peat exposure, erosion and groundwater seepage/runoff which will be discussed in the section relating to alternative scenarios. With no LAP, and no development of IWAK there would be minimal impact on Soils and Geology.

4.5 Water

4.5.1 Introduction

The essence of the Directive 2000/60/EC establishes a framework for Community action in the field of water policy or the Water Framework Directive (WFD) focuses on both quality and quantitative status consistent with a healthy ecosystem. Prior to the coming into force of the WFD, protection of lotic surface waters comprised emission limits of nutrients in addition to other physico-chemical elements, while lake water quality was assigned a ‘trophic status’; established from the relationship between chlorophyll-a, the typical surrogate for phytoplankton biomass, water transparency and total phosphorus concentration. Currently, the Western River Basin District (RBD) Management Plan identifies water bodies in terms of risk status. Simply put, risk status described water bodies as *not at risk* and *probably not at risk* and further *at risk* or *probably at risk* of failing to meet the principal objective of the WFD, namely, to achieve at least good status for all water bodies by 2015, or by 2021 where applicable. From the examination of biological elements and hydromorphological, chemical and physico-chemical elements and other general elements of surface water bodies, the classification of ecological status is applied as high, good, moderate, poor and bad.

4.5.2 Water Quality Baseline Data

The study area proposed for the Strategic Environmental Assessment (SEA) of the Local Area Plan (LAP) includes the airport and associated lands in its vicinity. Currently, the risk statuses assigned to this area are *at significant risk* and *probably at significant risk* of not achieving the principal objective of the WFD, which is to maintain good and high status where feasible and to improve current moderate, poor and bad water bodies’ status to at least good status by 2015.

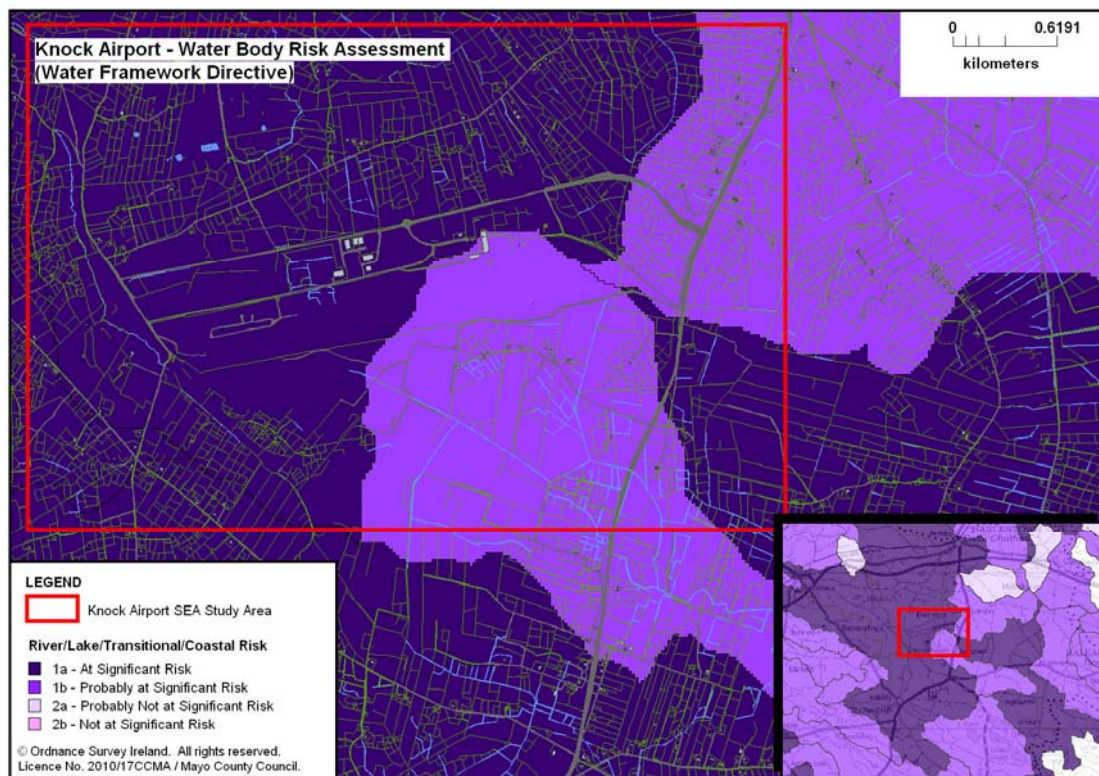


Fig 4.9 Current risk status assigned to study area

The delineation of catchments and sub-catchments into water bodies by the WRBD afforded the more manageable identification and description of the current status of waters in this study area, as well as the RBD in its entirety. The water body ecological status of the IWAK and catchments in its vicinity are not very satisfactory with a large proportion of the study area deemed at poor status, with approximately 30 % designated as good status. This water body, located in the south

east of the study area contains a tributary of the River Lung catchment, not considered as noteworthy as a sector of the Moy catchment, that which is identified as poor status. Completing the assessment for this study area is a water body which is of moderate status. This small pocket is located in the south west.

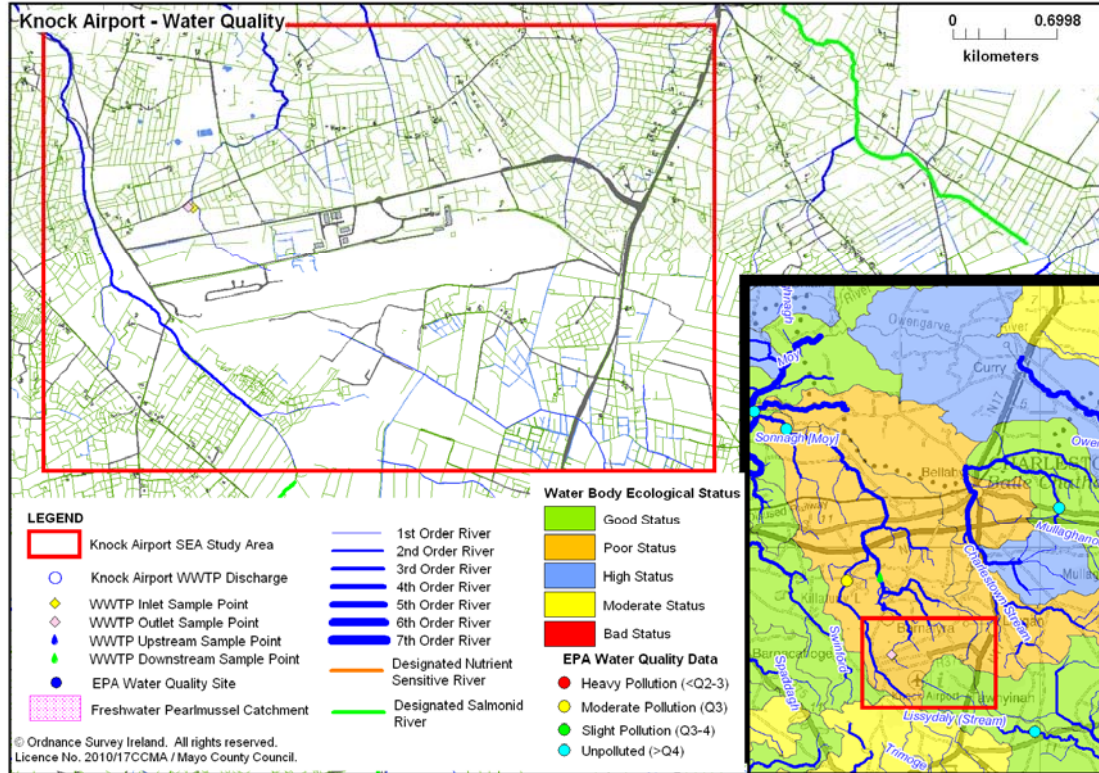


Fig 4.10 Ecological Status of water bodies within the study area

In terms of sensitive waters listed under Part 1 of the Third Schedule of the Urban Waste Water Treatment Regulations, 2001 (S.I. 254 / 2001), there are no designations within the study area or bordering catchments. In contrast, the first and second order streams in the study area are tributaries of the River Moy, a designated Salmonid river under EC (Quality of Salmonid Waters) Regulations (S.I. No. 293/1988).

4.5.3 Freshwater Ecology Baseline Data

The study area is drained by first and second order tributaries of the River Moy; a notable candidate SAC designated under the Habitats Directive 1992 (92/43/EEC) for the protection and conservation of habitats and species. The Moy Complex SAC (site code: 002298) has been assigned in consideration of habitats such as ‘depressions of peat substrates of the Rhynchosporion’, ‘old sessile oak woods with *Ilex* spp. and *Blechnum* spp.’ and for taxa including Brook lamprey (*Lampetra planeri*), Otter (*Lutra lutra*) and White-clawed crayfish (*Austropotamobius pallipes*). First and second order tributaries of the Moy drain the water bodies of the study area, indicating potential impacts on the cSAC species and habitats. The following table summarises the cSAC and pNHAs within or potentially influenced by the IWAK study area.

Table 4.9

Designated Sites (candidate Special Areas of Conservation (cSAC) and proposed National Heritage Areas (pNHA)) within a 5km radius the IWAK LAP study area

Designation	Site Code	Site Name
cSAC	002298	Moy Complex
pNHA	000511	Killaturly Turlough
pNHA	000523	Lough Gower

Other protection offered to freshwater ecological taxa is afforded under EC (Quality of Salmonid Waters) Regulations (S.I. No. 293/1988). Designated Salmonid waters in County Mayo under this legislation include the River Moy and its network of tributaries; the Owengarve, Mullaghanoe, Spaddagh, Trimoge, Glore, Yellow, Gweestion, Manulla, Castlebar, Deel and Corry. While none of these rivers drain the study area, Fig 4.11 illustrates that the first and second order streams within the IWAK area are tributaries of the River Moy. This aquatic pathway would conclude that the Salmonid species of the River Moy may be potentially impacted by any development in the vicinity of IWAK. No lakes are located within the study area but turloughs, defined as seasonal or ephemeral standing water bodies are notable in the study area; two are designated as proposed Natural Heritage Areas (pNHA) in consideration of waterfowl, aquatic mosses, birds, swamp and semi-natural reed beds in the case of Killaturly Turlough while Lough Gower pNHA has been designated in consideration of birds only. These proposed Natural Heritage Areas (pNHA) are located a few kilometres north and south of the study area.

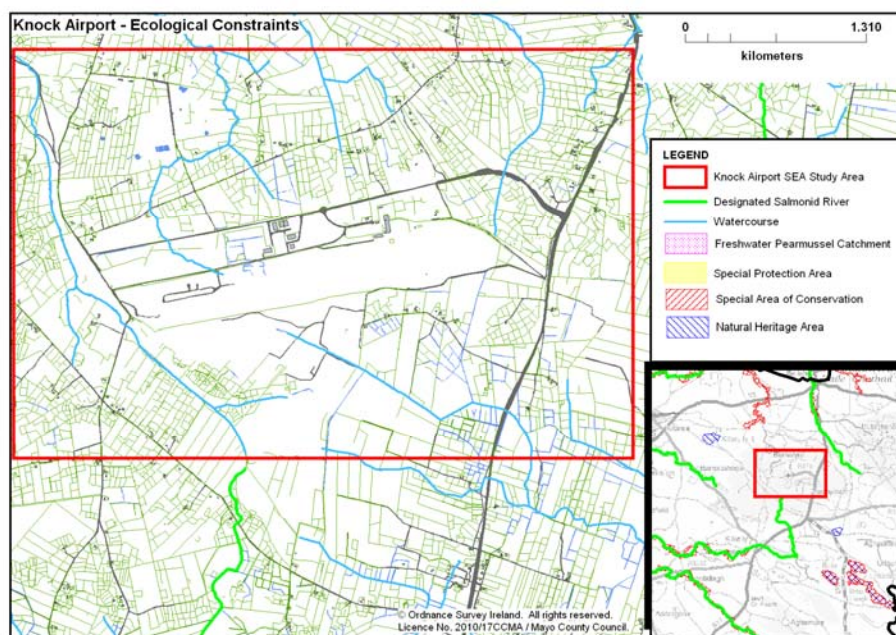


Fig 4.11 Natura 2000 Sites and designated Salmonid waters bodies within the study area

4.5.4 Effluent Baseline Data

Currently there are no IPPC licenses or Section 4 licences within study area. The Knock Airport WwTP is currently operating at approximately half the existing capacity and discharges to the Sonnagh River. A screening document is proposed for this Plant, but has not been undertaken to date, hence the obligation for an AA is not known at present.

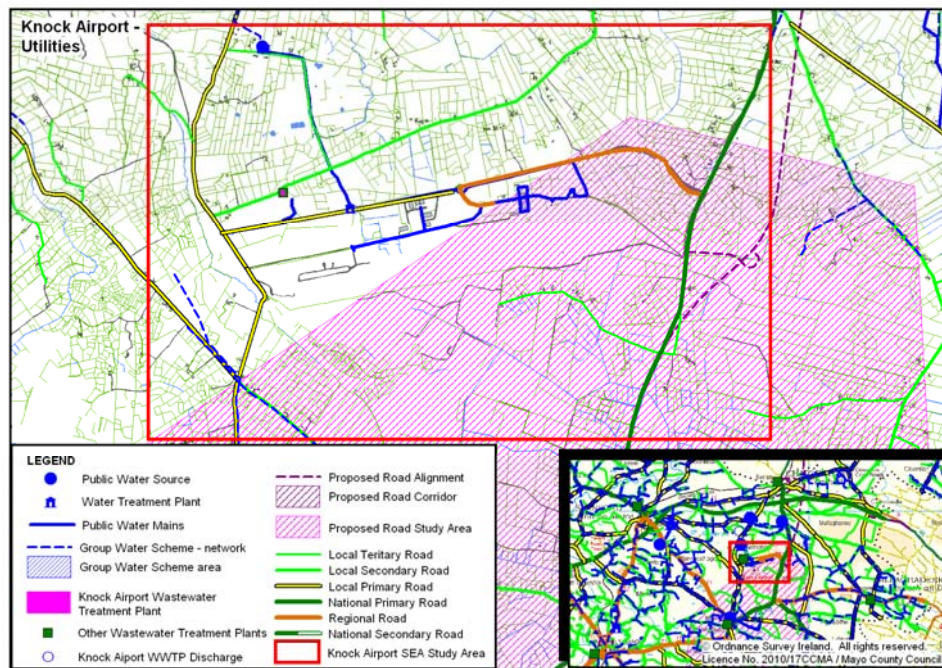


Fig 4.12 IWAK Wastewater Treatment Plant, primary discharge point and other utilities

4.5.5 Existing problems of environmental water quality, freshwater ecology and effluents

The primary challenge identified within the study area is the protection and / or restoration of the water bodies in the vicinity of IWAK and its environs. Considered a largely rural and sparsely-populated area, water status is designated based on element descriptions such as *inter alia* macroinvertebrate status, diatoms status, fish status or general physico-chemical status. For example, a poor status indicates water bodies with poor diversity and abundances of aquatic flora, macro invertebrates or unsatisfactory compositions of fish fauna or unsuitable hydromorphological elements, less-than-good chemical and physico-chemical elements and general conditions including nutrient and oxygenation conditions.

Specifically, in terms of the principal objective of the WFD, the good status water body in the southeast of the site was designated in consideration of its macroinvertebrate status (likely the presence of an abundant and diverse community of sensitive and less sensitive fauna) and must be protected, preventing any deterioration in this status. Therefore, while this water body is not exhibiting any problems at present, there must be an emphasis on protecting this current status.

The moderate status water body, a small portion of the study area located to the extreme southwest and also assigned in consideration of its macroinvertebrate status, must be restored by 2021, with extended timescales allocated due to delayed recovery following reduction in agricultural nutrient losses.

In addition, the poor status water body, including much of the Sonnagh catchment (tributary of the River Moy) and a significant part of the study area was also assigned by its macroinvertebrate community abundance and diversity and must be restored to at least good status by 2021, with an extended timescale due to delayed recovery of highly impacted sites.

IWAK and its surrounding lands are within the Moy Water Management Unit (WMU), one of 14 geographical areas designated within the Western RBD for the purpose of a more focussed management of the River Basin District, leading to detailed descriptions of particular risks and associated objectives as well as the production of a more refined and specific programmes of

measures, encompassing European, national, regional and local legislation to give legal effect to all measures.

Specific risks or challenges within the Moy WMU have been identified and summarised for the entire area. Risks include discharges from licenses under the Waste Water Discharge (Authorisation) Regulations, 2007, licences issued under Water Pollution Acts 1977 to 1990, IPPC licences and authorisations under the Waste Management Regulations of 2007 (as amended). In addition, unlicensed discharges from agricultural sources are correlated with increases in nutrient concentrations, particularly phosphorus and nitrogen, the principal eutrophication-promoting and pervasive nutrients associated with organic water pollution and with disturbance of the freshwater quality and to water-dependant ecological elements of water bodies.

Additionally, physical damage to riparian and littoral zones of rivers and lakes from overgrazing and intentional modification, runoff from forestry lands and peat bogs all contribute dissolved nutrients and suspended solids to water bodies; all potential threats to aquatic species. Silt, suspended and dissolved solids can interfere with the gills and spawning beds of fish and macroinvertebrate communities, while increased nutrients promote the growth of pollution-tolerant taxa and the consequential loss of more sensitive indigenous taxa.

Habitat loss is an additional problem; resulting in the disturbance or irreparable damage of water-dependant taxa and communities of keystone species. Typical candidates are freshwater pearl mussels and white-clawed crayfish. Competition from invasive species following introduction to water bodies is a notable challenge facing water quality and aquatic ecological elements. *Lagarosiphon major* and *Dreissena polymorpha* are notable invasive species, while the threat from the very aggressive *Dikerogammarus villosus* is omnipresent.

Flooding is another challenge within the study area. While flood risk data from the OPW indicates that flooding *within* the study area does not seem to be a substantial risk, the areas surrounding the study area contains lands which have been designated as OPW benefitting lands, in addition to water bodies which have experienced past flooding events. Figure 4.13 illustrates the areas surrounding the study area which have been classified as prone to flooding.

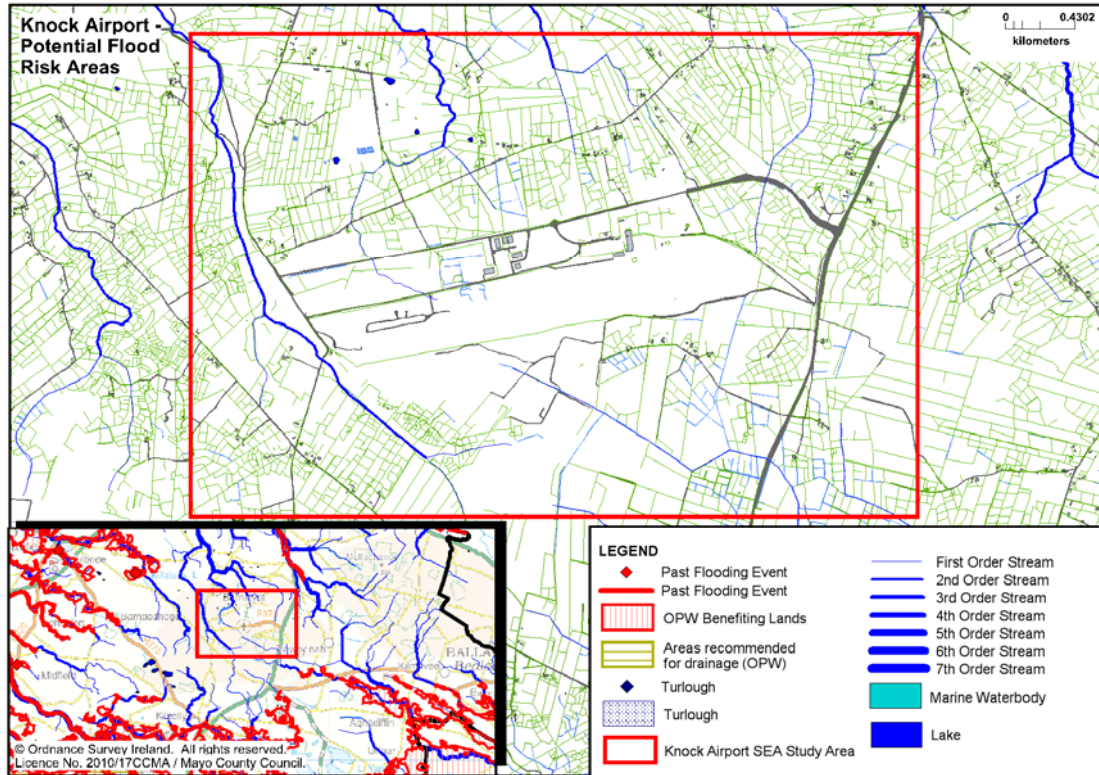


Fig 4.13 Rivers which experienced flooding events and those designated as OPW benefitting lands

Any proposed development within the study area would demand a screening process to determine whether or not a Natura Habitats Assessment should be undertaken for the protection of the proximate Natura 2000 sites – cSACs and pNHAs. The restoration of the poor and moderate status water bodies within the study area to good status by 2021 (extended deadline from 2015) and the protection and maintenance of the good status body is the main priority at present. The programmes of measures for the Western RBD was developed to, essentially, describe the measures to be taken to achieve the principal objectives of the Western RBD. Under the six broad headings describing the principal sources of water pollution, the restoration / protection actions are quantified within each WMU. Without unnecessary detail, the following is a summary of the programme of measures scheduled for the Moy WMU.

Table 4.10: Programme of measures for the Moy WMU of the Western RBD

Entity	Moy WMU	Within IWAK site
Control of urban waste water discharges:-		
Treatment plants requiring capital works	4	To be determined
Treatment plants requiring further investigation	1	To be determined
Treatment plants requiring attention to meet Shellfish water PRPs	0	0
Treatment plants requiring improvements in operational performance	4	To be determined
Urban agglomerations requiring investigation of CSOs	2	To be determined
Agglomerations that require management of development	1	To be determined

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Properties that will be subject to performance, operational and maintenance standards for on-site waste water treatment systems	Total: 14144 At risk: 555	To be determined
Sub-basin plans for Natura 2000 sites designated for the protection of Freshwater pearl mussel populations	0	0
Pollution Reduction Programmes (PRPs) for designated shellfish waters	1	0
IPPC licences with discharges to waters that require review	1	To be determined
Licences for discharges to waters under the Water Pollution Acts that require review	12	To be determined
Planned agricultural inspections under the Good Agricultural Practise Regulations	Not possible	to enumerate

Maintaining the quality of the good (or alternatively a high) status water body is potentially more problematic than restoring a water body, since measures with associated objectives to restore a less-than-good water body are likely to be more achievable than those to maintain a good (or high) status. For example, a small loading of phosphorus will likely have a much more damaging impact on the ecology of a good or high status system than a similar introduction into an already eutrophic system of less-than-good status. Similarly, small increases in silt inputs, hydromorphological pressures or priority substances will have an apparently disproportionate impact on good or high status systems relative to the impact of the same inputs to an already degraded system, which must be restored. It is therefore critical that measures to protect good and high status water bodies from becoming degraded are developed and implemented with due diligence.

4.5.6 Evolution of environmental factors in the absence of the LAP for IWAK

In the absence of the IWAK Local Area Plan development in this area would potentially occur with no specific strategic plan and as such the importance of water statuses in this region may be underestimated by the employment of a subjective approach and incompatible development not conducive to surface water protection and restoration. Freshwater quality and its ecological elements, including water bodies' statuses and their respective protection and / or restoration would be potentially impacted upon depending on the types and nature of planning applications. A Local Area Plan would guide sustainable development while concurrently observing the protection and maintenance of the good water body and ensuring adequate protection and furthermore restoration of the moderate and poor bodies in a sustainably developmental approach, employing all relevant and appropriate measures developed and described in the Western River Basin Management Plan 2009 to 2015.

4.6 Air Quality and Climatic Factors

4.6.1 Air Quality

Air quality is dependent on many factors including local and national weather conditions as well as emissions of substances to air from within and outside the study. On assessment of the geographic location for the IWAK Local Area Plan it was noted that no significant pollution emission sources are located within the area and existing air quality monitoring information is considered to be within current air quality standards, based on published EPA data. The primary influences on the existing air quality at IWAK include transport emissions from vehicles using the site and vehicles using the N17 national road to the east of the site. The prevailing westerly wind from the Atlantic Ocean ensures good dispersion of pollutants and background air pollutant concentrations are low.

4.6.1.1 Air Quality Legislation and Monitoring

Air quality monitoring is undertaken in accordance with relevant Irish ambient air standards which have been adopted from the European Commission Air Framework Directive (96/62/EC) and the associated Daughter Directives on air quality (1999/30/EC, 2000/69/EC). The Irish Air Quality Standards Regulations, S.I. No. 271 of 2002 specify limit values in ambient air for sulphur dioxide (SO₂), lead (Pb), particulate matter (PM₁₀) (Stage I), carbon monoxide (CO), nitrogen dioxide (NO₂) oxides of nitrogen (NO_x), particulate matter (PM₁₀) and benzene (C₆H₆). The limit values have been set with regard to scientific and medical evidence on the effects of the particular pollutant on health or depending on the context the wider environment.

The Air Framework Directive (96/62/EC 1996) requires that member states divide their territory into zones for the assessment and management of air quality. For Ireland, four zones are defined in the Air Quality Regulations (2002), amended by the Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons in Ambient Air Regulations (2009). The air quality monitoring data for County Mayo refers to information collated for Zone D, the study area of Knock Airport is within this zone.

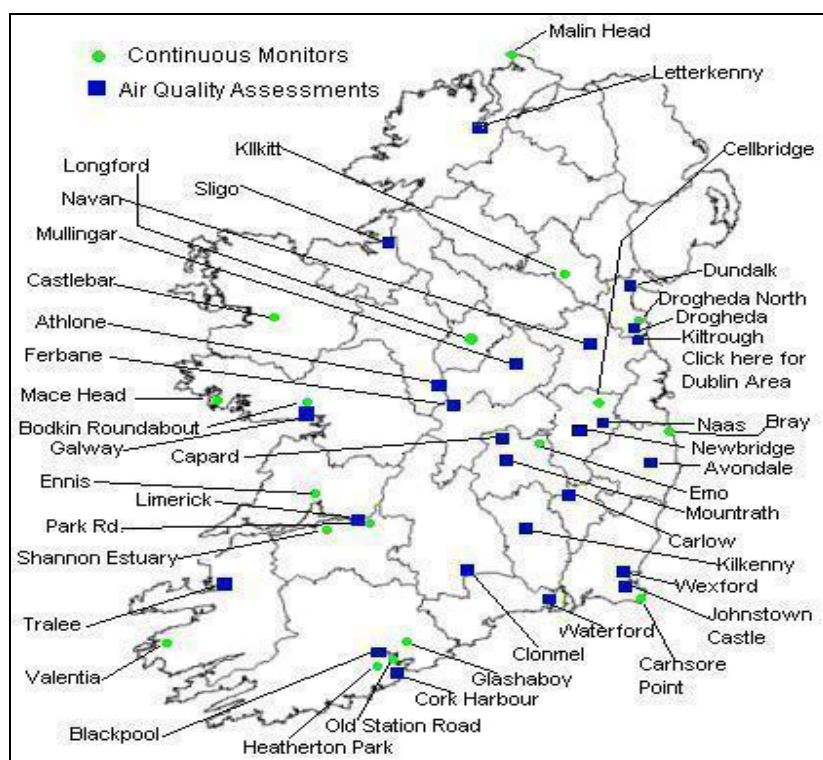
The result of such monitoring indicates that the concentrations of all regulated pollutants are well below the required limit values, therefore current air quality standards are being achieved. Air quality in Ireland is very good by international standards, however, pollutants from road traffic and household fires, especially in urban areas, pose the main threat to air quality. Meteorological conditions in the region play a major role with regard to the levels of air pollutants measured. The prevailing wind direction is west, south-westerly with annual average wind speed at Knock meteorological station of 5.1m/s with the highest monthly wind speeds occurring in November and December and lowest wind speeds in July. The average annual rainfall for Knock between 1997 and 2009 was 1263mm. The highest monthly rainfall occurs in the winter months from October to January and is often associated with Atlantic frontal depressions. In the summer months, high rainfall amounts tend to be associated with intense thundery showers, which may be localised in rainfall intensity. Mean monthly air temperatures over the period 1961 – 1990 for Claremorris range from a 4.3oC in January to 14.3oC in July.

The air quality aspect of the airside operations at the Ireland West Airport Knock has not been measured or modelled with regard to the dispersion of aircraft emissions. However the EIS prepared by the RPS Group for the IWAK development in Feb 2010 makes reference to an Environmental Impact Statement for the Dublin Airport Parallel Runway, where estimated emissions of nitrogen oxide, carbon monoxide, particulates and hydrocarbons for the Landing and Take off (LTO) cycle were undertaken. The aircraft movements for the Dublin Airport were far greater (ten to twenty times greater) than that at IWAK. The results of the Dublin Airport assessment indicated that the aircraft emissions did not have a significant effect on ambient air quality and that the concentrations of key pollutants would remain well below the Air Quality Limit Values. It can therefore be concluded that the flights at Ireland West Airport site have no discernible impact on local air quality.

In terms of landside operations and the greater study area the movement of vehicles and the use of on-site energy installations at the IWAK study site contribute to potential emissions of SO₂, NO_x, CO, particulate matter (including PM_{2.5}/PM₁₀), volatile organic compounds (VOCs) and polyaromatic hydrocarbons (PAHs). The impact of these emissions is localised and local wind conditions aid dispersion. The local road network is adequately designed for increased capacity, therefore reducing periods of congestion and associated conditions where emissions. In addition the emissions are not concentrated at any particular time and dispersion characteristics at the site are good due to location.

The impact of fugitive dust emissions generated from quarrying operations in the townland of Barnalyra; namely CEMEX ROI, planning reference 09/690 and Brendan O Grady (QY48) depend on surface characteristics, wind direction, wind speed and other meteorological conditions such as precipitation. Dust emissions could potentially have implications for the level of dust generation on roads, car parks and other hard standing areas. Both quarries operate under planning controls.

The space heating and electricity demands in the area will involve the emission of pollutants associated with the combustion of fossil fuels. The airport heating and stand by power systems are fossil fuel powered. Information with regard to the types of fuel used in domestic and commercial premises is required to adequately assess the impact of such factors on air quality in the region. However given the rural context of the study area and low population/household density the impacts from such activities are not deemed significant at local level but do incur an accumulative impact with regard to national emission levels. In addition no activities within the study area are currently subject to air pollution licensing or Integrated Pollution Prevention and Control Licences (IPPC). There are also no certifications required under the Volatile Organic Compound Regulations in the study area as commercial activities such vehicle refinishing and dry cleaning have not been identified within the area.



Source: <http://www.epa.ie/whatwedo/monitoring/air/data/ie/>. Accessed 27.09.10

Fig. 4.14 Irish Air Quality Monitoring Network Locations 2008

Table 4.11: Ambient air quality results for Zone D locations 2008

Pollutant	Cork Harbour	Kilkitt Monaghan	Shannon Esturay	AQS Annual Limit
	ug/m3	ug/m3	ug/m3	ug/m3
NO ₂	10	3	-	40
NO _x	15	4	-	30
SO ₂	4	4	5	20
PM ₁₀	16.7	-	-	40
PM _{2.5}	-	-	-	-
CO ₃	0.4	-	-	10

4.6.1.2 Potential Sources of Emissions

It is not possible to give an accurate description of potential air pollution hotspots without a site inspection and further monitoring data however the main sources and distribution of emissions levels for sulphur dioxide, nitrogen oxides, particulates and carbon monoxide are as follows:

- CO₂, NO_x and SO₂ emissions from the natural gas fired boilers and generators;
- CO₂, NO_x, VOCs and SO₂ emissions from the aircraft and airport vehicles.
- CO₂, NO_x and SO₂ emissions from traffic emissions.
- Particulates from quarrying operations

Sulphur dioxide (SO₂): the principal source of this gas is the combustion of fossil fuels from power generating plants, industrial processes and homes. There are no power generating plants or industrial processes in the study area. Sulphur dioxide (SO₂) concentrations measured by the EPA for zone D in 2008 were very low relative to the limit values. There were no exceedances of either the daily limit value of 125 µg/m³ or the hourly limit value of 350 µg/m³ at any station. Concentrated levels of SO₂ in ambient air can affect vegetation (via acid rain) and human health, particularly those suffering from asthma and chronic lung diseases.

Nitrogen oxides (NO_x): includes nitric oxide (NO) and nitrogen dioxide which are formed during high temperature combustion processes from the oxidation of nitrogen in the air or fuel. The principal source of nitrogen oxides is road traffic hence the distribution of nitrogen oxides as NO₂ can accumulate in zones of traffic congestion. Concentrations measured by the EPA for Zone D in 2008 were compliant with all limit values. NO_x levels are important as they are a precursor for ozone.

PM₁₀: particulate matter (PM₁₀) consists of very small particles in the air that can penetrate deep into the respiratory tract and pose significant health risks. Inhalation of these particles can increase the risk, frequency and severity of respiratory and cardiopulmonary disorders. PM₁₀ found in the atmosphere can result from direct emissions (primary PM₁₀) or can subsequently be formed by the interaction of other chemical compounds (secondary PM₁₀). The principal source of airborne PM₁₀ matter is from diesel vehicles. Concentrations of particulate matter (PM₁₀) measured by the EPA for Zone D in 2008 were compliant with limits, which permits no more than 35 daily values greater than the limit value of 50 µg/m³. The annual mean concentration measured at all stations was below the 40 µg/m³ limit value for annual mean. Black smoke is also an issue, it consists of fine particulates suspended in air that mainly arise from the incomplete burning of fossil fuels, in the domestic, industrial or transport sectors. Open fires in dwelling houses are a major source of much of the particulate material emitted to air as smoke.

Carbon monoxide (CO): is a toxic colourless and odourless gas which is emitted into the atmosphere by the oxidation of hydrocarbons and other organic compounds. It is a component of motor-vehicle exhaust, which accounts for most of the CO emissions nationwide. CO concentrations are generally higher in areas with heavy traffic congestion. It survives in the

atmosphere for a period of approximately one month but is eventually oxidised to carbon dioxide (CO₂) which, although non-toxic, is the major 'greenhouse' gas. Emissions of carbon monoxide are localised to the immediate urban areas and major roads. Concentrations measured by the EPA in 2008 were well within the daily 8-hour mean limit of 10 mg/m³.

To date air quality monitoring data for the region indicates very good air quality with concentrations of specific pollutants being well within the emission limits values. Therefore the implementation of Special Control Area Orders or Air Quality Management Plans has not been required.

4.6.2 Noise

The IWAK study area is located on an elevated site in a rural setting. The predominant influences on the noise climate in this area include road traffic noise from the N17 and R367 road network and intermittent aircraft related noise from the airport. noise from a gravel quarry which is located to the northwest of the complex may also contribute to the noise climate in the area due to movement of vehicles associated with the quarry.

Air and ground noise is created by:

- Aircraft approaching and taking off from the airport, by taxiing aircraft and by the engine running on the air field. It is caused by two things by air going over the aircrafts fuselage and wings - known as the airframe and by aircraft engines. The physical characteristic to consider are the duration of a single noise event its frequency and time of occurrence. The number of aircraft a day and their time of occurrence can strongly influence annoyance levels
- Other aircraft related noise sources include helicopter noise from a training school located in the hangars to the west of the main airport buildings. The school operates a Robinson R44 helicopter primarily at the weekends. The Irish Coast Guard helicopters Sikorsky S61N also carry out training procedures in the airport at certain times during the year and a number of freight and private air craft movements also pass through the airport
- Road traffic volumes on the adjacent N17 and R367 road network generate road traffic noise.
- Noise from cars manoeuvring and parking within the car park of the airport and heavy good vehicles operating in the near by business park and quarrying sites. Car and bus engines idling may also present a source of low-level continuous noise, although propagation towards any NSR is likely to be minimal.

As a component of the Environmental Impact Statement for IWAK undertaken by RPS in 2010, attended noise measurements were performed at a total of 4 noise sensitive receiver locations. Noise levels were recorded in accordance with the international standard ISO1996-1:2003 "Acoustics - Description, measurement and assessment of environmental noise - Part 1: Basic quantities and assessment procedures". The choice of locations as investigated in the baseline survey assessed in the report was made having due regard to the most exposed NSR to potential sources of environmental noise related whether directly (a noise) or indirectly (road traffic noise) to current and proposed airport activities. Ensuring that reasonable representation of baseline noise levels in the vicinity of the airport where noise climate is likely to be heavily influenced by either road or air traffic noise.

The baselines survey undertaken for the Environmental Impact Assessment allowed for the contribution of individual sound sources such as road or air traffic to the overall noise climate in the area to be determined and also served to provide an estimate of the accuracy of calculated road or air traffic noise by cross reference.

A noise sensitive receptor is defined by the EPA environmental noise survey guidance document 2003 as any dwelling house, hotel or hostel, health building, educational establishment or any other facility or area of high amenity for its proper enjoyment requires the absence of noise at nuisance level.

Measurements were undertaken at each measurement location to allow for variations in the daily temporal noise climate, measurements were also taken at each location during the day, evening and night periods as specified in the Environmental Noise Directive. Unattended 24-hour noise measurements were performed at a total of 3 noise sensitive receiver locations in the vicinity of the airport. The first two of these 24-hour monitoring units were positioned specifically to determine aircraft noise from take off and landing procedures at the nearest NSR in the flight path at each end of the runway. In addition noise measurements were also undertaken to determine road traffic from the R367.

LDEN is the 'day evening night' noise level that is anticipated to become the standard European index for environmental noise. LDEN is a measurement of noise over the course of an entire year. In order to ensure the index takes into account the increased sensitivity of the evening and night LDEN includes 5 and 10 dB penalties for these periods respectively.

Baseline Results: LDEN Equivalent Calculations

Location	D	E	N	LDEN
N1 Unattended	53.8	66.2	42.3	59.1
N2 Unattended	56.9	54.3	54.3	69.6
N2 Attended	56.9	54.3	54.3	69.6
N3 Unattended	57.9	49.9	51.6	55.7
N4 Attended	69.1	70.4	61.3	81.8
N5 Attended	48.6	65.1	45.8	71.5
N6 Attended	47.6	49.9	45.2	61.3

In summary, the noise levels recorded at all locations are dominated or heavily influenced by road traffic noise from the existing N17 and R367 roads. High levels of calculated LDEN values ranging from 59.1 dB Lden to 71.5 db Lden were identified, however it must be noted that during this period only 1 aircraft pass by was recorded, otherwise all other levels were influenced solely by road traffic noise. Local road traffic noise in particular was dominant intermittent source at certain locations.

Ground Noise Sources:

Airport:

Air traffic movements through the airport require the utilisation of ground equipment on the apron and taxiway. There is insufficient data to allow for prediction of noise arising from airport transport facilities and apron ground noise sources.

Traffic management at the airport site includes speed restrictions, type of surfaces, car parking arrangements, vehicle access and queuing. Using measured free field noise data exclusive of low-level background noise, an SEL of 75dBA has been used to represent the noise from door closure event at 10 metres.

An assessment of the existing and predicted noise levels has shown that the impact on the receiving environment from this source is likely to be high and could be considered significant. However, this must be considered in the context of the character of the existing rural receiving environment and indeed, established policies for the ongoing development of regional airports.

Road Network:

The main noise impacts on the noise climate in the area are from localised road traffic; is from the existing level of traffic on the N17 and R367.

Quarrying: The impact of noise generated from quarrying operations in the townland of Barnalyra; namely CEMEX ROI, planning reference 09/690 and Brendan O Grady (QY48) depend on surface characteristics, wind direction and other meteorological conditions. Both quarries operate under planning controls. CEMEX ROI is required to submit details of noise monitoring reports to Mayo County Council. Two noise reports are required per annum.

Air Noise sources:

Knock Airport is not currently required to produce strategic noise maps under the END, based on the projections for the airport for air traffic movements, mapping is unlikely to be needed until 2030. As such mapping is not required.

An estimate of the noise levels at nearest noise sensitive receptors in the flight path of the runway 27 and 9 was undertaken by extrapolating measured SEL data. Using flight data obtained from the airport, and cross reference with measured noise level data from the airport flight tracking system allowed for the determination of the aircraft with the highest SEL. The aircraft with the highest SEL was identified as the Boeing 737-800 which had an SEL of 87dB on landing.

It must be noted that the location of one monitoring location (N3) was directly beneath the flight path and as such represents a worst case exposure location for aircraft noise; other locations are likely to experience far lower levels of noise exposure from aircraft movement even with lateral noise emissions and overflight noise. The predictions were also based on the assumption that only one runway would be used. In reality it would be expected that some split in usage between the two runways would occur depending on the prevailing weather conditions. This would serve to further reduce the exposure of this location.

The nearest NSR to the proposed development is located approximately 250 metres to the north. At such a distance the worst-case sound propagation is in the range 48.0dB - 51.5dB for 2010 based on the calculations undertaken. Considering that the measured noise level at the nearby location N1 is 53.8dB LDay and that the calculations undertaken disregards the natural screening affect that would be naturally provided by the topography in the area, it can be said therefore that the impact of operational noise at nearest sensitive receptors would be low based on the baseline measurement taken.

4.6.3 Climatic Factors

4.6.3.1 Climate Change

Climate Change is recognised as the most serious and threatening global environmental problem. While natural variation in climate over time is normal, it is recognised that the rate of climate change is increasing as the emission of greenhouse gases into the atmosphere increases. The primary greenhouse gas is carbon dioxide CO₂ generated by the burning of fossil fuels. It is generally accepted that in order to reduce greenhouse gas emissions it is necessary to increase the use of energy from renewable sources.

The current strategy for the reduction in the use of fossil fuel and an increase in renewable energies stems from the Kyoto Protocol, an international agreement linked to the United Nations Framework Convention on Climate Change. The Kyoto Protocol sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas emissions. The targets amount to an average of five per cent against 1990 levels over the five-year period 2008-2012.

Specific baseline data on greenhouse gases is not available for Co. Mayo therefore National data is used as an indicative template for Mayo until specific data becomes available.

National baseline data is taken from the EPA publication Ireland's Greenhouse gas emissions in 2009. Figure 4.15 shows the contribution from each of the NCCS sectors.

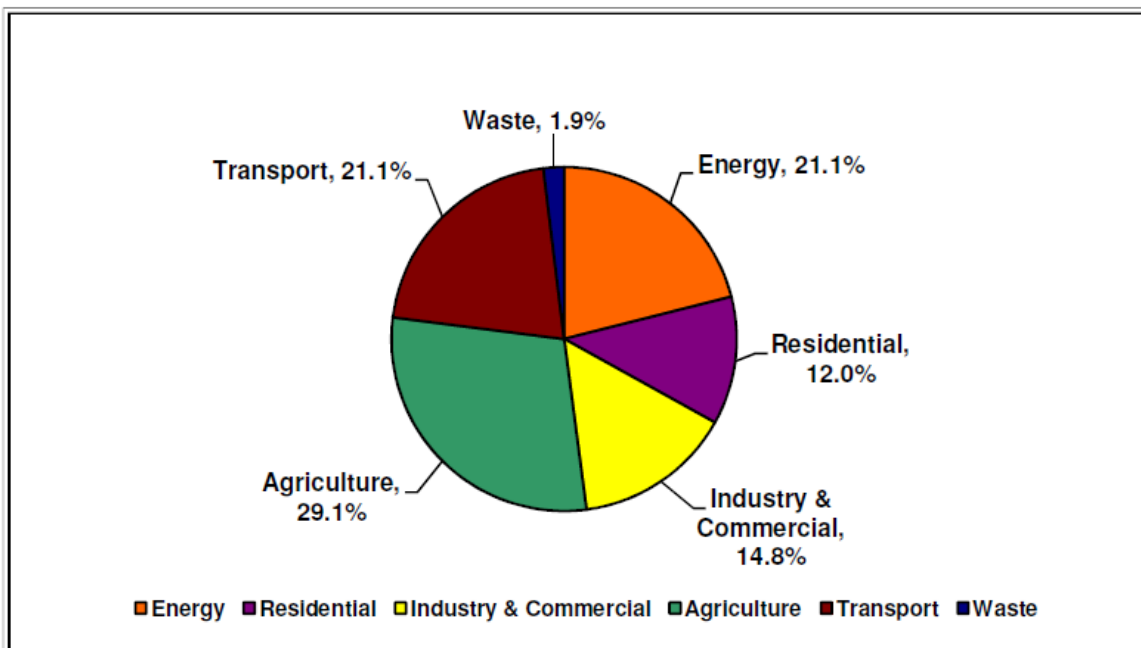


Figure 4.15 Greenhouse Gas Emissions in 2009 by Sector

European Union Directive 2009/28/EC on the promotion of the use of energy from renewable sources establishes the basis for the achievement of the EU's 20% renewable energy target by 2020. Under the Directive, each Member State has a binding renewable energy target, which will contribute to the achievement of the overall EU goal. Apart from a sub-target of a minimum of 10% in the transport sector that applies to all Member States, there is flexibility for each country to choose how to achieve their individual target across the sectors. Ireland's overall target is to achieve 20% of energy from renewable sources by 2020³.

The **National Climate Strategy 2007-2012** builds on Ireland's first Climate Change Strategy (2000) and its purpose is to limit the growth in greenhouse gas emissions. The National Climate Change Strategy 2007-2012 sets out ways to achieve national targets for the period 2008-2012 and to identifies areas in which further measures are being researched and developed to meet our 2020 commitment. The targets will be achieved through a number of means including harnessing more renewable energy and using energy more efficiently.

4.6.3.2 Flooding

'The Planning System and Flood Risk Management Guidelines 2009' were issued by the Minister of the Environment, Heritage and Local Government under Section 28 of the Planning and Development Act 2000, as amended. The Guidelines introduce comprehensive mechanisms, such as Strategic Flood Risk Management (SFRA), for the incorporation of flood risk identification, assessment and management into the planning process. Implementation of the Guidelines is achieved through actions at national, regional, local and site specific levels.

The main risk of flooding in the study area is from the Pluvial – Extreme category. Pluvial flooding can be defined as flooding which results from rainfall generated overland flow and / or ponding which may occur during or immediately after intense rainfall events, before the runoff enters any water course or sewer. A Strategic Flood Risk Assessment was carried out and the results of which are set out in Appendix 2.

³ Draft National Renewable Energy Action Plan 2010 DCENR

4.6.4 Existing Environmental Problems relating to Air Quality and Climate Factors

4.6.4.1 Air

Air quality can be affected by the introduction of pollutants which can chemically react in the atmosphere to produce secondary pollutants such as acid rain or ozone. One of the major features of air pollution is the trans-boundary dispersion of pollutants. Therefore it is important to consider impacts both on the local and wider environment.

The primary environmental threats with regard to air quality are detailed below: (1) road traffic (2) heat generation, (3) fugitive emissions from extractive industries.

Road traffic emissions: Motor vehicles are a major source of emissions of carbon monoxide (CO), benzene (C₆H₆), nitrogen oxide (NO) and nitrogen dioxide (NO₂). Concentration levels of these air pollutants are below limit values in the air quality standards; however road traffic emissions can directly affect human health, adversely effect the environment and are a major source of secondary pollutants such as tropospheric ozone. The pollutant emissions emanating from vehicular sources are also those to which the public may be most readily exposed, and they present a considerable risk in areas subject to heavy traffic [1].

The problem of controlling emission from vehicles is complex and requires various control measures as motor vehicles represent a very large number of small sources, each of the sources are mobile and each source emits different amounts and proportions of pollutants according to how the vehicle is used. Growth in passenger numbers will give rise to increased motor vehicle emissions in the area.

Emissions from Power and Heat Generation: The principal pollutants from power plants are those that arise from the combustion of fuel, namely sulphur dioxide (SO₂), carbon dioxide (CO₂) and nitrogen oxide (NO). The growth in demand for electricity on a national basis has involved the need for more energy generating capacity using fossil fuels. The emission from power plants depend on the fuels used, methods used to generate electricity and pollution abatement equipment. A high reliance on fossil fuel for domestic and commercial space heating in the county is compounded by the lack of district heating networks as well as combined heat and power plants. Natural gas is the least polluting of all the fossil fuels used for energy production, emitting less SO₂, CO₂ and NO_x per unit of energy than any other fossil fuel.

Emissions from commercial/industrial activities: The impact of fugitive dust emissions generated from quarrying operations in the townland of Barnalyra; namely CEMEX ROI, planning reference 09/690 and Brendan O Grady (QY48) depend on surface characteristics, wind direction, wind speed and other meteorological conditions such as precipitation. Dust emissions could potentially have implications for the level of dust generation on roads, car parks and other hard standing areas. Dust from quarry sites can affect air quality, although the severity will depend on factors like the local microclimate conditions, the concentration of dust particles in the ambient air, the size of the dust particles and their chemistry. Both quarries operate under planning controls. CEMEX ROI is required to submit details of monthly dust monitoring report to Mayo County Council. **Emissions from aircraft:** There is an established link between the rise in greenhouse gases and air travel. Flights from IWAK will result in airborne greenhouse gas and other air pollutant emissions. Ireland has committed to reducing greenhouse gases under the Kyoto Protocol. The National Climate Change Strategy (2000) and 2007-2012 sets out measures to achieve these reductions. Currently aviation emissions are not included in national emissions inventories for compliance with Kyoto Protocol requirements for greenhouse gas reductions [1]

Air borne radiation: is a natural air pollutant and occurs primarily as a result of cosmic radiation and the decay of radionuclide in soils and rocks. Radon is a Class-1 carcinogen. The level of radiation depends on where you live, degree of insulation in home and air travel/occupation. A significant portion of county Mayo has radon levels above the reference. The carcinogenic gas has direct links to lung cancer and attributes for 10-15 per cent of all lung cancer cases nationally. In

a recent study by the Radiological Institute of Ireland four homes in Mayo had more than four times the acceptable level with readings in excess of 800 becquerels per cubic metre (Bq/m³) and were found in Charlestown, Castlebar, Claremorris and Ballinrobe. North Mayo is one of the worst effected areas with the south and east of the county experiencing levels well above acceptable levels, however the west coastline of the county has far lower levels of the toxic gas. Mayo is regarded as a high risk area according to the Radiological Protection Institute of Ireland. Ballina town and the surrounding area is particularly at risk with a high level of the gas in the town itself and for a number of surrounding miles. Radon has no smell, colour or taste and can only be detected using special detectors. Long-term exposure to radon increases the risk of lung cancer.)

4.6.4.2 Noise

Noise levels were influenced primarily by road traffic noise. Local road traffic noise in particular is dominant intermittent source at certain locations.

4.6.4.3 Climatic Factors

Climate Change: The increasing rate of climate change is intensifying existing environmental problems arising from more extreme and unstable weather conditions.

Flooding: A Strategic Flood Risk Assessment was carried out for the LAP Area (Appendix 2). The existing flooding events are mainly from surface water run off. The Flood Risk Management Guidelines indicates that type of development associated with airports are classified as fit for 'highly vulnerable development' but are considered appropriate at this location. However it has been noted that surface water runoff from the airport runway can cause flooding and hence may warrant further investigation.

4.6.5 Evolution of Air and Climatic Factors in the absence of the LAP for IWAK

4.6.5.1 Air Quality

The evolution of air quality in the presence of a local area plan is dependant on strategies engaged however the application of a plan can provide for the maintenance of good air quality in the area. The impacts of the plan will depend on a number of variables such as the locations of developments, the type and scale of projects, planning controls and environmental authorisations for such developments. It is important that a policy of energy efficiency is implemented in conjunction with the plan in order to conserve natural resources of fuel and subsequently maintain good air quality status.

The main influences on air quality in the study area are traffic emissions from vehicles using the facilities at the airport and the N17 national road and the quarries to the west of the airport. The estimated peak hour vehicle movements for the carpark and airport in general will increase (from 2010 level) by approximately 100 in 2015 and 300 by 2025. These vehicle movements will result in additional pollutant generation (SO₂, NO_x, CO, PM₁₀ and VOCs) [1] The potential development of the IWAK complex will result in an increase in traffic and energy related emissions due to the anticipated increase of traffic and increased energy requirements in the area. Without LAP there is a possibility that traffic queues and slower driving conditions entering the airport would increase the level of associated pollutants however adequate road network capacity and the rural nature of the location indicate that the potential impact of traffic will be minimal.

Air quality in the study area in the absence of a LAP would involve a continued reliance on fossil fuels for heat and power requirements, hence the continued direct and indirect emissions from fossil fuel combustion and the extraction of fossil fuels. Due to the trans-boundary nature air pollution it is necessary to consider both local and accumulative impacts on the wider environment. Reliance on imported fossil fuel heat requires the transportation of such fuel into the area. This places additional stress on air quality due to increased transport requirements.

In the absence of the LAP, the primary objective for air quality in County Mayo is to ensure compliance with the **Clean Air For Europe (CAFÉ) Directive** (2008/50/EC) which was

published in May 2008. It envisaged that compliance with this directive will be achieved as emission levels in County Mayo are well below the specified limit values for the CAFE directive.

There is an established link between the rise in greenhouse gases and air travel. The most likely scenario for the evolution of future air quality is that the effect of increased aircraft movements will be offset by reductions in jet engine pollutant emissions this would mean that air quality will remain essentially unchanged in the locality but will have an accumulative impact with regard to national air quality and climate change data. Improvements in passenger facilities at IWAK airport may reduce any tendency towards increased passenger transport to Dublin or Shannon Airports but ultimately the effects of climate change will mean that more extreme weather patterns and this may affect the operation and management of IWAK in the future.

The Department of Environment, Community and Local Government (DoECLG) is the lead department responsible for ensuring that Ireland meets its Kyoto Protocol commitments. Most of the strategies for achieving these commitments are set out in the **National Climate Change Strategy 2007-2012**. The strategy for reducing emissions will be shared across all sectors but the main focus will be on transport, residential, industry, electricity production, the public sector and waste.

The conclusion from the latest environmental assessment carried out at IWAK is that the air quality is within current air quality standards and that future intensification of operations is unlikely to have a significant impact.

4.6.5.2 Noise

Under a 'do-nothing' scenario, noise levels within the surrounding environment would remain nominally unchanged with the exception of natural increases in road traffic noise at receptors along the N17.

The traffic impact assessment completed by RPS in 2008 identified that traffic volumes on the adjacent N17 and R367 road network will increase when aided by structures such as extended car parking facilities and upgrading of the road infrastructure. A direct result of such increases in road traffic volumes will be an associated increase in road traffic noise generation.

In summary environmental noise can be affected by:

- increases in aircraft traffic especially flights using larger aircraft
- increased urbanisation of airport neighbour hoods
- increased public awareness of environmental noise problems

4.6.5.3 Climatic Factors

Under a 'do nothing scenario' development of the airport would happen in a haphazard manner without any definite proposals for energy conservation and the use of renewable energy technologies. Surface water management would not occur in a planned manner leading to possible problems related to flooding.

4.7 Material Assets

4.7.1 Introduction

It is considered that the relevant material assets in the context of the Airport are the airport, roads and transportation and other utility related infrastructure within the area.

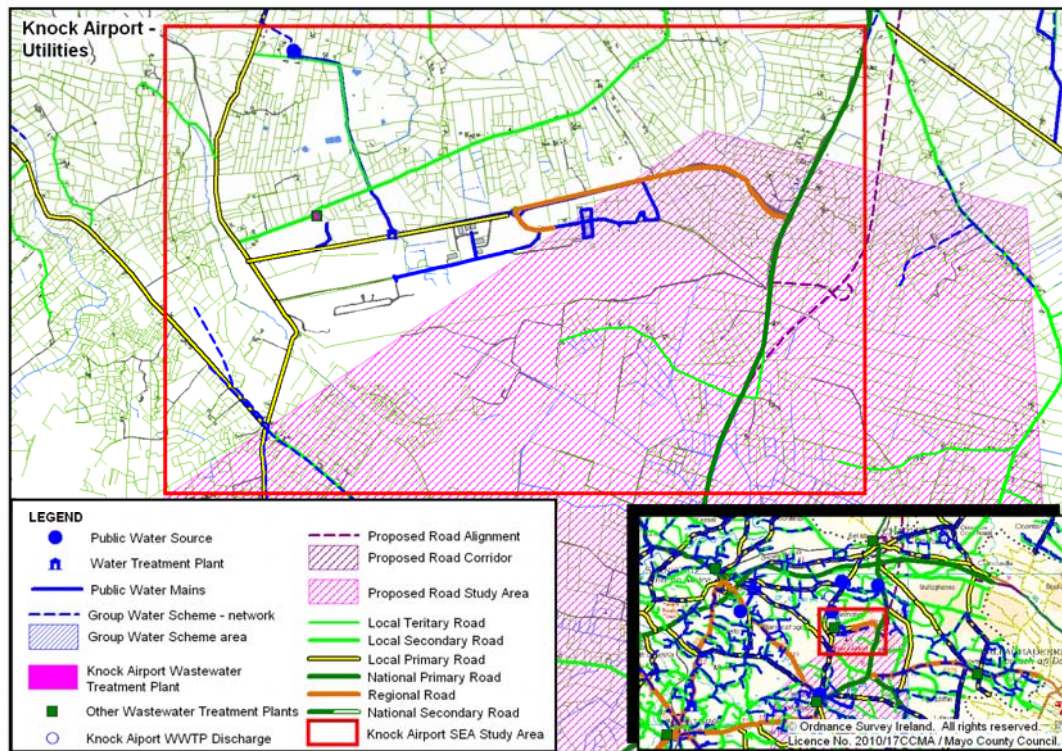


Fig 4.16: Infrastructure at IWAK

4.7.1.1 Roads and Transportation Infrastructure

Roads

Access to the Plan Area is from the National Primary Route (N17) via the R376 Regional Road. The N17 links the Gateways of Galway to Sligo and also joins the National Primary Route N5 Dublin to Westport approximately 7km to the North of the Airport.

Traffic Counts at the Junction of the N17 and the R376 in 2008 recorded 3558 Annual Average Daily Traffic Counts (AADT), with the N17 recording 6769 AADT. The National Roads Authority has plans to Re-align the N17, bypassing Charlestown. A number of route options are currently been considered which will result in improved access to the area.

The R376 Regional Road runs through the centre of the Plan area. To the North of the Regional Road are undeveloped lands, whilst the lands to the South contain the Airport Campus. The Airport is accessed off the R376 by a roundabout with a spur leading to the Airport. Passenger circulation is through the existing car park. The situation is not ideal as the drop off and pick up areas are not separate from the airport parking area.

Airport

The original passenger terminal was built in 1986 and is located north of the runway directly west of the current passenger apron. A 3000m² extension to the terminal building was opened in 2009 which has resulted in creating more circulation space for passengers, new security screening areas, extended check in facilities, an increased departure lounge space as well as new retail, catering and other facilities.

The existing runway (27-09 runway) is 2300 metres long and 45 metres wide. The runway has turning circles, 80 metres in diameter at each end, symmetrical about the runway centreline. The runway strip is a defined area which includes the runway and stopway and is intended to reduce the risk of damage to aircraft running off a runway and to protect aircraft during take off and landing operations.

Table 4.12: Declared distances of the runway:

	TORA (Take Off Run Available) (m)	ASDA (Accelerate Stop distance Available) (m)	TODA (Take Off Distance Available) (m)	LDA (Landing Distance Available) (m)
Runway 27	2270	2300	2300	2270
Runway 9	2240	2300	2300	2087

The current runway strip is 300 metres wide is in compliance with the International Civil Aviation Organisations (ICAO) recommendations for CAT 1 runways. No fixed objects except for visual aids required for navigation purposes as set out by the ICAO are permitted within the runway strip.

The existing runway is sufficient to cater for planned and future aircraft requirements, but it may be necessary to consider an extension of the runway to 2,600m to cater for a wider range of aircraft.

4.7.1.2 Energy

The airport is supplied by 10 kV from the Charlestown 38kV/MV station via an outlet located at Charlestown (Airport Outlet). Standby provisions from this outlet are located at Swinford and Tubercurry. Electricity feeds to a 600 kVA substation located on the airport property which supplies the airport and adjoining industrial park with power.

4.7.1.3 Waste Water

Mayo County Council has made an application to the Environmental Protection Agency (EPA) for a Waste Water Discharge Licence, for the Ireland West Airport Knock Waste Water Treatment Plant (WWTP) and Agglomeration, in compliance with the Waste Water Discharge (Authorisation) Regulations 2007 (S.I. No. 684 of 2007).

Knock Airport WWTP was commissioned in February 2004 to serve the airport now known as Ireland West Airport Knock (IWAK) and the adjacent industrial park with a design population equivalent PE of 700 to the standards required by the Urban Wastewater Treatment Regulations 2001 i.e. BOD 25mg/L, COD 125 mg/L and SS 35 mg/L.

The waste water treatment works at Ireland West Airport Knock consists of a WWTP with an associated collection network of foul sewers that serve the Airport Terminal and Industrial Park Area adjacent to the Airport Access Road. There is currently 1 No. pumping station located at the eastern end of the agglomeration adjacent to the Airport Access Road R-376-0 but there are no sewer connections to this pumping station at present.

Final effluent is discharged through a 100m rising main outfall pipe to the Sonnagh River in the townland of Killeen a distance of 2,700 metres from the treatment works. The Sonnagh River is a tributary of the River Moy. Sludge storage is provided at the treatment plant works. Desludging is carried out by suction tanker as required and is taken to the Swinford Treatment Plant for dewatering.

4.7.1.4 Drinking Water

The majority of Mayo County Council's Public Water Supplies and Group Water Schemes are sourced from surface waters i.e. lakes, which together with an extensive system of rivers and

streams, sustain highly valuable fishery resources. The water quality of our lakes, rivers and aquifers must therefore be maintained to the highest possible standards.

The European Communities (Drinking Water) (No. 2) Regulations 2007 (S.I. 278 of 2007) (the Regulations) fully transpose and implement the EU Council Directive 98/83/EC on the quality of water intended for human consumption. They aim to protect human health from adverse effects of any contamination of water intended for human consumption or use in food and drink manufacture by ensuring that it is wholesome and clean.

The Drinking Water Regulations prescribe 48 parametric values which are classified as being either microbiological, chemical or indicator parameters. Furthermore, the Regulations outline two monitoring categories, Check monitoring and Audit monitoring. The purpose of Check monitoring is to provide information on the organoleptic and microbiological quality of the water supplied for human consumption, as well as information on the effectiveness of drinking-water treatment. The purpose of Audit monitoring is to provide the information necessary to determine whether or not all the standards specified in Part I of the Schedule to the Regulations are being complied with.

The EPA is the supervisory authority for Public Drinking Water supplies. Public water suppliers (Sanitary Authorities) are required to notify the EPA of breaches of drinking water standards and comply with any directions given by the EPA. Sanitary Authorities have similar powers in relation to private water supplies (i.e. group water schemes). The Health Service Executive was also given a statutory role in relation to the protection of human health and must be consulted both by the Sanitary Authority and the EPA where there is a potential risk to human health arising from a problem with a Drinking Water supply. The results for the compliance monitoring are sent to the Environmental Protection Agency each year for the Annual Report on Drinking Water Quality. Mayo County Council is responsible for 25 Public Water Supplies (PWS) serving a population of 78,021 (EPA, 2009).

Knock Airport PWS is sourced from a spring, which is located in a disused glaciofluvial sand and gravel quarry. The source is located in the townland of Kilgarriff known locally as 'Harringtons Well' (297475 N, 144869 E). This is situated in hydrometric area 34. The Groundwater body code is IE_WE_G_0064. The aquifer beneath is a karstified regionally important aquifer (Rkc). The Groundwater vulnerability map for this area shows high to low vulnerability (but the Geological Study of Ireland (GSI) maps state only an interim study took place).

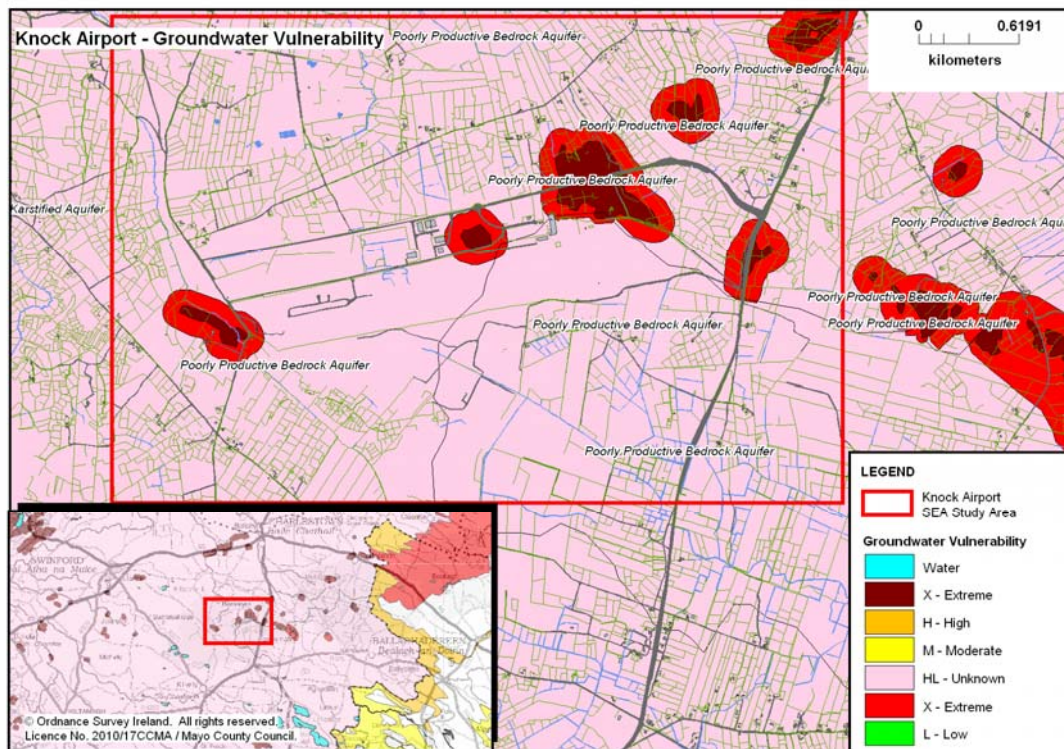


Fig 4.17: Ground Water Vulnerability Map

Groundwater is an important natural resource which supplies some 20-25% of drinking water in Ireland. Groundwater in Ireland is protected under European Community and national legislation, and local authorities and the Environmental Protection Agency (EPA) are responsible for enforcing it.

A Groundwater Protection Scheme provides guidelines for the planning and licensing authorities in carrying out their functions, and a framework to assist in decision-making on the location, nature and control of developments and activities in order to protect groundwater. Use of a scheme will help to ensure that within the planning and licensing processes due regard is taken of the need to maintain the beneficial use of groundwater.

A Groundwater Protection Scheme aims to maintain the quantity and quality of groundwater, and in some cases improve it, by applying a risk assessment-based approach to groundwater protection and sustainable development. In this way it helps public authorities to meet their responsibility to protect groundwater. This would include planning authorities which have a major function in the development and control of land use and the built environment.

Two main components are integrated to produce a Groundwater Protection Scheme: (a) land surface zoning; and (b) groundwater protection responses for potentially polluting activities. The land surface zoning is presented on a Groundwater Protection Map which delineates land areas in terms of groundwater vulnerability to pollution and groundwater potential and is compiled by combining an Aquifer Map and a Groundwater Vulnerability Map. These, in turn, are derived from a series of primary maps: bedrock and subsoil geology, depth to bedrock, and hydrogeological data.

Groundwater protection responses for the different zones indicate the acceptability of a particular activity with respect to the potential hazard, aquifer category or source protection area, and groundwater vulnerability. The responses outline the design and construction conditions and investigation requirements which may be appropriate.

A scheme can also be used pro-actively: for example, to identify suitable sites for potentially polluting developments by avoiding, where possible, the main aquifers and vulnerable areas; or to locate water supply sources by identifying the best aquifers and avoiding the most vulnerable areas.

As part of the Water Framework Directive's Groundwater Monitoring Programme, it was found that the groundwater status is good, while the risk category is at risk.

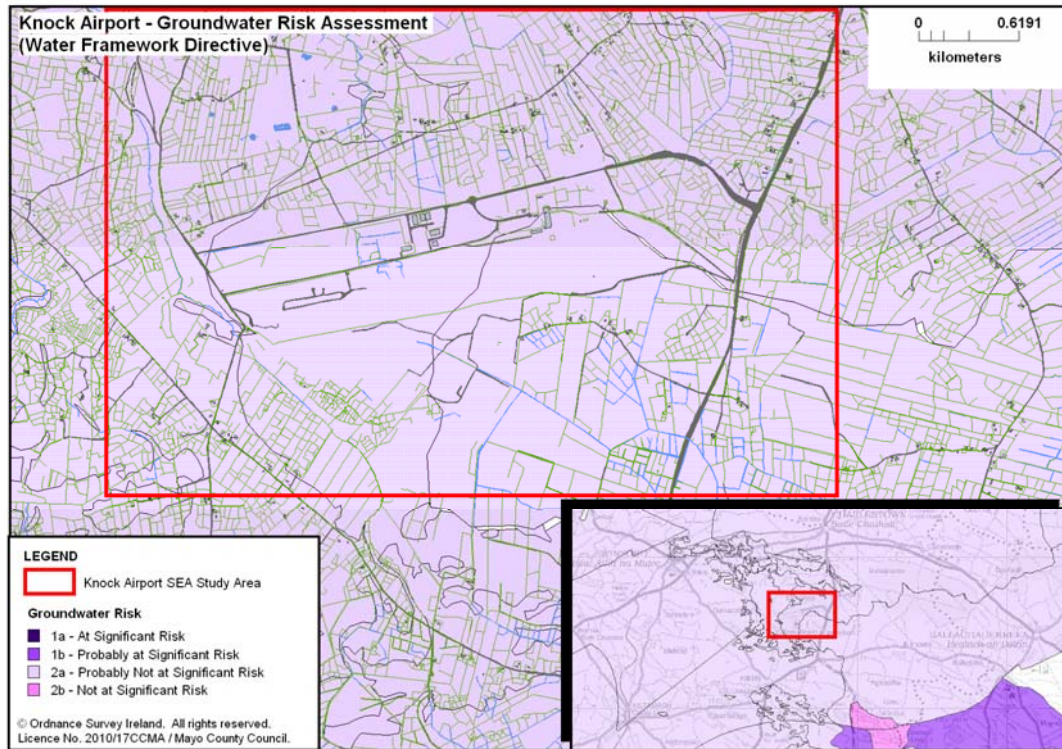


Fig 4.18: Ground Water Risk Assessment (WFD)

The PWS supplies Knock West Airport with approximately 40m³ of treated water per day (EPA, 2011). Chlorination is the only form of treatment at this plant. Monitoring of the treated water is carried out monthly on the network.

The Cloonlyon private Group Water Scheme (GWS) (supplying 50 persons with a volume of 20 m³/day) is also fed from this spring and another GWS (supplying 3 houses) is supplied from a stream, which originates from this spring source.

However, the long term proposal for water supply at Ireland West Airport will either involve the extension of the Lough Mask Regional Water Supply Scheme from Knock Village or the provision of supply from the proposed North East Mayo Regional Scheme with its source at Lough Conn.

Mayo County Council is currently undertaking Source Protection work on the Public Water Supplies initially to ensure that the source is not being impacted on by agricultural activities within a 250m buffer zone.

The Geological Survey of Ireland (GSI) is carrying out an aquifer study in Mayo which started in October 2010 and is estimated to take 12 months to completion. Mayo County Council will then receive the Aquifer maps, Groundwater Vulnerability and Groundwater Resource Protection Zone maps. The overall aim of a scheme is to preserve the quality of groundwater, particularly for abstraction purposes, for the benefit of present and future generations.

4.7.1.5 Waste Management

County Mayo forms part of the Connaught waste management region. Mayo County Council is the lead and nominated authority in the Region. The current plan 'Replacement Waste Management Plan for the Connaught Region 2006-2011' details the regions integrated waste management approach and policies with specific targets that are to be achieved by 2013. The targets are derived from the EU waste Hierarchy and require that of waste arising, 48% is recycled, 33% is used for energy recovery and 19% of residual waste is sent for disposal.

There are no waste management facilities within the study area. All waste produced has to be transported out of the area. Most waste streams generated at the campus can be managed through permitted waste collectors who are authorised to collect in Mayo and to transfer wastes to specific authorised facilities inside and outside the county. Airport International catering wastes are classified as Category 1 animal by products and are to be managed in accordance with the requirements of the Department of agriculture and food.

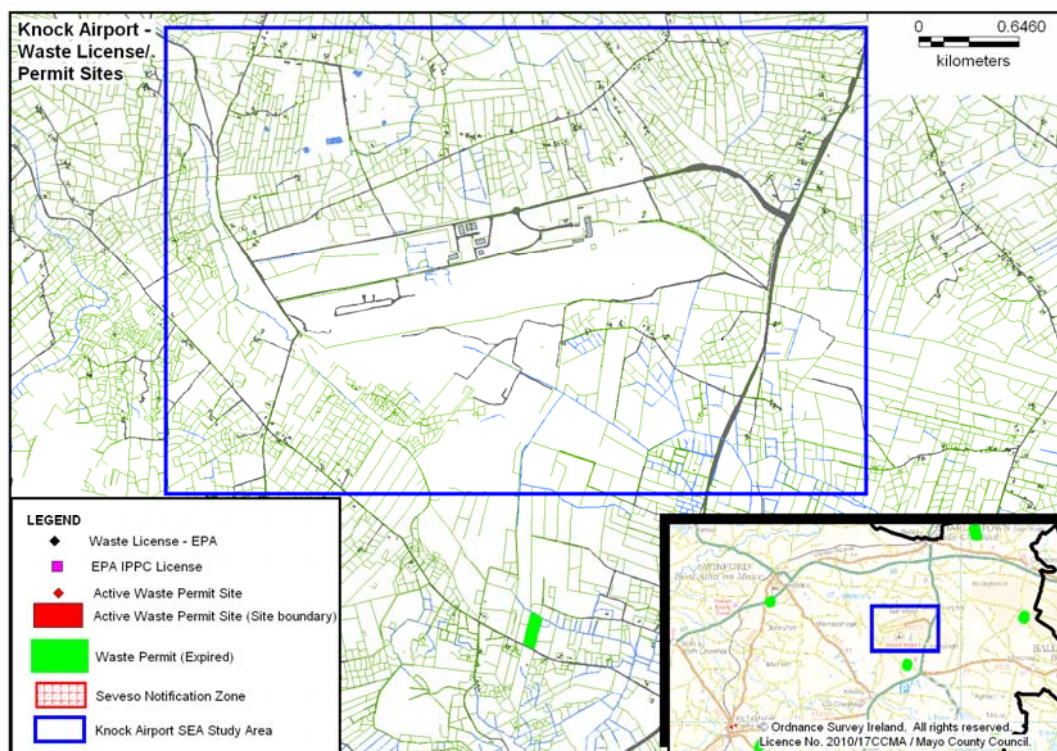


Fig 4.19: Waste License and Permit Sites

4.7.2 Existing Environmental Problems relating to Material Assets

4.7.2.1 Roads and Transportation Infrastructure

The primary environmental issues relating to roads and transportation include emissions from vehicles using the site and vehicles using the N17 National Road to the east of the site. Pollutants from road traffic may pose a threat to air and noise quality and human health. Furthermore emissions of nitrogen oxide, carbon monoxide, particulates and hydrocarbons as a result of landing and take off of aircraft could have a discernable impact on the surrounding environment. There is an established link between the rise in greenhouse gases and air travel. Flights from IWAK will result in airborne as well as the aforementioned air pollutants.

4.7.2.2 Energy

The space heating and electricity demands in the plan area involve the emission of pollutants associated with the combustion of fossil fuels. The airport heating and stand by power systems are fossil fuel powered. The emission of CO₂, Carbon monoxide and sulphur dioxide from natural gas fired boilers and generators may cause potential threats to the environment.

4.7.2.3 Waste Water

Mayo County Council has made an application to the Environmental Protection Agency (EPA) for a Waste Water Discharge Licence, for the Ireland West Airport Knock Waste Water Treatment Plant (WWTP) and Agglomeration, in compliance with the Waste Water Discharge (Authorisation) Regulations 2007 (S.I. No. 684 of 2007). There are no existing environmental issues associated with the WWTP in the LAP area.

4.7.2.4 Drinking Water

The IWAK water supply was upgraded in 2007 with the construction of a new booster station with 40m³ storage and chlorination facilities to give treated water to the Airport and its environs. The upgrade included for the protection of the water supply source, which is a well located in the townland of Kilgarra. There are no existing environmental problems associated with the water supply and subsequently the drinking water in the IWAK area.

There have been no exceedances on the drinking water tested at Knock Airport in 2010. From examining the 2011 Drinking water data taken to date, all the results are compliant.

Vulnerability of Ground Water to pollution is linked to soil permeability and depth i.e. the thicker and less permeable the overlying subsoil layer the lower the risk of pollution. GW vulnerability zones are being mapped currently for Mayo by the Geological Survey of Ireland. Source protection zones have been established. These zones around GW sources such as wells, boreholes and springs used for public drinking water supply, which show the risk of contamination from any activities that might cause pollution in the area i.e. the closer the activity the higher the risk.

4.7.2.5 Waste Management

Without any waste management facilities located in or close to the study area, all waste produced is transported out of the area to waste management facilities.

4.7.3 Evolution of Material assets in the Absence of a LAP for IWAK

“The IWAK LAP provides a policy framework to guide and manage the future growth and sustainable development of IWAK over the next 6 years. It sets out objectives for the zoning of land for particular uses and provides the framework against which planning applications will be assessed. The overall strategy of the LAP has regard to national, regional and county policy and guidance, as well as the aspirations and views of the local community...”. While the Plan period is 6 years in length the LAP will shape the development of IWAK including the material assets associated with the airport beyond the plan period.

In the absence of an LAP for IWAK the existing policies and objectives of the Mayo County Development Plan 2008-2014 relating specifically to IWAK would guide the planning and development of the airport. Accordingly policies and objectives of the County Plan have been formulated having regard to the existing situation on the ground and future projections for Roads, Transportation, Energy, Waste Water and Drinking Water within the IWAK jurisdiction.

4.7.3.1 Roads and Transportation Infrastructure

The absence of a LAP for IWAK could compromise the objectives of the Mayo County Development Plan 2008-2014 with specific regards to transportation and its implementation at both local and regional level. IWAK is a fundamental facet within the County's transportation infrastructure and the absence of a LAP for same could undermine the carrying out of transport and infrastructural development aims and objectives. The absence of a specific strategic plan for the Airport region could result in ad hoc incompatible development at and around the Airport which could compromise the day to day operations of the Airport, which would be unsustainable and against the principles of proper planning and development. The policies and objectives set out in the LAP should guide the development of a high quality, sustainable and integrated transportation system embracing the road, rail, and air transport sectors in an attempt to achieve

a more balanced sustainable transport system within the LAP area and throughout the county and region. The absence of a LAP would hinder the development of IWAK as a transportation asset within the county and furthermore strategic road and rail corridors as critical elements to the intra/inter regional linkages.

4.7.3.2 Energy

The absence of a LAP for IWAK could result in the depletion of energy supplies in the area in an unacceptable manner both environmentally and sustainably due to the lack of strategic local guidance relating to Energy infrastructure at the Airport. The Mayo County Development Plan 2008-2014 aims to develop high quality Energy Infrastructure throughout the county and furthermore to ensure that the energy supply and distribution throughout Mayo is expanded and upgraded sufficiently to enable economic, enterprise and other developments to locate in the County. A lack of strategic guidance at local level at IWAK could compromise the ability of these Development aims to come to fruition.

4.7.3.3 Waste Water

In the absence of the IWAK LAP development in this area would potentially occur with no specific strategic plan for the Airport region only the broad policies and objectives set out in the Mayo County Development Plan 2008-2014 and other hierarchical plans for guidance. Such a subjective approach could lead to over development which would result in over loading of the waste water treatment system and incompatible development not conducive to groundwater and surface water protection and enhancement. A LAP would guide sustainable development while concurrently observing the protection of groundwater and ensuring adequate protection of same.

4.7.3.4 Drinking Water

As with Waste Water above the absence of a LAP for the IWAK area could result in potential environmental risks to ground water and subsequently drinking water. Furthermore development in the area could occur on an ad-hoc basis which could result in over development in the area and over consumption of a depleting water supply. A LAP would guide the sustainable development of the area and also ensuring the protection and maintenance of the good water body which provides the water supply to the area and furthermore the restoration of the moderate and poor water bodies through a proper sustainable plan led approach.

The Water Framework Directive aims to achieve high status by 2015. In the absence of the Plan perhaps there may be less awareness of possible impacts in combination with location of our drinking water sources. The LAP will assist in decision-making on the location, nature and control of developments and activities in order to protect surface waters and groundwater. The use of this strategy will help to ensure that due regard is taken to maintain the beneficial use of these waters.

4.7.3.5 Waste Management

In the absence of IWAK LAP the Connaught Waste Management Plan will continue to drive waste management in the county. Constantly evolving environmental legislation assists with an integrated approach to achieving targets in waste management. Greater awareness due to successful local and national campaigns, greater visibility of enforcement through multi-agency road check points and media coverage assist with advancing towards achieving 'Replacement Waste Management Plan for the Connaught Region 2006-2011' objectives.

4.8 Cultural Heritage

4.8.1 Introduction

Heritage, by definition, means inherited properties, inherited characteristics and anything transmitted by past ages and ancestors. It covers everything, from objects and buildings to the environment. Cultural heritage includes physical buildings, structures and objects complete or in part, which have been left on the landscape by previous and indeed current generations. Mayo's heritage is a unique resource which is fundamental to the cultural identity of the county and the quality of life of its citizens- it is central to how we see ourselves and to our identity as individuals and communities. Historic buildings can define a region's localities and communities and can become a focus of community identity and pride. An historic church or park, for example, can help define a neighbourhood and create a sense of local cohesion.

4.8.2 Archaeological Heritage

Heritage, by definition, means inherited properties, inherited characteristics and anything transmitted by past ages and ancestors. It covers everything, from objects and buildings to the environment. Cultural heritage includes physical buildings, structures and objects complete or in part, which have been left on the landscape by previous and indeed current generations. The heritage of Co. Mayo is a unique resource which is fundamental to the cultural identity of the county and the quality of life of its citizens. Our Heritage is central to how we see ourselves and to our identity as individuals and communities. For example historic buildings can become a focus of community identity and pride.

The archaeological heritage includes National Monuments in the ownership or guardianship of the State, National Monuments that are the subject of Preservation Orders, archaeological and architectural monuments and sites listed in the Record of Monuments and Places (RMP) and the Register of Historic Monuments, zones of archaeological potential in Historic Towns; the underwater archaeological heritage, including Historic Wrecks; unknown and unrecorded archaeological sites (including subsurface elements with no visible surface remains); potential sites located in the vicinity of large complexes of sites or monuments, present or former wetlands, unenclosed land, rivers or lakes, or inter-tidal zones.

Monuments can be described as any artificial or partly artificial building structure, or erection. Monuments protected under the National Monuments Acts 1930-2004 include places and artefacts associated with commercial, cultural, economic, industrial, military, religious or social activity.

The Minister for Arts, Heritage and Gaeltacht has a specific role at central government level in the protection of the archaeological heritage through the relevant legislation (National Monuments Acts 1930-2004, Heritage Act 1995). The overall State archaeological service provided by the Department of the Arts, Heritage and Gaeltacht is delivered through the Heritage Service and the National Museum of Ireland. The Heritage Council is a statutory independent body appointed by the Minister. The European Convention on the Protection of the Archaeological Heritage provides the basic policy framework for protection of the archaeological heritage. The 1992 European Convention on the Protection of the Archaeological Heritage (the Valletta Convention) was ratified by Ireland in 1997. The aim of the Convention is to '*protect the archaeological heritage as a source of the European collective memory and as an instrument for historical and scientific study*' (Article 1). The Convention provides the basic framework for policy on the protection of the archaeological heritage. Ireland is party to the UNESCO (United Nations Educational Scientific and Cultural Organisation) Convention concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention).

Co. Mayo has a rich archaeological heritage. This wealth is reflected in the RMP which lists and protects monuments and places in Co. Mayo under Section 12 of the National Monuments (Amendment) Act, 1994. Nearly 6,000 areas of archaeological importance (representing almost 8,000 elements) are included in the RMP for Co. Mayo spanning over 7,000 years. This RMP is

constantly updated as new sites and monuments are discovered. There are 51 National Monuments in the ownership or guardianship of the State in Co. Mayo and a further 11 National Monuments that are subject to Preservation Orders.

There are 12 (twelve) RMP's within the Strategic Environment Assessment Area of the Proposed Ireland West Airport Knock (IWAK) Local Area Plan (LAP).

Table 4.13 National Monuments within the study area

RMP. No	Monument Type
MA072-030	Enclosure
MA072-031	Enclosure and Souterrain
MA072-032	Enclosure- Site
MA072-033	Enclosure and Children's Burial Ground
MA072-034	Enclosure
MA072-085	Wedge Tomb
MA072-117	Fulacht Fiadh
MA072-118	Ecclesiastical Remains Possible Graveyard-Possible Children's Burial Ground-Possible House Site
MA072-119	Megalithic Tomb
MA072-120	Fulacht Fiadh
MA073-002	Enclosure and Children's Burial Ground
MA073-034	Mound

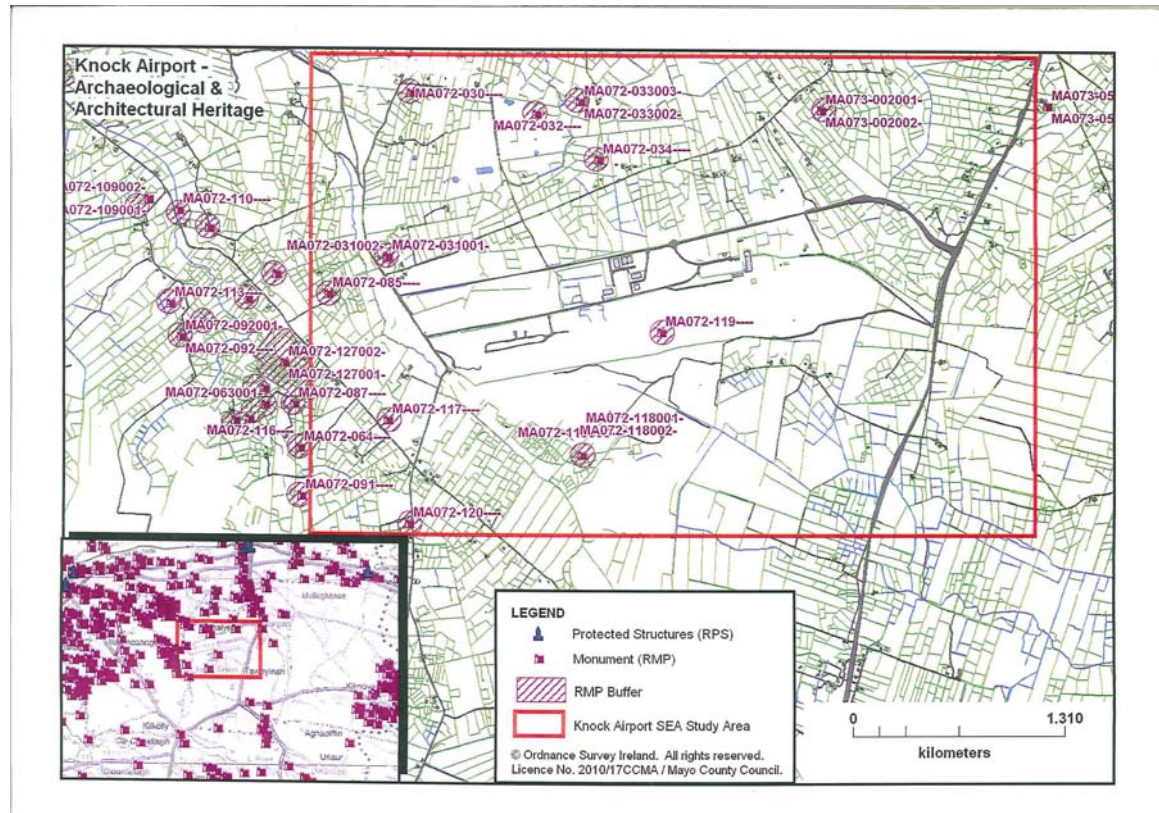


Fig 4.20 National Monuments within the study area.

4.8.3 Architectural Heritage

The term ‘architectural heritage’ is defined in the Architectural Heritage (National Inventory) and Historic Monuments Act, 1999, as meaning all structures and buildings together with their settings and attendant grounds, fixtures and fittings, groups of such structures and buildings, and sites which are of architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest.

Within this range of building types are structures, streetscapes, village and town cores of such architectural heritage significance or special character that they are deemed worthy of protection either as individual elements which are listed on the Record of Protected Structures (RPS), as groups of buildings within Architectural Conservation Areas (ACA’s) or as particular built heritage types that have been recorded (by inventories) because they form part of the unique identity of Mayo.

The legislative framework covering architectural heritage includes the National Monuments Act 1930-2004 which constitutes a broad piece of legislation dealing with the protection of historic monuments; and the Planning Developments Acts 2000 – 2002. Apart from National Legislation there are also European and International Legal Frameworks to be consulted in relation to architectural heritage including the Venice Charter 1964; the Washington Charter 1987; the Burra Charter 1979 / 1981 / 1988; the NARA Charter on Authenticity 1994; and the Granada Convention for the Architectural Protection of Architectural Heritage of Europe (1985).

County Mayo has a rich architectural heritage, of which 273 structures are included on the RPS. The full list of protected structures and a brief description of each structure listed is set out in Document 7 of the MCDP 2008-2014. Whilst the RPS includes some of the architectural heritage of the County deemed worthy of preservation and conservation, it could not be described as a definitive list. In addition, there are many buildings and structures, not included in the RPS which are important in their own right as part of the built heritage of the County.

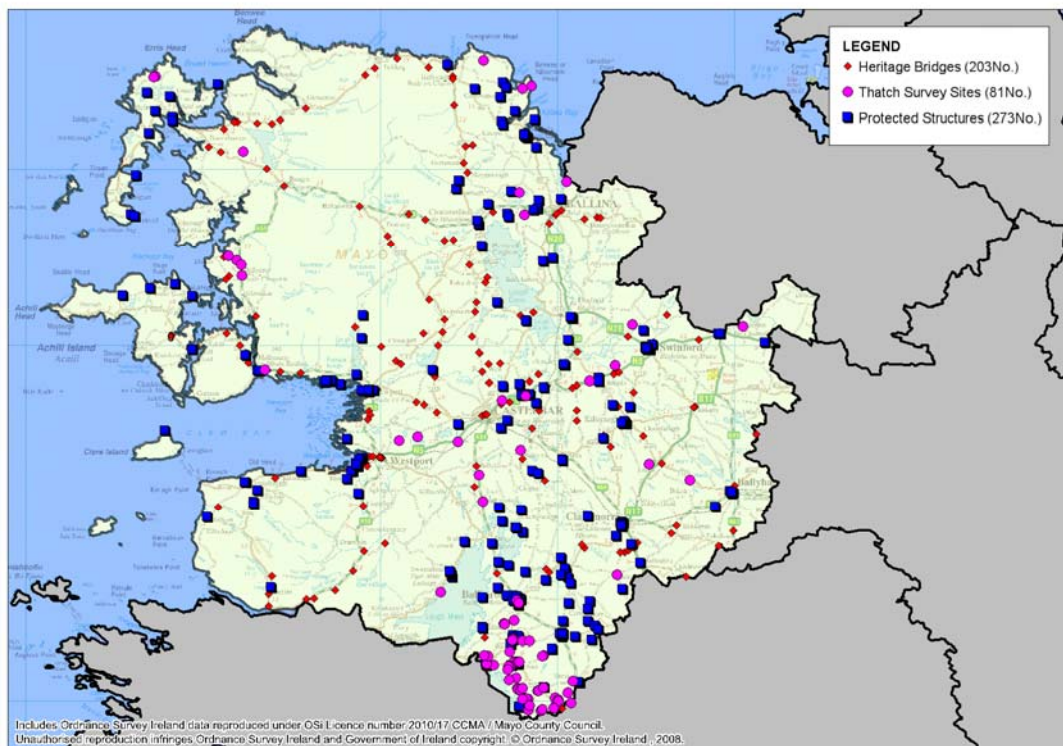


Fig 4.21 Map of Architectural Heritage

There are no protected structures within the Strategic Environment Assessment Area of the proposed IWAK Local Area Plan (LAP). The IWAK Catchment Area extends into Co. Roscommon and Co. Sligo. The following urban areas in Co. Mayo form part of this catchment area; Ballina, Ballyhaunis, Castlebar, Charlestown, Claremorris, Foxford, Kilkelly, Kiltimagh, Swinford. The urban areas of Ballaghadreen, Ballyhaunis, Boyle, Castlerea and Tubbercurry fall within the catchment area and are in adjoining counties. The relevant plans for these areas can be consulted for further details regarding the architectural heritage in these towns.

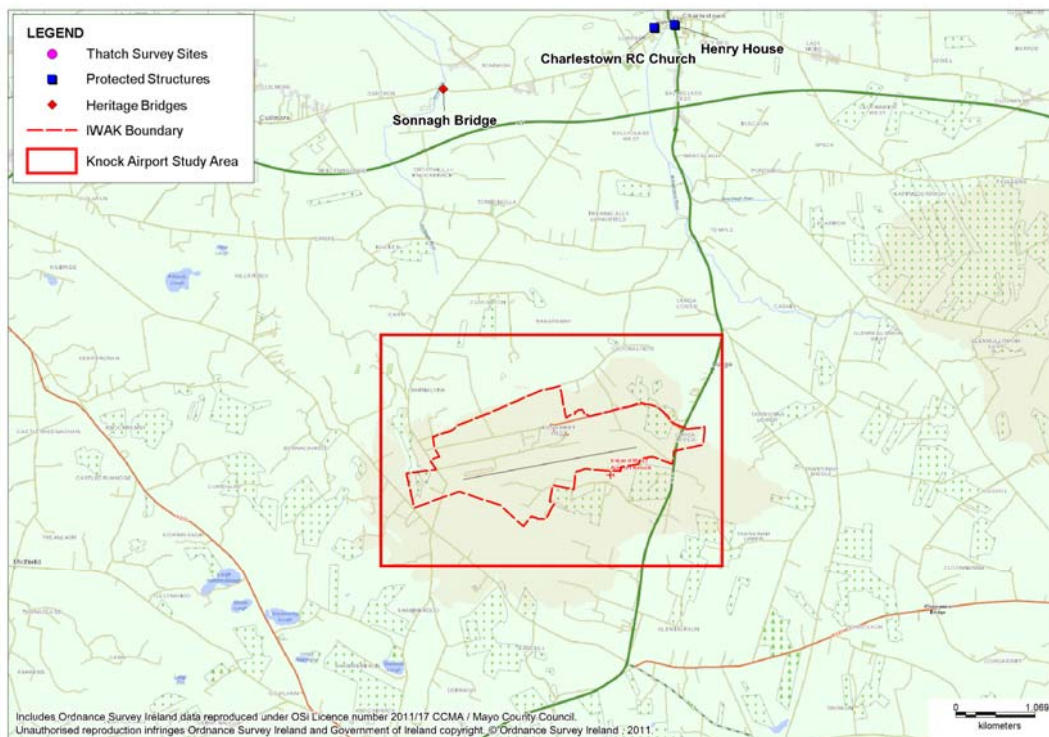


Fig 4.22: Map of Architectural Heritage near the IWAK Study Area

4.8.4 Existing Environmental Problems relating to Cultural Heritage

4.8.4.1 Archaeological Heritage

The archaeological heritage is a non-renewable resource. Increased development pressure raises the potential for impact on the archaeological resource. Although the aforementioned cultural heritage is protected under legislation, impacts can still occur as a result of development. Proposed developments which cause ground disturbance can damage previously unknown subsurface archaeology.

4.8.4.2 Architectural Heritage

As architectural heritage is a non-renewable resource and increased development pressure raises the potential for impact on the resource. There are no protected structures within the Strategic Environment Assessment Area of the Proposed Ireland West Airport Knock (IWAK) Local Area Plan (LAP) and any significant built heritage that is not recorded should be afforded protection if necessary.

4.8.5 Evolution of Cultural Heritage in the Absence of a LAP for IWAK

4.8.5.1 Archaeological Heritage

In the absence of a Proposed Ireland West Airport (IWAK) Local Area Plan development would have no guidance as to where to be directed and planning applications would continue to be assessed on an individual basis. Cultural Heritage would continue to be protected under a number of strategic actions relating to archaeological protection. The Cultural Heritage would be impacted upon by the nature of permitted applications.

4.8.5.2 Architectural Heritage

In the absence of the IWAK LAP, planning applications would continue to be assessed on an individual basis and would be subject to the relevant statutory requirements and guidelines in place for the protection of the architectural heritage.

4.9 Landscape

4.9.1 Introduction

Landscapes are areas which are perceived by people and are made up of a number of layers: landform, which results from geological and geomorphological history; land cover, which includes vegetation, water, human settlements, and; human values which are a result of historical, cultural, religious and other understandings and interactions with landform and land cover.

Mayo presents a wide range of landscapes. These range from complex agricultural patterns in the lowlands with small roads and houses; to a deeply indented and islanded Atlantic coastline; to the great and often empty uplands and moorlands of the west and north of the County.

Receiving Environment

The airport has been established at this location since 1985. The location is on elevated lands adjoining the N17 approximately 8km South of Charlestown. The existing airport facilities and adjoining business park are located on an upper plateau that gently slopes to the West and steeply to the North. The upper plateau consists mainly of peat land with the various component parts of the airport on reclaimed lands. The runway is located on the upper platform as is an Ordnance Datum of approximately 200m above sea level. On the northern and eastern side of the airport the topography falls steeply. The lands to the eastern side of the airport also have extensive areas of coniferous forestry. Extensive views from the north and northern east are available from the Regional Road. (R367)

There is limited tree cover within the environs of the Local Area Plan study area. There are areas of coniferous forests to the Eastern side of the airport and on either side of the Regional Road (R367) from the N17. To the North of the R367 the steeply dipping fields consist of poor grassland and post and wire/stone ditch field boundaries. The predominant vegetation cover within the areas of permitted and proposed development is a mixture of existing hardstand, upland grassland and heath.

The built environment within the study area consists of the airport campus and the adjoining industrial park. The area is rural in character and consists of a dispersed rural housing. There are no residential units within the proposed LAP boundary.

Landscape Appraisal (Mayo County Development Plan 2008 – 2014)

County Mayo's Landscape Appraisal (Mayo County Development Plan 2008-2016) subdivides the County into sixteen distinct landscape character units each containing an area of land with similar character-giving elements such as slope, vegetation and land use. The appearance of the landscape is relatively uniform within each Character Unit.

IWAK is located within Area K designated in the landscape appraisal as "East – Central Drumlin Spine". This area is made up of glacial drumlins that are uniform at its western end near its transition with the distinct drumlins of Clew Bay. In the east, these become less uniform and severe, and the terrain merges into several sets of geologically distinct and isolated hills as the unit encapsulates the towns of Castlebar, Swinford, and Charlestown. The land cover is a mixture of bog/moorland, poor quality pasture and transitional woodland scrub with better quality pasture to the east and south.

This area is characterised by a mixed land use pattern which includes peat bogs and agricultural lands with significant areas of natural vegetation and transitional woodland scrub. There are also significant areas where pasturelands represent a major land use. Charlestown, Castlebar and Swinford towns display the significance of urban settlement areas in this region of the County.

The critical landscape factors for the area are defined as follows:

- Undulating topography

Mildly undulating topography as represented in this character unit by drumlins and low hills has the ability to both shelter and absorb the visual impact of development. Firstly, the physical shielding of a built form within the lee of hill where it does not break the skyline renders it visually unobtrusive and reflective of landscape scale. Secondly, the dynamic and complex nature of undulating country provides fore, middle, and distant ground to a vista that helps to provide a realistic scale and visual containment not available in open country.

- Shelter Vegetation

In a similar manner to undulating topography, shelter vegetation has a shielding and absorbing quality in landscape terms. It can provide a natural visual barrier and also adds to the complexity of a vista, breaking it up to provide scale and containment for built forms.

- Prominent Ridge Lines

These occur as either primary ridgelines (visible only against the sky from any prospect) or secondary ridgelines (visible at least from some prospects below a distant primary ridge line). There are major primary ridgelines beyond the north-west boundary of this character unit, and it also contains some relatively low and isolated examples of primary and secondary ridge lines through its centre. Ridge lines perform the important roles of providing an area with its identity, acting as dominant landscape focal points, and defining the extent of visual catchments. As with other natural linear features such as shorelines it is important that development does not interrupt the integrity of primary ridgelines. Due to the dominating influence of ridgelines, in instances where penetration does occur, development can appear insubordinate to the landscape in which it sits.

The Landscape Appraisal identifies vulnerable features across the County including river banks, lake shorelines, the coastline and the skylines of the County's uplands and it is a policy of the Council to recognise and facilitate appropriate development in a manner that has regard to the character and sensitivity of the landscape, to ensure development does not have a disproportionate effect on the landscape and scenic views in terms of location, design and visual prominence. With regard to both the character units and the vulnerable features, the Appraisal groups together character units into Policy Areas which provide for the guidance of development across the County. There are four Landscape Policy Units in County Mayo.

The Local Area Plan is located in Policy Area 4 designated in the Landscape Appraisal as "Drumlins and Inland Lowlands." These undulating areas of pasture, woodland and forest are considered to have a generally similar ability to absorb development. Many of these areas are underlain by glacial drumlins and incorporate low-lying lakelands.

The policies associated with this area are as follows:

- Recognise that these areas are made up of a variety of working landscapes and contain the vast proportion of the Counties population within principle towns and on rural holdings. These also incorporate all of the major national primary and regional roads, and railways.
- Continue to permit development that can utilise existing infrastructure, whilst taking account of absorption opportunities provided by the landscape and prevailing vegetation.
- Encourage development that will not significantly interfere or detract from scenic Lakeland vistas, as identified in the Development Plan, when viewed from areas of the public realm.
- Encourage development that will not result in detrimental impacts (through excessive bulk, scale or inappropriate siting) on the landscape at a local or micro level as viewed from areas of the public realm.
- Encourage development that will not interrupt or penetrate distinct linear sections of primary ridge lines when viewed from areas of the public realm.

- Facilitate developments that have a locational requirement to be situated on elevated sites (e.g. telecommunications and wind energy structures). It is necessary however to ensure that adverse visual impacts are avoided or mitigated wherever possible.

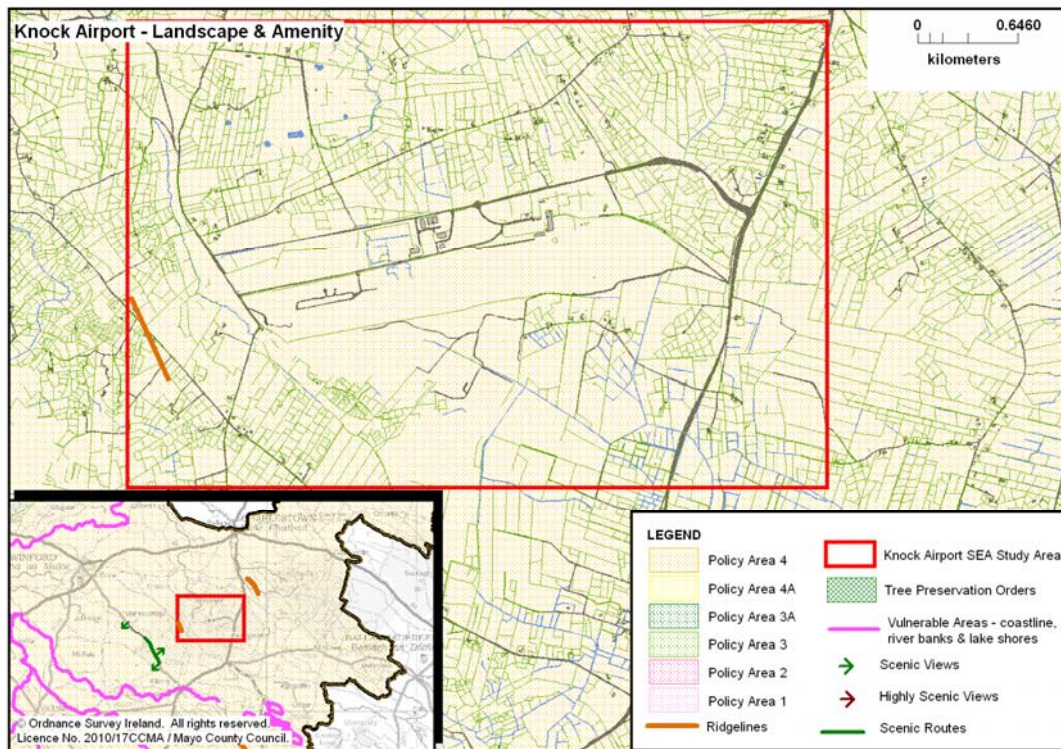


Fig 4.23: Landscape and Amenity Map

4.9.2 Existing Environmental Problems relating to Landscape

An environmental problem associated with regard to the environmental component of landscape is the visual impact on the landscape. The airport campus is located in a prominent location to the summit of a hill. The existing buildings and associated lighting can be viewed from a considerable distance. There is very little attempt to screen development on the landscape with the topography of the area offering some form of screening.

4.9.3 Evolution of Landscape in the Absence of a LAP for IWAK

In the absence of a Local Area Plan, no significant change will occur to the existing landscape and visual resource of the area and the existing facilities at the airport will remain as a feature in the surrounding landscape. A plan at this location would address the visual aspect by applying various methods to screen and reduce the impact of any existing and proposed development at this location.

4.10 Interrelationships between Environmental Factors

The interrelationship between each environmental factor has been assessed to identify areas of consistency in relation to each factor. This is important as it examines how each environmental factor relates to each other, which gives a greater understanding in determining Environmental protection objectives under each factor and developing appropriate mitigation. In general the eight factors are compatible with each other. There is potential that disposal of soils would impact on ecology sensitive environmental receptors and that soil run-off could impact on ecologically sensitive watercourses. Any change to the natural landscape will impact on water quality (and quantity, in some cases) by diversion of drain flow, increase/reduction of water volume, slope steepness and orientation. In some cases there will be no obvious relationship between environmental factors such as there is no obvious link between archaeology and climate factors. Also some factors will be in conflict with each other, for example material assets such as new infrastructural development will impact on archaeological sites and monuments.

The interrelationship between environmental factors is an important step in the development of environmental protection objectives. If the factors are consistent or mutually exclusive then the environmental protection objectives will support each other, which will feed into the policies and objectives of the Local Area Plan. Where they are in conflict with each other, mitigation measures will be suggested by the SEA. Again this will feed into the policies and objectives of the LAP.

The following matrix shows how the environmental factors would interrelate with each other.

Table 4.14: Interrelationships between Environmental Factors

	Biodiversity, and Flora Fauna	Population and Human Health	Soils and Geology	Water	Air Quality and Climate Factors	Material Assets	Cultural Heritage	Landscape
Biodiversity, Flora and Fauna		X	M	M	?	X	M	M
Population and Human Health	?		X	C	X	M	X	X
Soils and Geology	X	O		X	X	O	O	O
Water	M	C	M		C	C	C	O
Air Quality and Climate Factors								
Material Assets	X	C	C	C	C		O	C
Cultural Heritage	C	X	C	?	O	X		M
Landscape	M	O	C	C	?	X	M	

Key

M	Factors are mutually supportive
C	Factors are consistent
?	Situation cannot be determined
O	No obvious relationship between factors
X	Factors in conflict

4.11 Consideration of Impacts of the IWAK LAP on Adjoining Authorities

Environmental impacts do not recognise administrative boundaries and therefore the potential impact of the IWAK LAP on adjoining authorities must also be taken into consideration. Having regard to Departmental guidance, a study area, extending 15km from the LAP Plan boundary has been established in order to take into account the potential for in combination effects with other plans and authorities within 15km of the LAP Plan area. Adjoining local authorities within 15km

of the LAP Plan area are Counties Sligo and Roscommon. There are no town councils within 15km of the LAP Plan area boundary.

County Roscommon

Roscommon County Development Plan 2008-2014 is the current development plan for County Roscommon. The CDP recognises the importance of air travel stating that *“International air access supports and facilitates growth in foreign direct investment, supports indigenous enterprise and tourism. As Ireland evolves into a more knowledge and service based economy, the efficient movement of people is increasingly critical as there is often individual customisation of products/ services which necessitates direct customer interaction.*

Direct air access to national and regional airports is therefore an increasingly important factor in the economic development of regions. The distances to the main regional and national airports are also a key factor for industrial location and for speedy access to domestic and international markets. The RPG’s identified the potential for air facilities in South Roscommon.”

Objective 17 of the Transport and Infrastructure Section of the Roscommon County Development Plan supports the provision of an airport in South Roscommon over the lifetime of the plan that could build on the synergies of existing industries within the environs of Athlone Linked Gateway.

There are a small number of cSACs and pNHAs located adjacent to, or in close proximity to, the Mayo/Roscommon boarder.

County Sligo

Sligo County Development Plan 2010-2016 is the current development plan for County Sligo. Sligo is served by a Regional Airport situated in Strandhill, five miles to the west of Sligo City. The airport runs a commuter service to Dublin and a seasonal international service to Manchester. The airport is important in facilitating access to the North-West for both tourist and business interests. The promotion of Tobercurry and Ballymote as Key Support Towns, and Bellaghy- Charlestown as a local centre of enterprise, is reinforced by their proximity to Knock Airport and the availability of direct access to an international business and tourism market.

It is an objective of Sligo County Council to:

O-A-1 *Promote and support improved access to and expansion of Sligo Regional and Knock International Airports, so as to secure a better level and frequency of service and promote Sligo’s accessibility to tourists and businesses, both nationally and internationally. Any development that occurs through the implementation of this policy shall be subject to compliance with the requirements of the Habitats Directive.*

There are two large SACs and pNHAs along the Sligo/Mayo boarder.

Section 5 Environmental Protection Objectives

5.1 Introduction

Environmental Protection Objectives (EPOs) are methodological measures against which the environmental effects of the IWAK LAP can be tested. The EPOs are set out under a range of topics and are used as standards against which the LAP can be evaluated in order to help identify areas in which significant adverse impacts are likely to occur, if unmitigated. If it complies with in full, the EPOs would result in an environmentally neutral impact from implementation of the LAP. The use of Environmental Protection Objectives fulfils obligations set out in Section F, Schedule 2B of the Planning and Development (SEA) Regulations 2004. They are used as a tool to cross check the policies and objectives of the LAP in order to maximize the environmental sustainability of the Strategy. The cross checking process will help identify policies/objectives that would be likely to result in significant adverse impacts so that alternatives may be considered or mitigation measures put in place.

The SEA Directive requires that the evaluation of plans etc be focused upon the relevant aspects of the environmental characteristics of areas likely to be significantly affected. In compliance with this requirement, Environmental Protection Objectives were developed for the various environmental factors set out in Schedule 2B of the SEA Regulations 2004. However, most attention has been given to environmental receptors which are likely to be impacted upon as a result of implementation of the LAP.

Following consultation with the statutory consultees, EPOs were formulated/adapted by the multi-discipline in-house SEA Team having regard to the checklist of objectives established at international, European and national level, the sample objectives in Table 4B of the DoEHLG SEA Guidelines; and EPOs listed in the SEA Environmental Report for MCDP 2008-2014.

The EPO's are linked to indicators which serve to assess/ measure the success of the EPOs and facilitate monitoring the implementation of the LAP. They are also linked to targets which the LAP can help work towards. Use of the EPOs both in assessing the alternative scenarios and the detailed policies and objectives of the LAP, and as a basis for mitigation measures enabled them to be fully integrated into the preparation of the LAP from the outset.

5.2 Biodiversity, Flora and Fauna: EPOs, Targets and Indicators

The UN Convention of Biological Diversity 1992, which was ratified in 1996 aims to conserve biological species, genetic resources, habitats and ecosystems; to ensure the sustainable use of biological materials; and to guarantee the fair and equitable sharing of benefits derived from genetic resources. In addition, the European Biodiversity Strategy (1998) aims to anticipate, prevent and attach the causes of significant reduction of loss of biodiversity at the source.

The Convention on Wetlands of International Importance (Ramsar Convention 1971) provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. Each Member State must recognise and preserve internationally important wetlands.

The EU Habitats Directive aims to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species at a favourable conservation status. The Habitats Directive was transposed into Irish Law by the European Communities (Natural Habitats) Regulations, 1997 (S.I. 94 of 1997).

In relation to Bird species, the EU Birds Directive: (79/409/EEC) for the conservation of naturally occurring species of wild birds and their habitats throughout the EU; requires that special measures be taken to conserve the habitats of listed migratory and wetland species to ensure their survival and reproduction in their area of distribution.

The EU Council Directive on the Conservation of Natural Habitats & of Wild Flora & Fauna (92/43/EEC) aims to protect and restore the conservation status of a list of key habitats. For Ireland, these include raised bogs, active blanket bogs, turloughs, sand dunes, machair (flat sandy plains on the north and west coasts), heaths, lakes, rivers, woodlands, estuaries and sea inlets. Member states are required to designate these habitats as SACs. The SAC and SPA areas combined constitute the Natura 2000 network.

At the National level, the Wildlife Act 1976 seeks to provide for the protection and conservation of wild fauna and flora, to conserve a representative sample of important ecosystems, to provide for the development and protection of game resources and to regulate their exploitation, and to provide the services necessary to accomplish such aims. The Wildlife (Amendment) Act, 2000 extended the scope of the 1976 Act to give statutory protection to NHAs (including geological and geomorphological sites) and also new measures to enhance the conservation of wildlife species and their habitats and the promotion of biological biodiversity. Under the National Biodiversity Plan, the overarching objective is to secure the conservation, including where possible the enhancement, and sustainable use of biological diversity in Ireland and to contribute to conservation and sustainable use of biodiversity globally.

At the local level, Mayo County Council has published a Local Biodiversity Action Plan to raise awareness of and promote the conservation of the natural heritage and biodiversity of the county.

The following EPOS, targets and indicators have been developed having regard to the environmental baseline and the objective of the above strategic actions:

Table 5.1 EPOs, Indicators and Targets for Biodiversity, Flora and Fauna

EPOs	Target	Indicator
B1: Conserve and protect designated habitats and protected species	Target B1i: No loss of protected habitats or species. Target B1ii: No loss or degradation of locally rare/distinctive habitats/species. Target B1iii No loss or fragmentation of ecological corridors	Indicator B1i Number of sites for Nature Conservation to be adversely affected by the implementation of the LAP. Indicator B1ii: Changes in population and range of protected species. Indicator B1iii: Number of sites containing locally rare/distinctive species/habitats to be adversely affected by the implementation of the LAP. Indicator B1 iv: Percentage loss of ecological connectivity between areas of local biodiversity as a result of implementation of the LAP.
B2: Maintain the biodiversity of interdependent habitats and species in the wider landscape	Target B2i: No loss of protected habitats or species. Target B2ii: No loss or degradation of locally rare/distinctive habitats/species. Target B2iii No loss or fragmentation of ecological corridors	Indicator B2i Number of sites for Nature Conservation to be adversely affected by the implementation of the LAP. Indicator B2ii: Changes in population and range of protected species. Indicator B2iii: Number of sites containing locally rare/distinctive species/habitats to be adversely affected by the implementation of the LAP. Indicator B2 iv: Percentage loss of ecological connectivity between areas of local biodiversity as a result of implementation of the LAP.

5.3 Population and Human Health

At present there are no persons living within the Plan area and it is not envisaged that residential property would be permitted within the LAP Boundary. Therefore the main concerns relate to risk to public safety associated with the airport and impacts such as increased noise and/or traffic on local roads which would could indirectly impact on the quality of life of people living in the locality adjacent to the LAP area. The predicted catchment area for the airport is considerably large, therefore the main factors to considered are to ensure that there is a safe high quality working environment and to ensure that incompatible land uses are restricted at the airport. Human health could also be determined by the impacts which the LAP may have on other environmental components including water quality, soils, air, noise and biodiversity which are addressed in other sections of this report. The following EPOs , Indicators and Targets for population and human health are considered appropriate.

Table 5.2 EPOs, Indicators and Targets for Population and Human Health

EPOs	Target	Indicator
HP1: To improve the working populations quality of life based on a high quality working environment, reduction in commuting distance and the promotion of sustainable modes of transport within, to and from IWAK	HP1i: provide a good quality of recreation and green space within the working environment. HP1ii: reduction in commuting distance within the catchment area. Target HP1iii: increase of sustainable transport options including public transport, cycling and walking.	Indicator HP1i: that all development has sufficient recreation and open space for the working and visiting population to the area. Indicator HP1ii: reduction in the percentage of persons distance to work that is greater than the distance to the airport from the Census data Indicator HP1iii: promotion of cycleways and walkways for internal circulation throughout the Plan area and any increase in use of public transport or car sharing schemes for employees within the area.
HP2: To protect human health from incompatible land uses associated with locating at or adjoining airports.	Target HP2i: To ensure that all development complies with the land use requirements of the public safety zones, safe guarding maps and noise contour maps	Indicator HP2i: the avoidance of incompatible land uses in the area around the airport.

5.4 Soils and Geology: EPOs, Targets and Indicators

To date, there is no legislation which is specific to the protection of soil resources. In 2006 the European Commission adopted a Soil Thematic Strategy, on the protection of soils, which is designed to halt and reverse the process of soil degradation, ensure healthy soils for future generations and remain capable of supporting the ecosystems on which our economic activities and well being depend⁴. The Strategy includes a proposal for a Soil Framework Directive which proposes common principles for protecting soils across the EU. Article 5 of the proposed Directive states that, for the purposes of preserving the various functions of soil; sealing, the development of artificial surfaces on top of soil resources, should be limited. The proposed Directive also states soil should be used in a sustainable manner which preserves its capacity to deliver ecological, economic and social services, while maintaining its functions so that future generations can meet their needs. Having regard to the above, the baseline study of the soils and

⁴ Environment fact sheet: soil protection – a new policy for the EU, European Commission 2007.

geology and the policies identified in the Mayo County Development Plan 2008-2014, the following EPO's are established for Soils and Geology:

Table 5.3 EPOs, Indicators and Targets for Soils and Geology

EPOs	Target	Indicator
SG1: To identify and protect areas which may be deemed to have a risk of landslide	Target SG1: No occurrence of landslides	Indicator SG1: Steepness of slopes, moisture content of peat, depth of peat, nature of layer below peat.

5.5 Water: EPOs, Targets and Indicators

The Water Framework Directive (2000/60/EC) (WFD) was adopted in 2000 and transposed into Irish legislation by the EU (Water Policy) Regulations, 2003 (SI 722 of 2003). The WFD, which encompassed a number of earlier Directives, sets a framework for the comprehensive management of water resources in the European Community. The fundamental objective of the Directive aims at maintaining "high status" of waters where it exists, preventing any deterioration in the existing status of waters and achieving at least "good status" in relation to all waters by 2015. Good status refers to the biological and chemical characteristics which demonstrate only minor differences compared to the natural or 'reference' state. The essence of the WFD was a new approach to water quality management which focuses on both quality and quantitative status consistent with a healthy ecosystem, contrary to previous legislation, the focus of which was on standards and emission limits for physical and chemical parameters only. Besides protecting and enhancing water quality and aquatic ecosystems, the Directive is also intended to promote the sustainable use of high quality water resources.

The WFD provides for water management on the basis of River Basin Districts (RBDs). The Western River Basin District River Basin Management Plan 2010 was adopted in July 2010. Waters are also protected under the EU Urban Waste Water Directive (91/271/EEC) which aims to protect surface inland waters by regulating collection and treatment of urban waste water and discharge of certain bio-degradable industrial waste. The principal objective of the RES in Mayo with regard to water quality and freshwater ecological elements and effluents is to determine the most economical method of energy production with as minimal impact on the aquatic environment as possibly feasible while producing as small a volume of 'good quality' effluent as possible. The Following EPOs, targets and indicators have been developed for Water having regard to the baseline data and objectives described above;

Table 5.4 EPOs, Indicators and Targets for Water

EPOs	Target	Indicator
W1: To prevent deterioration of surface waters of good and high status	Target W1: No deterioration of surface waters of good and high status	Indicator W1: Quality elements for ecological status (biological, hydro morphological, chemical and physic-chemical elements)
W2: To restore states of water bodies of moderate, poor and bad to good status	Target W2: Achievement of at least good status by 2015, or by 2021 where this is not technically feasible, not environmentally sustainable and / or when restoration costs are disproportionately expensive	Indicator W2: Quality elements for ecological status (biological, hydro morphological, chemical and physic-chemical elements)
W3: To reduce surface water pollution from priority substances	Target W3: No emissions, discharges or losses of priority substances to surface waters	Indicator W3: Chemical and physic-chemical elements of water bodies, in particular, specific pollutants
W4: To achieve water-related designated protected area objectives and to support the	Target W4: No exceedance of specific water quality standards and no deviation from	Indicator W4: Quality elements for ecological status (biological, hydro morphological, chemical

achievement of favourable conservation status wherever such plans exist	environmental quality objectives established to protect natural habitats and species	and physic-chemical elements)
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5.6 Air and Climate Factors: EPOs, Targets and Indicators

The primary objective for air quality in County Mayo is to ensure compliance with the Clean Air for Europe (CAFE) Directive (2008/50/EC) published in May 2008. Protecting the valuable asset of good air quality in the region is of utmost importance. Particularly ensuring that adverse air quality does not impact on the most vulnerable of the population whether their vulnerability is due to occupation, age, existing health conditions or other factors. Measures should be adopted to control air-polluting emissions from both stationary and transport sources by consideration of the EPOs set out below (Air Quality and Noise)

The Environmental Noise Directive 2002/49/EC provides for a common approach intended to avoid, prevent or reduce the harmful effects of environmental noise. The main target is an integrated noise management. Irelands' legal obligations under the Kyoto Protocol and targets established under the Climate Change Strategy underpin the EPOs relating to Climatic factors.

Table 5.5 EPOs, Indicators and Targets for Air and Climatic Factors

Environmental Protection Objectives	Target	Indicator
Air Quality		
AR1: Maintain good air quality status in line with CAFE Directive requirements and the National Climate Change Strategy.	Target AR1i: Ensure monitoring results are maintained within the appropriate emission limit values. Target AR1ii: An increase in the percentage of the people travelling to the airport by public transport. Target AR1iii: A decrease in the distance travelled to work/airport by users of IWAK. A reduction in car dependency will generate a reduction in car based emissions - increase coach transport, lobby for rail connection. Target AR1iv: Increase the number of energy efficient buildings and Co2 neutral developments in the area. Reduce waste of energy, and maximise use of renewable energy sources.	Indicator AR1i: Air monitoring data to indicate compliance with appropriate policies and legislative requirements. Indicator AR1ii: Percentage of workers/airport users travelling to the airport by public transport or non mechanical means. Indicator AR1iii; Average distance travelled to work/airport by the users of IWAK. Indicator AR1iv: No of BER certificates issued for Area. Indicator AR1v: No of Co2 neutral developments in the Area
Noise		
N1: To promote appropriate noise control measures on operations within the IWAK LAP area.	Target N1: Minimise the number of incompatible developments within the various noise contour categories	Indicator N1: Number of developments located with the noise contour categories
N2: To encourage the implementation of control measures on road traffic noise within the IWAK LAP area.	Target N2: Reduce the percentages of vehicular traffic at IWAK	Indicator N2: Number of traffic movements at IWAK
Climate		
C1: To maximise the areas contribution to the national decrease in Green House Gases	Target C1i: Increase the number of energy efficient buildings and Co2 neutral developments in the area. Reduce waste of energy, and maximise use of renewable	Indicator C1i: No of BER certificates issued for Area. Indicator C1ii: No of Co2 neutral developments in the Area

	energy sources Target C1ii: To implement the EU Emissions Trading Directive and Irelands National Allocation Plan for Emission Trading to ensure that the Area becomes Carbon Neutral	Indicator C1iii: to promote awareness of energy efficient technologies to off set emissions from increased aircraft movements to achieve a carbon neutral area.
Flooding		
F1: To prevent development on lands which pose – or are likely to pose in the future – a significant flood risk.	Target F1: Minimise developments granted permission on lands which pose – or likely to pose in the future- a significant flood risk	Indicator: F1: Number of developments granted permission on land which pose – or are likely to pose in the future – a significant flood risk.

5.7 Material Assets: EPOs, Targets and Indicators

Material Assets in the area relate to roads and transportation; the airport; energy infrastructure, waste water infrastructure, waste and drinking water.

Regarding Waste Management infrastructure, the current plan ‘Replacement Waste Management Plan for the Connaught Region 2006-2011’ details the regions integrated waste management approach and policies with specific targets to be achieved by 2013. The targets are derived from the EU waste Hierarchy and require that of waste arising, 48% is recycled, 33% is used for energy recovery and 19% of residual waste is sent for disposal. In relation to Waste Water infrastructure, the treatment of wastewater is governed by the Urban Waste Water Treatment Directive (91/271/EEC) (amended by Directive 98/15/EEC) transposed into Irish law by the Urban Waste Water Treatment Regulations 2001 (SI 254 of 2001). The Directive aims to protect the environment from the adverse effects of the wastewater discharges by ensuring that wastewater is appropriately treated before it is discharged to the environment.

Also, it is noted that the treatment of wastewater is relevant to the WFD which requires all public bodies, including Mayo County Council, to coordinate their policies and operations so as to maintain the good status of water bodies which are currently unpolluted and bring polluted water bodies up to good status by 2015. The policy of Mayo County Council is to improve and extend Water Services in the County.

Groundwater quality and quantity must be protected under the requirements of the WFD (2000/60/EC) and the Groundwater Directive (80/68/EEC) and (2006/118/EEC). They establish clear Environmental Quality Objectives, Groundwater quality standards and threshold values for classification of groundwater protection against pollution and deterioration.

The EPA (2005) has set interim guideline values for both total coliforms (0 counts per 100ml) and faecal coliforms (0 counts per 100ml) in groundwater which is used for drinking water. These values are the same as the values set by the ECs (Drinking Water) Regulations, 2000 and trigger values set by the GSI (1999)²⁷. Faecal coliforms are micro-organisms which found in human and animal faeces and are a useful indicator of the likely level of pathogens in wastewater.

The Following EPOs, targets and indicators have been developed for material assets having regard to the baseline data.

Table 5.6 EPOs, Indicators and Targets for Material Assets

Environmental Protection Objectives	Target	Indicator
Roads & Transport Infrastructure		
R1: To protect the road network	Target R1i: to ensure that all traffic to the area uses the	Indicator R1i: increase in traffic movements too and from the

◆Strategic Environmental Assessment◆
Environmental Report for the draft Ireland West Airport Knock Local Area Plan

	national road network Target R1ii: to reduce traffic using the local roads in the area to access the Plan area.	area at the junction with the national route. Indicator R1ii: reduction in traffic movements to and from the area via the local road network..
R2: to prevent any interference with the safety and efficiency of aircraft operations in the vicinity of the airport.	Target R2: that all development complies with safety requirements and uses are compatible with location at airports	Indicator AR2: number of development projects permitted with the safety zones around the airport
Energy		
E1: to reduce the reliance on non sustainable energy sources by the promotion and use of renewable energy resources	Target E1: to reduce energy consumption from non sustainable sources to a minimum by the adoption and use of renewable energy sources.	Indicator E1: increase in renewable energy projects IndicatorE1ii: promotion of energy efficacy in the Plan area
Waste Water		
WW1: to provide adequate waste water infrastructure to meet existing and future demands for such provision.	Target WW1i: to upgrade the existing waste water treatment infrastructure to provide increased capacity for the short term development Target C1ii: to provide new waste water treatment infrastructure for the estimated future development of the area.	Indicator WW1i:upgrade of WWTP from 700 PE to 1400PE capacity Indicator WW1ii: provide new WWTP for 5000 PE capacity
Drinking Water		
DW1: To prevent deterioration of the status of water bodies with regard to quality, quantity and to improve water body status of rivers, lakes and groundwater to at least good status as appropriate to the WFD, providing good sources of abstraction for drinking water.	Target DW1i: no deterioration of the status of waters and restoration to good status of waters currently at moderate, poor or bad status Target DW1ii: comply with the Drinking Water Regulations, 2007 Target DW1iii: progressively reduce chemical pollution in waters Target DW1iv: prevent deterioration of and limit pollution inputs to surface water and ground water.	Indicator: DW1i: trophic status and faecal coliform count per 100ml of groundwater Indicator DW1ii: drinking water annual report (EPA) Indicator DW1iii: interim water status report in 2011 Indicator DW1iv: Long Term water status report in 2015
Waste Management		
WM1: Minimise waste production and maximise recycling and recovery through the introduction of sustainable waste management practices.	Target WM1i: 48%recycled 33%energy recovery and 19% landfilled. Attitude change. Target WM1ii: All Waste activity is regulated Target WMiii: Diversion of bio-waste from landfill and reduction in landfill emissions. Target WMiv: All waste activity is regulated.	Indicator WM1i: Reduced tonnage of waste collected with increased number of customers Indicator WM1ii: Reduction in enforcement actions required Indicator WMiii: Indicator: Increase in the percentage of customers receiving a refuse collection service and decrease in proportion of waste arising being landfilled and increase in recovery and recycling tonnages

5.8 Cultural Heritage: EPOs, Targets and Indicators

The Record of Monuments and Places lists and protects monuments and places in Co. Mayo under Section 12 of the National Monuments (Amendment) Act, 1994. In addition, any impacts on National Monuments and sites subject to Preservation Orders require the consent of the Minister of the DoAHG under Section 14 of National Monuments Act 1930 as amended by Section 5 of the National Monuments (Amendment Act) 2004.

Mayo is a county steeped in a wealth of architectural heritage that spans many centuries as indicated in the baseline study of this environmental component. Apart from National Legislation such as the National Monuments Act 1930-2004 and the Planning Acts, which aim to preserve and protect the architectural heritage, there are also European and International Legal Frameworks to be consulted in relation to architectural heritage including the Venice Charter 1964; Washington Charter 1987, Burra Charter 1979/ 1981/ 1988; Nara Document on Authenticity 1994; and the Granada Convention for the Protection of Architectural Heritage of Europe (1985).

The following EPOs, targets and indicators have been established in relation to the Cultural Heritage

Table 5.7 EPO, Targets and Indicators relating to Cultural Heritage

EPOs	Target	Indicator
Archaeological Heritage		
CH1: To protect the archaeological heritage and especially sites identified in the Record of Monuments and Places, National Monuments in the ownership or guardianship of the State and National Monuments that are subject to Preservation Orders and to safeguard the integrity of the archaeological sites in their setting.	Target CH1: No developments carried out over the lifespan of the Proposed Ireland West Airport (IWAK) Local Area Plan which result in the full or partial loss of the archaeological heritage and especially sites identified in the Record of Monuments and Places, National Monuments in the ownership or guardianship of the State and National Monuments that are the subject of Preservation Orders. No developments which result in the full or partial loss of the integrity of the archaeological sites in their setting.	Indicator CH1: Number of developments carried over the lifespan of the Proposed Ireland West Airport (IWAK) Local Area Plan which result in the full or partial loss of the archaeological heritage and especially sites identified in the Record of Monuments and Places, National Monuments in the ownership or guardianship of the State and National Monuments that are the subject of Preservation Orders. The integrity of the archaeological sites in their setting can also be impacted upon by new developments
Architectural Heritage		
CH2: To protect the architectural heritage of County Mayo with regard to protected structures, Architectural Conservation Areas and other elements highlighted in the baseline data in Section 4.	Target CH2i: No development carried out over the lifespan of the LAP shall result in the full or partial loss of architectural heritage Target CH2ii: No development carried out over the lifespan of the LAP will result in the full or partial loss of heritage bridges of Mayo	Indicator CH2i: The number of developments carried out over the lifespan of the LAP which result in the full or partial loss of architectural heritage. Indicator CH2ii: The number of developments carried out over the lifespan of the LAP which result in the full or partial loss of the heritage bridges of Mayo.

5.9 Landscape: EPOs, Targets and Indicators

Ireland signed and ratified the European Landscape Convention in 2002 with the Convention entering into force in Ireland from in 2004. The aims of the Convention include: to conserve and maintain the significant or characteristic features of a landscape, justified by its heritage value derived from its natural configuration and/or from human activity; to harmonise changes in the

landscape which are brought about by social, economic and environmental processes, and to enhance landscapes.

The Landscape has been assessed in the environmental baseline data and vulnerable features that have been identified are mainly skylines as there no shorelines or riverbanks in the area. The following EPOs, Targets and Indicators have been identified for Landscape

Table 5.8 EPOs, Indicators and Targets for Landscape

EPOs	Target	Indicator
L1: To protect the landscape character of the area.	Target L1i: to minimise the intrusion of new developments on the landscape character of the area. Target L1ii: to minimise the intrusion of exiting development on the landscape character of the area.	Indicator L1i: that all development proposals include measures to minimise any intrusion that the development may have on the landscape character of the area. Indicator L1ii: that all development proposal examine if they can introduce measures to reduce the impact of existing structures on the landscape character.

Section 6 Alternative Scenarios

6.1 Introduction

Article 5 of the SEA Directive requires the Environmental Report to assess the likely significant effects of implementing a plan and “reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme”. A total of six scenarios were devised and each was assessed in terms of the planning and environmental implications on the various environmental factors (Biodiversity, flora and fauna, Soils and Geology, Population and Human Health, Water, Material Assets, Cultural Heritage and Landscape). Each Scenario was then evaluated against the Environmental Protection Objectives.

The Six Scenarios that were considered are as follows:

- Do Nothing Scenario: Retain Mayo County Development Plan Policies and Objectives
- Scenario 1: Expand existing situation
- Scenario 2: Expanding Business Park Development to the East and relocate airport to the West of the campus
- Scenario 3: Provides a larger plan area and expand development naturally around the existing campus
- Scenario 4: Airport Development Zone to the North with a large buffer zone of rural character
- Scenario 5: Smaller buffer zone and an expanded Airport Development Zone.

These scenarios were established taking into consideration the strategic aims of the LAP which are:

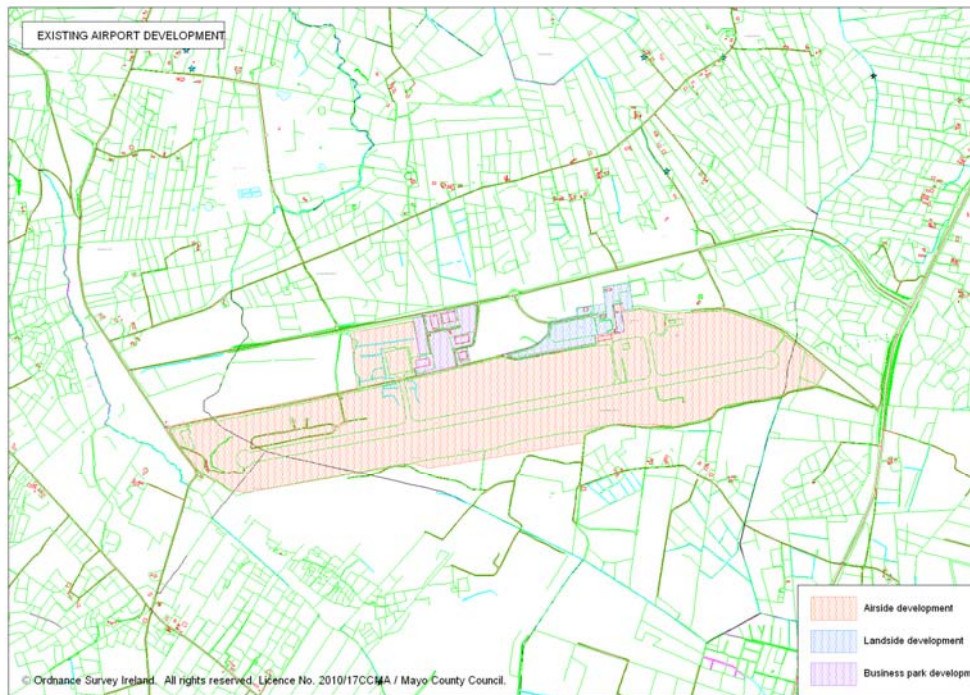
- to enable the development of Ireland West Airport Knock as a strategically important international gateway to the Region through the continued growth of the Airport as a major transportation hub
- to enable the full development potential of Ireland West Airport Knock as a strategic economic/enterprise hub for the Region, to be fully realised in a sustainable, co-ordinated and plan led manner whilst ensuring the efficient and effective operation of the Airport.
- to support the designation of the IWAK LAP area as a Strategic Development Zone (SDZ)

6.2 Do Nothing Approach

6.2.1 Description of Scenario

The do nothing approach can be examined in two ways. The first is to assume that the airport has developed to its full potential and to restrict any further development in the area. The second approach would be to allow the airport to develop in an ad-hoc manner rather than within a strategically, plan led manner

Fig 6.1 Do Nothing Approach



6.2.2 Assessment of “Do nothing Approach”

Biodiversity, Flora and Fauna

At present IWAK is a functioning airport operating within the LAP SEA study area. It is surrounded by habitats that have been subject to varying degrees of disturbance. The habitats comprise a mosaic of cutover bog, wet heath and grassland habitats. If the habitats were subject to continued grazing and peat extraction, the overall diversity of these habitats would not increase.

If it is assumed that the airport has developed to its full potential and no further development is permitted in the area, there should be no further impact on biodiversity, in terms of loss or fragmentation of habitats. However, the area may be subject to further afforestation or turbary activities and the resulting impact on biodiversity these landuses/activities would bring. If, however, the airport is allowed to develop in an ad-hoc manner, applications for developments would be dealt with on a case by case basis with no overall framework to guide development. There will be no overall habitat/landscape strategy to protect the biodiversity of the area. Habitats, species and ecological networks may come under threat from future development.

Population and Human Health

Population demographics would not substantially change under this scenario, if no more development was to occur then the population of the hinterland may decline as employment opportunities may decrease which could result in longer commuting distances for the population of the catchment and result in a reduction in the quality of life for those working and living in the area. The airport would not develop as an economic hub for the region and thus have a wider negative impact for the wider catchment area, directly in terms of employment and in-directly in terms of feeder companies associated with the airport development

In terms of human health, incompatibility of uses without a strategic vision for development of the area could be a risk to human health and aircraft safety. Also without any regulation specific to the area the area, development would take place in an ad hoc manner and not contribute to building a better quality working environment for those working or visiting the area.

Soils and Geology

This is the current situation; where there is an absence of a strategic plan and development is prevented (based on the opinion that the airport has reached its full potential) *or* development is allowed, but in an ad-hoc manner with no detailed plan. Regarding the soil & geology elements, this approach would not be detrimental provided that proper geotechnical assessments are carried out on the blanket peat to ensure that measures are put in place to prevent landslides from occurring.

Water

Regarding the freshwater and ecological elements, this approach is potentially detrimental as development occurs / will occur without a specific strategic plan and as such the importance of water statuses in this region may be underestimated by the employment of a subjective approach and incompatible development not conducive to surface water protection and restoration. Freshwater quality and its ecological elements, including water bodies' statuses and their respective protection and / or restoration would be potentially impacted upon depending on the types and nature of planning applications. A Local Area Plan would guide sustainable development while concurrently observing the protection and maintenance of the good water body and ensuring adequate protection and furthermore restoration of the moderate and poor bodies in a sustainably developmental approach, employing all relevant and appropriate measures developed and described in the Western River Basin Management Plan 2009 to 2015.

Air Quality and Climate Factors

Air Quality

The do nothing approach is a model which could present significant risks for various environmental parameters due ad hoc development. It is assumed that the airport has not yet reached its full potential. Although a current assessment of air quality using EPA published data indicates that air quality within the IWAK Local Area Plan is well within specified limits for Ambient Air Quality, the lack of strategic development could give rise to localised problems depending on the source, pathway and subsequent reception of emissions from landside/airside developments.

In particular developments within the landside operations should take vehicular movements, fuel storage and the use of on-site energy/ air conditioning installations into consideration. The air quality of the airside operations at the Ireland West Airport Knock has not been measured or modelled with regard to the dispersion of aircraft emissions but a recent EIS study for Ireland West Airport indicated the flights at this site have no discernible impact on local air quality.

A strategic plan would take cognisance of the above parameters with regard to future development ensuring adequate protection of ambient air quality and therefore compliance with relevant Directives and National legislation.

Noise

Under a 'do-nothing' scenario, noise levels within the surrounding environment would remain nominally unchanged with the exception of natural increases in road traffic noise at receptors along the N17. However the lack of strategic development could give rise to localised problems depending on the source, pathway and subsequent reception of noise levels from landside/airside developments

The main influences on environmental noise would be increases in aircraft traffic especially flights using larger aircraft, increased urbanisation of airport neighbour hoods and increased public awareness of environmental noise problems. The traffic impact assessment completed by RPS in 2008 identified that traffic volumes on the adjacent N17 and R367 road network will increase when aided by structures such as extended car parking facilities and upgrading of the road infrastructure. A direct result of such increases in road traffic volumes will be an associated increase in road traffic noise generation.

In summary environmental noise can be affected by a number of variables and a strategic plan should take cognisance of the above parameters with regard to future development ensuring adequate noise levels are maintained and compliance with relevant Directives and National legislation is achieved.

Climate Factors

Development of the airport would occur in an ad-hoc manner, with no policies to encourage the energy conservation and energy efficiency. Also the use of renewable energy technologies could only be suggested for new developments but again would happen in a haphazard manner and not examining the area as a strategic unit.

Flooding

If no development was to occur then any potential flooding aspects within the LAP boundary of the surrounding area would not be further exacerbated. But without a planned approach any existing flooding issues could not be addressed as development would occur in an ad-hoc manner and only address the issue of a specific project without the possibility of solving the problem through a planned approach

Material Assets

Roads and Transportation Infrastructure

The absence of any strategic plan for the Airport could result in an ad hoc incompatibility around the airport which would compromise the day to day operations of the airport, which would be unsustainable and against the principles of the proper planning and sustainable development. There would be no policies and objectives to guide development of a high quality, sustainable and integrated transportation system embracing the road, rail and air transport sectors in an attempt to achieve a more balanced sustainable transport system.

Energy

If no further development was to occur, the energy supplies would not change, but there would be no opportunity to strategically plan for energy consumption and energy demand. Developing the area in an ad-hoc basis could also give rise to deficiencies in the energy supply for the area. A planned approach can ensure that energy conservation and the use of renewable energy technologies can be incorporated into development proposals.

Waste Water

This will not impact on waste water provision as development cannot occur in the area unless there is the provision for waste water services. But a planned approach for the whole IWAK area can ensure that the need for waste water infrastructure will be required when a specified level of development has occurred at the airport.

Drinking Water

Without proper consideration and guidance in relation to the location and type of development, negative effects could occur in relation to the water source i.e. reduction in the quality at the source of abstraction for the drinking water supply. Provision of new infrastructure will generate impacts on the land from preparation works, construction works to operational works.

Waste

The levels of waste will not increase if there was no more development at IWAK, but there would be no opportunities to resolve any existing environmental problems relating to waste by the introduction of best practice management procedures within the Plan area that would hopefully resolve such problems.

Cultural Heritage

The Archaeological heritage and sites identified in the Record of Monuments and Places will be impacted upon. The integrity of the archaeological sites in their settings will be impacted upon.

RPM MA072-119 Megalithic Structure
RPM MA073-034 Mound
Will be impacted upon.

Planning Applications would continue to be assessed on an individual basis and would be subject to the relevant statutory requirements and guidelines in place for the protection of architectural heritage.

Landscape

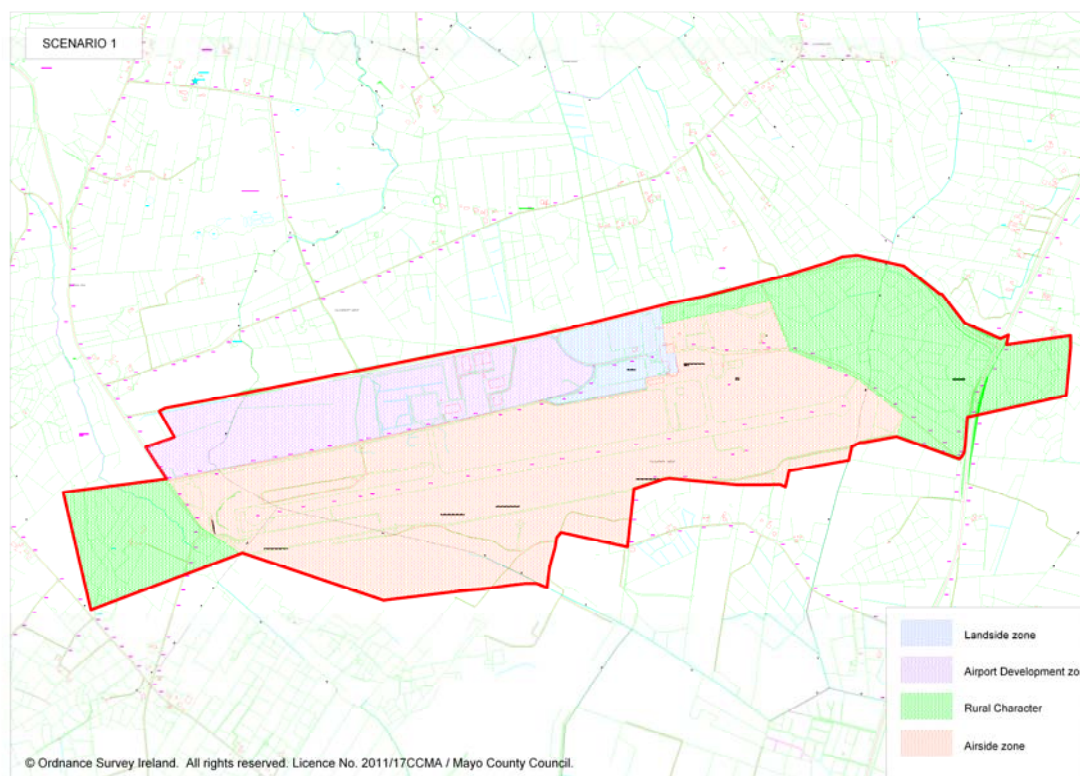
If no further development happened at the airport, there would be no further impact on the landscape. It would also ensure that the existing features could not be further screened with the addition of new structures and screening proposals at this location. If development was to occur in an ad-hoc manner, proposal could be developed at various locations thus spreading out development on the landscape thus negating any possible improvements to the existing situation at the Airport location.

6.3 Scenario 1

6.3.1 Description of Scenario 1

Scenario 1 expands on the existing situation, with all zones expanding naturally as development occurs. The plan boundary to the North relates to the regional road. The Rural Character zone extending from the end of the runway is necessary to preserve land for future navigational equipment. Hangerage and aircraft maintenance would locate to the South of the existing runway.

Fig 6.2: Scenario 1



6.3.2 Assessment of Scenario 1

Biodiversity, Flora and Fauna

Scenario 1 involves expansion of the existing situation with all zones expanding naturally as development occurs. The northern plan boundary would be the existing regional road. The amount of land zoned to the south of the existing runway for airside development would also be

increased. This scenario would result in increased land take in all directions from the current boundary, with no strategic policy in place to guide development to those areas most suitable for the various zones of development and the protection of the most vulnerable/important habitats within the plan area. Current county development plan policies would apply.

Population and Human Health

This scenario allows for a modest expansion of the business park development, which would increase the working population of the Area. The Public Safety Zones and Noise Contour mapping would limit the uses that could be developed in the Airport Development Zone. New infrastructure would be required around the airside development zone for access to the hangerage and maintenance area, which would underutilise the exiting infrastructure of the area and create unnecessary expense to accommodate development.

Soils and Geology

In terms of the impact on soils and geology, scenarios 1 & 2 are similar, with expansion being constrained to the south of the regional road. The slopes in these areas are not steep and this approach would not be detrimental provided that proper geotechnical assessments are carried out on the blanket peat to ensure that measures are put in place to prevent landslides from occurring.

Water

This approach is essentially described as natural expansion of all zones as / when development occurs. Development in a piecemeal fashion, *in lieu* of a plan with defined and agreed guidelines would potentially be very harmful to the water quality both in the north and south of the site, with poor and good / moderate water statuses respectively. While zones will remain in existing locations, the expansion of any of the described zones – landside, airside, airport development and rural development zones – may impact negatively on the water quality and its ecological elements if no proper guidelines, encompassing specific WRBD objectives and programme of measures, are developed.

Air Quality and Climate Factors

Air Quality

The future development of the area in a piecemeal fashion could pose a threat to air quality in localised scenarios. Expansion of the various zones may impact negatively on air quality if proper guidelines are not taken into consideration. The local road network design and car park access routes would be an important aspect to consider regarding air quality so as to reduce any periods of congestion and associated emission conditions. In addition to it would be important to ensure the emissions are not concentrated at any particular time. The location of hangers and air craft maintenance facilities to the south of the plan area is positive as fuel storage beside buildings etc could present a risk of fugitive VOC release and a fire hazard.

Noise

The future development of the area in a piecemeal fashion could create localised noise pollution problems. Expansion of the various zones may impact negatively on noise levels if proper guidelines are not taken in to consideration. The local road network design and car park access routes would be an important aspect to consider regarding noise levels. In addition to it would be important to ensure that sensitive receptor buildings such as hotels etc are located in areas that would not be exposed to high noise levels.

Climate Factors

The increase in development will result in an increase in Green House Gases directly from the development itself and indirectly from increased traffic movements; both of which can be mitigated against to contribute to a decrease in green house gas with the possibility of developing an area as a carbon neutral location. Indirectly, if more development occurs and the working population increases sufficiently, it may become more suitable to provide alternative sustainable transportation options for those working, using or visiting the area.

Flooding

There are no reordered instances of flooding occurring at locations under this scenario. Any new development will require mitigation measures to ensure that development does not cause any flooding at alternative locations near the plan area. There may not be sufficient capacity under this scenario to alleviate any existing problems from the existing structures and infrastructure. Therefore this scenario will not increase any flooding potential but will not resolve any existing issues that may occur within the Plan area.

Material Assets

Roads and Transportation Infrastructure

This scenario would involve the creation of new road network to service development to the southern end of the runway thus underutilising the existing road network for the area this may limit further expansion of the airport in future as it may encroach on future runway extensions. It would also direct traffic away from using the National Secondary Route and using the local road network, which would not have the capacity for such traffic movements.

Energy

The possibility of utilising renewable energy technology to reduce energy consumption would be limited under this scenario and there would be a conflict with certain types of projects with aircraft safety under the public safety zones and safe guarding maps.

Waste Water

This scenario would require new infrastructure for development to the Southern end of the LAP area. New development will only occur if there is sufficient capacity in the system to adequately cater for such development.

Drinking Water

This proposal involves the expansion of the existing airside zone and inclusion of rural character zones at east and west of this land use type, which also has potential for navigational aids. The airport development zone, still located north of the development will be expanded to the west, while the landside development has increased in size in a northerly direction.

This development, if chosen, will see construction work and excavations in the northern sector of the IWAK and surrounding lands.

Without being familiar with the development plan and proposed drinking water abstraction rate required for the development, it is difficult to predict the impact on the water supply. If, for example, a study finds that an aquifer is being drained at a rate faster than it can be replenished, restrictions may be imposed. Such conservation of groundwater resources would not be possible without first having a groundwater study to identify the problem.

Further, a groundwater study can also be used to predict and possibly even correct other problems related to groundwater withdrawal. Surface land elevations can even be lowered by groundwater depletion, a process known as land subsidence. This can be extremely damaging to buildings located on the surface, and cost millions to rectify.

Waste

The expansion of the existing development will generate waste arising during construction. The necessary infrastructure for construction and demolition waste is not in place at present. Infrastructure to cater for this waste should be provided in advance of construction work to ensure that projects are not held up due to lack of appropriate authorised waste facilities. The works may generate waste peat, currently there is no treatment facility for this in east Mayo. There is some uncertainty as to the quantity and type of waste arisings until the exact nature of the business developments, level of employment and passenger numbers are known. Hazardous waste could arise, or a business using wastes generated on the campus as a resource could be

introduced. Authorised waste collectors can manage most waste arisings from the business park and International catering waste is classified as category 1 animal by product and must be managed in accordance with the Department of Agriculture and Food requirements. This scenario allows for natural expansion of the airport, thus due to the adhoc nature of expansion, the necessary waste infrastructure may not be in place in time to facilitate construction works. It may be possible to reuse some excavated material on site in landscaping works in the proposed amenity areas. Comprehensive construction and operational waste management plans will be required for each development.

Cultural Heritage

The Archaeological heritage and sites identified in the Record of Monuments and Places will be impacted upon. The integrity of the archaeological sites in their settings will be impacted upon.

RPM MA072-119 Megalithic Structure

RPM MA073-034 Mound

Will be impacted upon.

Planning Applications would continue to be assessed on an individual basis and would be subject to the relevant statutory requirements and guidelines in place for the protection of architectural heritage.

Landscape

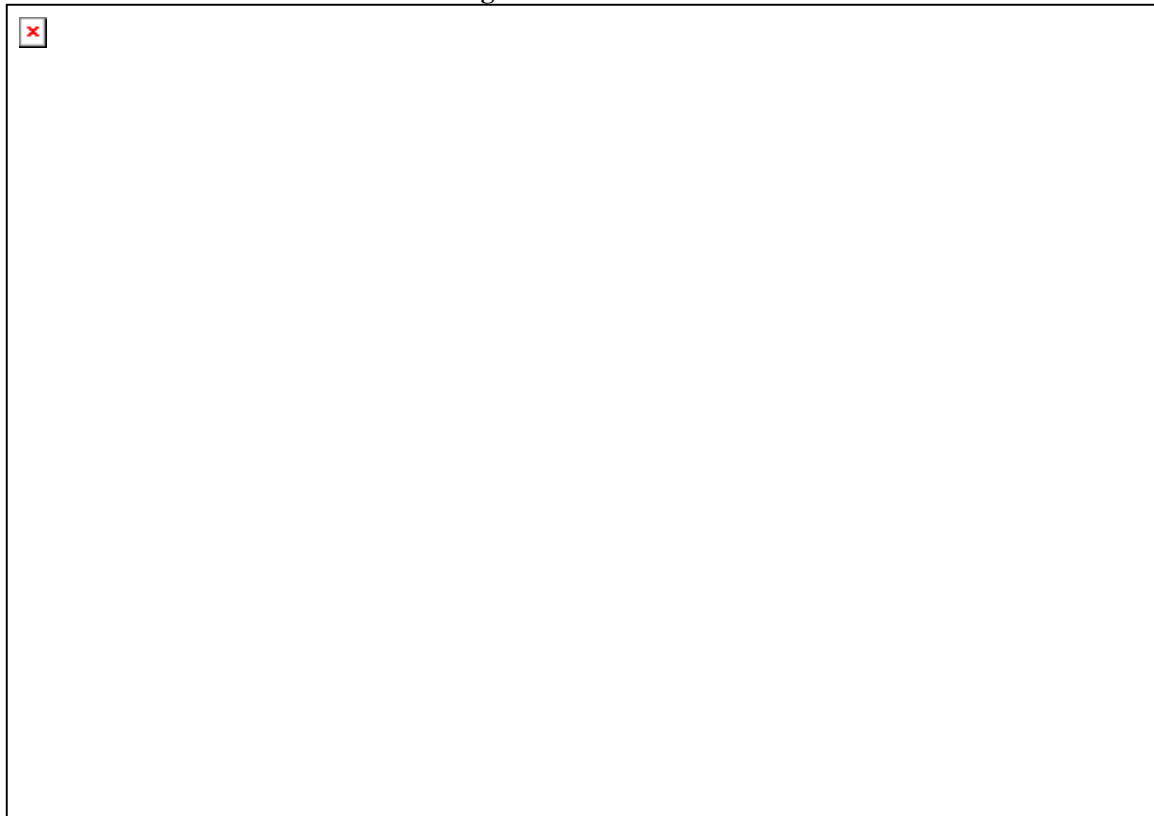
Development under this scenario would occur at the most elevated areas of the LAP, thus increasing the negative impact on the landscape character of the area. The prominent ridgelines at this located cannot easily absorb development and thus reducing the possibility of further screening existing development on the landscape. Also the linear nature would extend development along the ridge line. Therefore scenario would have a negative impact on the landscape character of the Area.

6.4 Scenario 2

6.4.1 Description of Scenario 2

Scenario 2 expands the existing Airport Development zone (business park area) to the east of the plan area into the airport zones. The airport terminal and access will relocate to the West of the Airport Development zone. The terminal area could also be located on the lands to the South of the runway. The existing terminal building would be redeveloped to a use associated with the Airport Development Zone

Fig 6.3: Scenario 2



6.4.2 Assessment of Scenario 2

Biodiversity, Flora and Fauna

See Scenario 1 above

Population and Human Health

This scenario would be similar to Scenario 1 above in terms of impact on population due to the modest expansion of the airport. Restrictions in relation to the possible uses within the airport development zone due to the Public Safety Zones and Safe Guarding maps would restrict the economic potential of the airport therefore reducing the working population.

Soils and Geology

In terms of the impact on soils and geology, scenarios 1 & 2 are similar, with expansion being constrained to the south of the regional road. The slopes in these areas are not steep and this approach would not be detrimental provided that proper geotechnical assessments are carried out on the blanket peat to ensure that measures are put in place to prevent landslides from occurring.

Water

Scenario 2 describes a significant change to the current zoning of the IWAK, with the relocation of the airport terminal and access and the airport development zone expanding to the east and west. It also describes an expansion of the current rural character of the site. Any development in this area can potentially impact on the freshwater and ecological elements and emphasis must be placed on the restoration of the poor and moderate status water bodies, while the presently good status must be protected from any possible deterioration.

Air Quality and Climate Factors

Air Quality

The relocation of the airport terminal and expansion of the business park to the east could potentially impact on the air quality depending on technologies utilised at the redevelopment of the Business Park and development of the new terminal. Emphasis should be placed on

increasing the utilisation of energy efficient and renewable technologies, car park design, road networks to maintain the good status of ambient air quality in this region.

Noise

The relocation of the airport terminal and expansion of the business park to the east could potentially impact on the noise levels depending on technologies utilised at the redevelopment of the Business Park and development of the new terminal. Emphasis should be placed on car park design, road networks and public transport to ensure that noise levels do not give rise to nuisance in this region.

Climate Factors

The increase in development will result in an increase in Green House Gases directly from the development itself and indirectly from increased traffic movements, both of which can be mitigated against to contribute to a decrease in green house gas with the possibility of developing an area as a carbon neutral location. Indirectly, if more development occurs and the working population increases sufficiently, it may become more suitable to provide alternative sustainable transportation options for those working, using or visiting the area.

Flooding

Under this scenario the LAP area would be redeveloped, giving an opportunity for management of surface water run-off which would be properly mitigated against and thus reduce the possibility of surface water flooding in areas adjoining the airport complex.

Material Assets

Roads and Transportation Infrastructure

This scenario allows for the use of the existing road network to the area and would offer the opportunity of improving the internal circulation and traffic movements within the airport campus. Moving the terminal to an alternative location may encourage traffic to use the local road network instead of the National Network, but adequate signage and layout could mitigate against this occurring.

Energy

Similar to scenario 1 above, the possibility of utilising renewable energy technology to reduce energy consumption would be limited under this scenario and there would be a conflict with certain types of projects with aircraft safety under the public safety zones and safe guarding maps.

Waste Water

Similar to all scenarios, the continued development of the LAP would require adequate sewerage treatment capacity and therefore development will not occur unless there is adequate treatment. The scenario can give an accurate prediction as to the requirement for future waster water treatment for the LAP.

Drinking Water

This proposal includes the expansion of the airside zone in a southerly direction, while rural character zone similar to Scenario 1 are proposed. The airside development zone will be located in a more easterly direction, with the existing landside zone, including access to the airport will relocate to the west.

The key question is the extent and scope of the construction works during the development phase(s) and the volume and nature of all effluents arising.

One possibility is that more control can be enforced on lands within a boundary than on privately-owned lands or commonage, as long as all measures employed to improve / protect / enhance water bodies are undertaken with the best available technology necessary to achieve good water status by 2015.

Waste

The expansion of the existing development will generate waste arising during construction. The necessary infrastructure for construction and demolition waste is not in place at present. Infrastructure to cater for this waste should be provided in advance of construction work to ensure that projects are not held up due to lack of appropriate authorised waste facilities. The works may generate waste peat, currently there is no treatment facility for this in east Mayo. There is some uncertainty as to the quantity and type of waste arising until the exact nature of the business developments, level of employment and passenger numbers are known. Hazardous waste could arise, or a business using wastes generated on the campus as a resource could be introduced. Authorised waste collectors can manage most waste arising from the business park and International catering waste is classified as category 1 animal by product and must be managed in accordance with the Department of Agriculture and Food requirements. It may be possible to reuse some excavated material on site in landscaping works in the proposed amenity areas. Comprehensive construction and operational waste management plans will be required for each development.

Cultural Heritage

The Archaeological heritage and sites identified in the Record of Monuments and Places will be impacted upon. The integrity of the archaeological sites in their settings will be impacted upon.

RPM MA072-119 Megalithic Structure

RPM MA073-034 Mound

Will be impacted upon.

Planning Applications would continue to be assessed on an individual basis and would be subject to the relevant statutory requirements and guidelines in place for the protection of architectural heritage.

Landscape

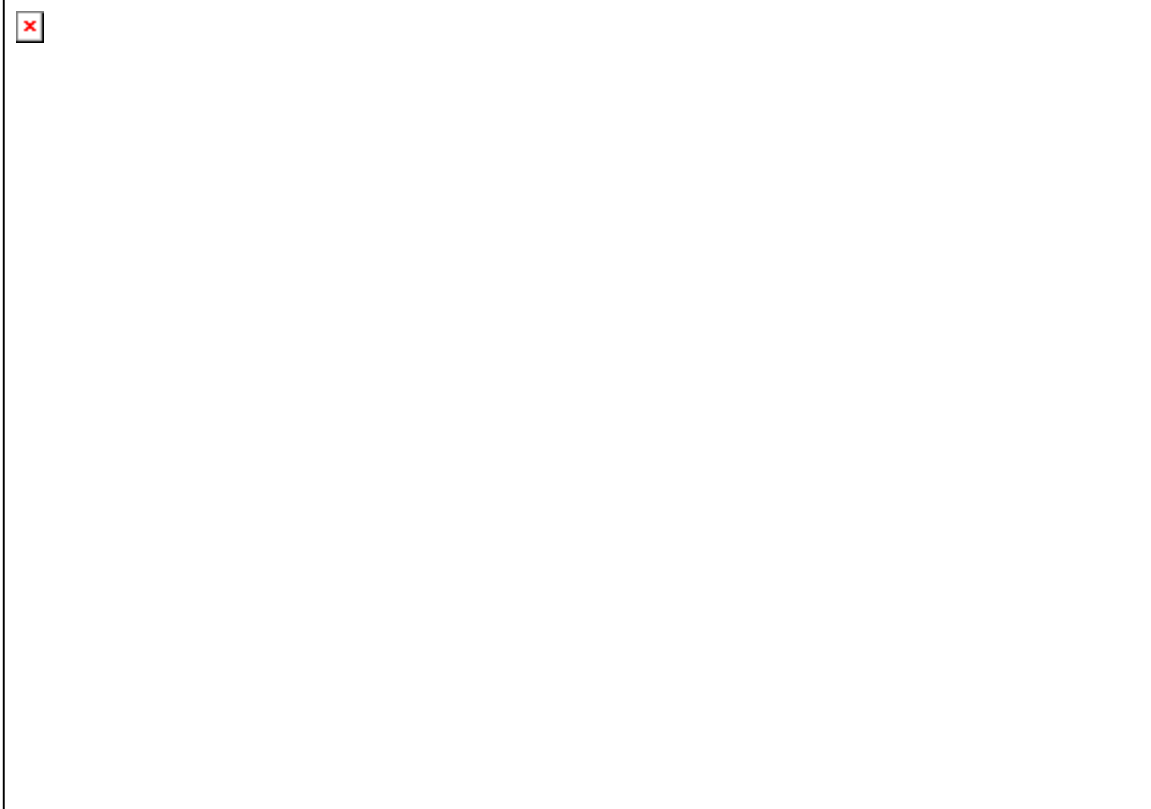
Under this scenario, all development would occur along a visually prominent ridgeline with little opportunity to screen development on the landscape. This would be considered to have a negative impact on the landscape character of the area and would be considered difficult to mitigate against.

6.5 Scenario 3

6.5.1 Description of Scenario 3

Scenario 3 expands the existing uses around the airport campus, but provides a larger plan area to encompass the Airport Development Zone to the North of the regional road. The airport uses can expand naturally based on the existing situation and the requirement to separate the passenger aircraft and freight is also facilitated by this scenario.

Fig 6.4 Scenario 3



6.5.2 Assessment of Scenario 3

Biodiversity, Flora and Fauna

Without detailed habitat mapping of SEA study area it is difficult to say what the impact of the various scenarios on biodiversity, flora and fauna will be. However any proposal that minimises land take and associated loss of habitats would be preferred. It is therefore important to ensure that land take is minimised through careful integrated planning. Due to the raised nature of this site relative to the surrounding land, it is imperative that high quality landscape proposals are developed for the interface area between the airport and the surrounding lands that respect the natural biodiversity and character of the surrounding landscape.

In relation to biodiversity the objective should be to ensure that biodiversity is conserved and enhanced, insofar as consistent with the safe and efficient operation of the airport, by ensuring that land take is minimised and that impacts on habitats and species are mitigated to ensure that there is no net loss of biodiversity. Development of the LAP lands must also ensure that there is no resulting deterioration of downstream watercourses or associated wetland habitats, including designated sites from increased and/or polluted runoff.

It is important that a strategic approach is taken to biodiversity and landscape management within the LAP area. Detailed habitat mapping is necessary to determine the habitats and species present, which should take into account seasonal patterns. When this information has been obtained more informed decisions relating to the zonings can be taken. This information can be used to inform the preparation and implementation of a detailed landscape and habitat framework for the site.

Population and Human Health

The next three scenarios will have similar details interactions to population and human health. In relation to population, as the airport develops there will be a significant increase in the working and visiting population of the airport. But as the airport becomes an economic driver for the region, the LAP will show an improvement in the lifestyle of the population in the catchment

area. Shorter travel times to work; a vibrant working environment and a better quality of life for all associated with the Airport.

The larger Plan area will ensure that development will not interfere with aircraft safety and incompatibility of land uses, restricted by the public Safety Zones. The area will offer more employment opportunities.

Scenario 3 indicates that the airport development zone can expand to the east of the existing development, but could be restricted in terms uses due to the Public Safety Zone.

Soils and Geology

These scenarios involve the expansion of the Airport Development Zone into the area north of the regional road. These scenarios represent the greatest development in an area where the slopes are steeper than the area to the south of the regional road. However, this approach again would not be detrimental provided that proper geotechnical assessments are carried out on the blanket peat to ensure that measures are put in place to prevent landslides from occurring.

Water

This scenario essentially illustrates expansion of the existing site and particularly the development of the airport development zone north of the regional road. Again, the term 'expand naturally' indicates the absence of a series of guidelines or a definitive plan.

The streams to the north of this site are within a water body presently described as of poor status and hence must be improved to good status by 2021; there are no alternatives. Also, since this water body contains first and second order tributaries of the Moy, a designated Salmonid river, there is further emphasis on restoration for the purpose of the water's ecological elements, not only fish but macro invertebrates, phytobenthos, phytoplankton (including bacilliarophytes) and macrophytes.

Air Quality and Climate Factors

Air Quality

The main aspect of this scenario is the development of the airport development zone north of the regional road with an amenity zone to the east. The absence of a strategic plan in regard to this scenario could present sustainability issues. In relation to air quality the interaction of building design, energy usage, road network, and traffic movements should be considered.

Noise

The main aspect of this scenario is the development of the airport zone north of the regional road with an amenity zone to the east. The absence of a strategic plan in regard to this scenario could lead to localised and intermittent noise nuisances if the impact of the road network, traffic movements and building energy controls are not taken into consideration.

Climate Factors

The assessment of scenario 3 will be similar to both scenarios 4 and 5. The LAP area has expanded therefore the demand for energy will be greater. But it also offers the opportunity to provide and implement more energy conservation measures, with building design more flexible due to the topography of the lands to the North of the Regional Road.

Flooding

As the developable area increases there are also the scope that flooding as a result of surface water runoff would also increase. But a larger plan area allows for more scope in building and site design to minimise the effects of surface water run-off and can be designed to factor in any existing problems associated with flooding around the airport complex. Therefore with the right mitigation measures, this scenario could improve any existing environmental concerns relating to flooding.

Material Assets

Roads and Transportation Infrastructure

The road and transportation infrastructure is in place and there is little addition required to implement the LAP. A larger area gives an opportunity to properly manage traffic onto the national route and to avoid any increase in traffic onto the local road network.

Energy

A larger area for development gives an opportunity to provide renewable energy technologies in the LAP area and they can be located so as not to interfere with aircraft safety. The large amount of rural character space may limit the best locations for implementing such technologies and the airport development zone may be the better location dependent on testing of such technologies therefore restricting the location for economic development.

Waste Water

Development will only occur if there is sufficient waste water provision, therefore the expansion of the airport development zone will require phasing as outlined LAP.

Drinking Water

All zones will be extended to include north of the regional road, with a larger rural character area for expansion and an airport development zone which is separated from the airport by the R376. A larger airport development zone will potentially include a larger population equivalent (PE) and a consequential necessity to a greater demand on the drinking water usage.

Waste

A greater plan area implies greater waste arising both during construction and operational phase. The expansion of the existing development will generate waste arising during construction. The necessary infrastructure for construction and demolition waste is not in place at present. Infrastructure to cater for this waste should be provided in advance of construction work to ensure that projects are not held up due to lack of appropriate authorised waste facilities. The works may generate waste peat, currently there is no treatment facility for this in east Mayo. The larger amenity area proposed may enable recovery of a proportion of excavated material on site.

There is some uncertainty as to the quantity and type of waste arising until the exact nature of the business developments, level of employment and passenger numbers are known. Hazardous waste could arise, or a business using wastes generated on the campus as a resource could be introduced. Authorised waste collectors can manage most waste arising from the business park and International catering waste is classified as category 1 animal by product and must be managed in accordance with the Department of Agriculture and Food requirements. It may be possible to reuse some excavated material on site in landscaping works in the proposed amenity areas. Comprehensive construction and operational waste management plans will be required for each development.

Cultural Heritage

The Archaeological heritage and sites identified in the Record of Monuments and Places will be impacted upon. The integrity of the archaeological sites in their settings will be impacted upon.

RPM MA072-119 Megalithic Structure

RPM MA073-034 Mound

Will be impacted upon.

Planning Applications would continue to be assessed on an individual basis and would be subject to the relevant statutory requirements and guidelines in place for the protection of architectural heritage.

Landscape

The main development opportunity is to the North of the airport campus below the ridgelines. New development can be designed so that it does not have a major impact on the landscape

character of the area and could act as a softener to the existing and future development along the ridgeline that would be necessary for the airport development.

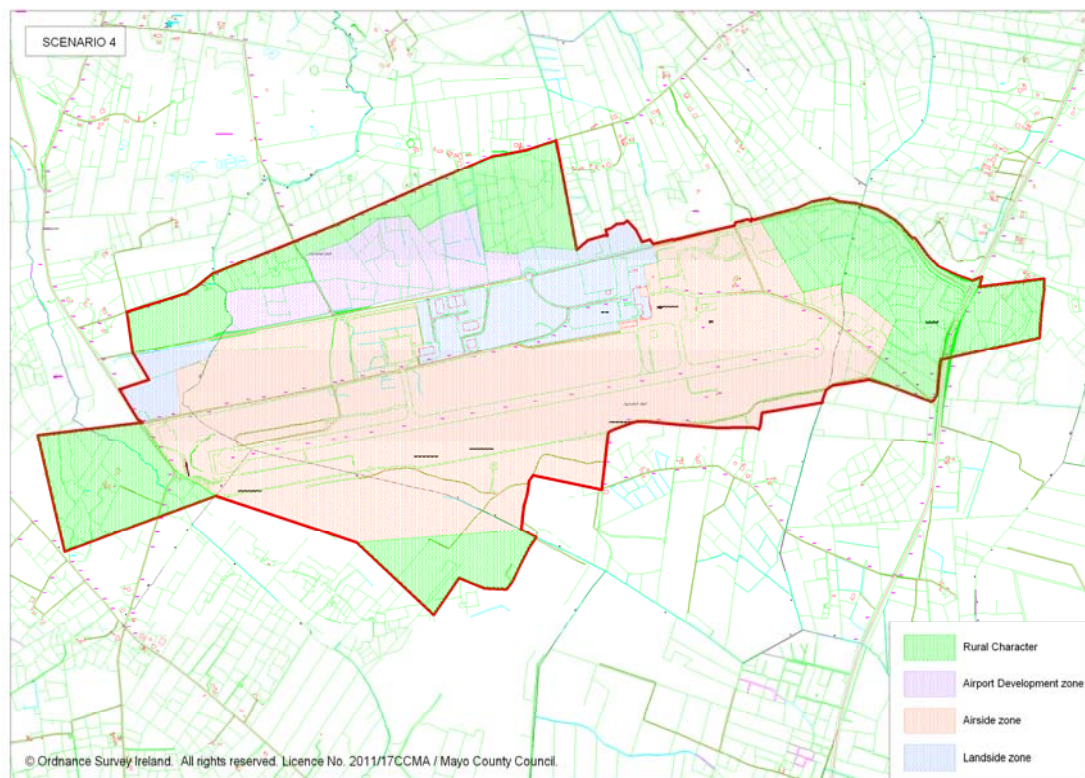
The expansion of the business park towards the existing terminal would result in the removal of a small hill that provides a landscaped screen for the terminal building and if developed would result in a negative impact on the landscape character of the area.

6.6 Scenario 4

6.6.1 Description of Scenario 4

Scenario 4 locates all the Airport Development Zone to the North of the Regional Road separating it from the airport related development. Allowing the airport to further development without any incompatibility of land uses.

Fig 6.5: Scenario 4



6.6.2 Assessment of Scenario 4

Biodiversity, Flora and Fauna

See Scenario 3 above

Population and Human Health

See Scenario 3 above. The same assessment will apply to this scenario

Soils and Geology

This scenario is similar to scenarios 3 & 5, although with a higher proportion of Rural Character Zone. As with Scenarios 3 and 5, this approach would not be detrimental provided that proper geotechnical assessments are carried out on the blanket peat to ensure that measures are put in place to prevent landslides from occurring.

Water

This scenario sees a very significant expansion in the scale and extent of the IWAK development. As with Scenario 3, development of the airport development zone is to the north; into the poor status water body. Pressures on this water body have resulted in it being 'probably at risk' of

failing to reach good status by 2015; timescales have been extended to 2021 due to delayed recovery of highly impacted sites in this location.

Air Quality and Climate Factors

Air Quality

As in Scenario 3, the main aspect of this scenario is the development of the airport development zone north of the regional road. However the inclusion of an rural character area surrounding the airport development zone to the north will provide greater dispersion/ circulation rates and therefore it should be seen as a positive in relation to air quality

Noise

As in Scenario 3, the main aspect of this scenario is the development of the airport zone north of the regional road, however it is proposed to include an amenity area surrounding the business park to the north. The noise levels from this development scenario would be as outlined in Scenario 1/2/3 above.

Climate Factors

See Scenario 3 above. The same assessment will apply to this scenario

Flooding

See Scenario 3 above. The same assessment will apply to this scenario

Material Assets

Roads and Transportation Infrastructure

See Scenario 3 above. The same assessment will apply to this scenario

Energy

See Scenario 3 above. The same assessment will apply to this scenario

Waste Water

See Scenario 3 above. The same assessment will apply to this scenario

Drinking Water

This would encompass a similar development as Scenario 3, but with more emphasis on rural character and with the entirety of the airport development zone north of the regional road, in addition to a surrounding rural character zone. This way, all airport activities and possible expansion will remain separate from the airport development zone. The development of a Airport development Zone north of the R376 will remain completely separate from further expansions of the airport-related development is a worthwhile consideration. Similar to Scenario 3, the nature and volume of effluents arising and discharging to receiving waters such as the Sonnagh River in the north (a tributary of the River Moy, within the cSAC and itself a Salmonid river) and the tributaries of the Lung River to the south (in addition to the two aforementioned pNHAs) must be quantified and characterised insofar as possible, at all stages of development and operation of the airport development zone and airside and landside zone infrastructural development and operation.

Waste

The expansion of the existing development will generate waste arising during construction. A greater plan area implies greater waste arising both during construction and operational phase. The proposed amenity areas may enable recovery of some excavated material on site in landscaping works. The necessary infrastructure for construction and demolition waste is not in place at present. Infrastructure to cater for this waste should be provided in advance of construction work to ensure that projects are not held up due to lack of appropriate authorised waste facilities. The works may generate waste peat, currently there is no treatment facility for this in east Mayo. Whilst the proposed development to the north of the regional road will to some extent separate business activities from the airport there is some uncertainty as to the

quantity and type of waste arising until the exact nature of the business developments, level of employment and passenger numbers are known. Hazardous waste could arise, or a business using wastes generated on the campus could be introduced. Authorised waste collectors can manage most waste arising from the business park and International catering waste is classified as category 1 animal by product and must be managed in accordance with the Department of Agriculture and Food requirements. It may be possible to reuse some excavated material on site in landscaping works in the proposed amenity areas. Comprehensive construction and operational waste management plans will be required for each development.

Cultural Heritage

The Archaeological heritage and sites identified in the Record of Monuments and Places will be impacted upon. The integrity of the archaeological sites in their settings will be impacted upon.

RPM MA072-119 Megalithic Structure

RPM MA073-034 Mound

Will be impacted upon.

Planning Applications would continue to be assessed on an individual basis and would be subject to the relevant statutory requirements and guidelines in place for the protection of architectural heritage.

Landscape

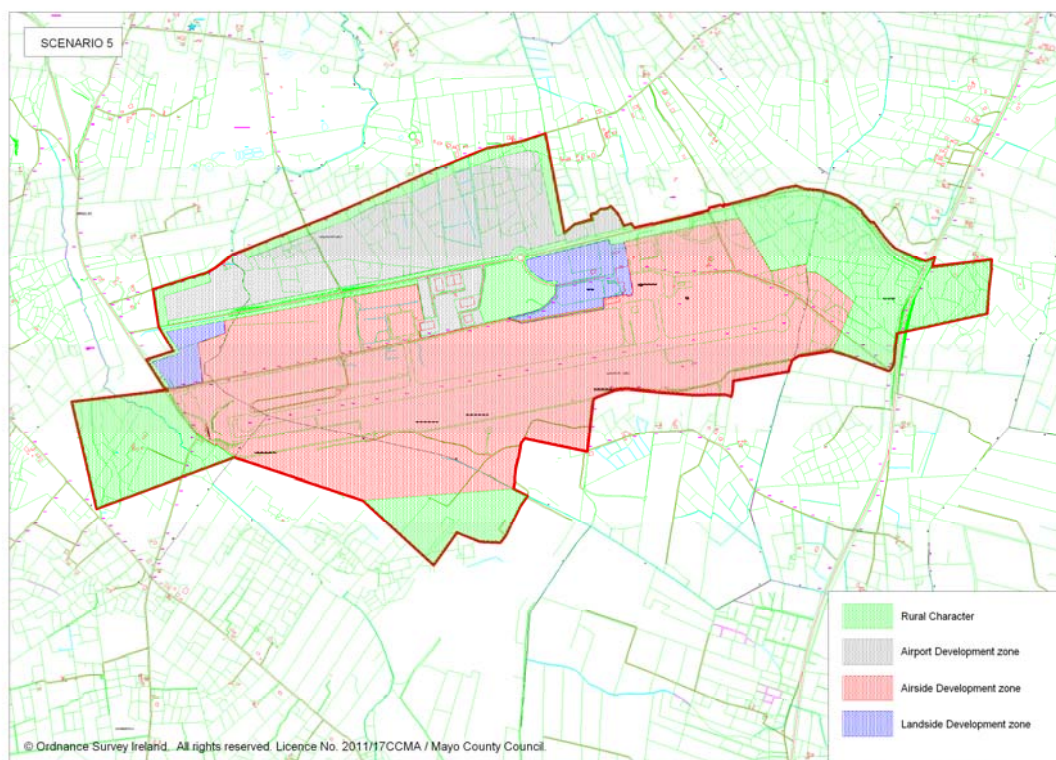
Similar assessment to scenario 3, except for the increase in the landside development zone to the west of the existing terminal, which would result in the removal of a small hill that provides for adequate screening of the existing terminal building.

6.7 Scenario 5

6.7.1 Description of Scenario 5

Scenario 5 zones all lands to the North of the regional road as Airport Development zone. This facilitates the most varied use for the area, by not restricting the location of development, but allows for a methodological approach to determine the most appropriate locations for any development within the zoning objectives.

Fig 6.6: Scenario 5



6.7.2 Assessment of Scenario 5

Biodiversity, Flora and Fauna

See Scenario 3 above

Population and Human Health

In relation to population, as the airport develops there will be a significant increase in the working and visiting population of the airport. But as the airport becomes an economic driver for the region, the LAP will show an improvement in the lifestyle of the population in the catchment area. Shorter travel times to work; a vibrant working environment and a better quality of life for all associated with the Airport.

The larger Plan area will ensure that development will not interfere with aircraft safety and incompatibility of land uses, restricted by the public Safety Zones. The area will offer more employment opportunities.

Soils and Geology

These scenarios involve the expansion of the Airport Development Zone into the area north of the regional road. These scenarios represent the greatest development in an area where the slopes are steeper than the area to the south of the regional road. However, this approach again would not be detrimental provided that proper geotechnical assessments are carried out on the blanket peat to ensure that measures are put in place to prevent landslides from occurring.

Water

Scenario 5 zones all lands to the north of the regional road as the airport development zone, and allows for a methodical approach to determine the most appropriate locations for any development within the zoning objectives. The adoption of a methodical approach to determine appropriate locations for development indicates that any planning proposals will follow a definite plan and does not suggest naturally expanding zones such as that suggested in Scenario 1; this is a positive proposal.

Air Quality and Climate Factors

Air Quality

This scenario zones all lands to the north of the regional road as the airport development zone. As this approach requires an evaluation of lands using an integrated assessment approach this scenario should be seen as the most logical and sustainable manner of encouraging appropriate development in this area.

Noise

This scenario zones all lands to the north of the regional road as the airport development zone. As this approach requires an evaluation of lands using an integrated assessment approach this scenario should be seen as the most logical and sustainable manner of encouraging appropriate development in this area.

Climate Factors

The LAP area has expanded therefore the demand for energy will be greater. But it also offers the opportunity to provide and implement more energy conservation measures, with building design more flexible due to the topography of the lands to the North of the Regional Road.

Flooding

As the developable area increases there are also the scope that flooding as a result of surface water runoff would also increase. But a larger plan area allows for more scope in building and site design to minimise the effects of surface water run-off and can be designed to factor in any existing problems associated with flooding around the airport complex. Therefore with the right mitigation measures, this scenario could improve any existing environmental concerns relating to flooding.

Material Assets

Roads and Transportation Infrastructure

The road and transportation infrastructure is in place and there is little addition required to implement the LAP. A larger area gives an opportunity to properly manage traffic onto the national route and to avoid any increase in traffic onto the local road network.

Energy

A larger area for development gives an opportunity to provide renewable energy technologies in the LAP area and they can be located so as not to interfere with aircraft safety. Designating the majority of the area for Airport Development, give scope to develop energy efficient technologies within the restriction of a zoning objective. This offers a more strategic approach for development.

Waste Water

Development will only occur if there is sufficient waste water provision, therefore the expansion of the airport development zone will require phasing as outlined LAP.

Drinking Water

Differing subtly from Scenario 4, this proposal will see the expansion of the current IWAK and vicinity in all directions, with the Airport Development Zone *only* north of the regional road, but with no allowance for Rural Character zones north of the regional road. Therefore, the definition of Rural Character in this context is vital in differentiating between scenarios 4 and 5. While Rural Character can be defined as 'preserved land' for future expansion, their importance is negotiable and very much dependant on actual land uses assigned.

Waste

The expansion of the existing development will generate waste arising during construction. A greater plan area implies greater waste arising both during construction and operational phase. The proposed amenity areas may enable recovery of some excavated material on site in landscaping works. The necessary infrastructure for construction and demolition waste is not insitu at present. Infrastructure to cater for this waste should be provided in advance of construction work to ensure that projects are not held up due to lack of appropriate authorised waste facilities. The works may generate waste peat, currently there is no treatment facility for this in east Mayo. There is some uncertainty as to the quantity and type of waste arising until the exact nature of the business developments, level of employment and passenger numbers are known. Hazardous waste could arise, or a business using wastes generated on the campus could be introduced. Authorised waste collectors can manage most waste arising from the business park and International catering waste is classified as category 1 animal by product and must be managed in accordance with the Department of Agriculture and Food requirements. It may be possible to reuse some excavated material on site in landscaping works in the proposed amenity areas. Comprehensive construction and operational waste management plans will be required for each development.

Cultural Heritage

The Archaeological heritage and sites identified in the Record of Monuments and Places will be impacted upon. The integrity of the archaeological sites in their settings will be impacted upon.

RPM MA072-119 Megalithic Structure

RPM MA073-034 Mound

Will be impacted upon.

Planning Applications would continue to be assessed on an individual basis and would be subject to the relevant statutory requirements and guidelines in place for the protection of architectural heritage.

Landscape

This scenario give more flexibility in terms of siting and design to best develop the airport development zone so that it can encompass all aspects of best practice in order to develop that lands to ensure minimal impact on the landscape character of the area. It also gives scope in utilising the topography to act as a softener to future development necessary for the airport to develop to its full potential. It also ensures that the hill which screens the airport terminal is maintained. This is a distinctive feature which could be landscaped to give a ‘sense of arrival’ at the Airport.

6.8 Evaluation of Alternative Scenarios Against EPO’s

6.8.1 Methodology

The methodology used in evaluating the different Alternative Scenarios and in identifying the preferred Scenario is based on the same methodology used in the SEA of the MCDP 2008-2014. The purpose of the evaluation is to determine the merits of the six Alternative Scenarios described above. This determination process sets out to understand whether each of the alternatives are likely to improve, conflict with or have a neutral interaction with the environment of the County together with the degree of certainty/uncertainty of that interaction – see criteria set out below in Table 6.1

Table 6.1 Criteria for Appraising the Effect of the RES on EPOs

Likely to Improve status of SEOs	Probable Conflict with status of SEOs- unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated by measures under Section 8	Uncertain interaction with status of SEOs	Neutral Interaction with status of SEOs	No Likely interaction with status of SEOs
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The Environmental Protections Objectives (discussed in Section 5 and set out in composite below in Table 6.2) are arrayed against the five Alternative Scenarios to identify which interactions – if any – are likely/unlikely to cause impacts on specific components of the environment.

Table 6.2: Environmental Protection Objectives

EPO Code	Environmental Protection Objectives
Biodiversity, Flora and Fauna	
B1	Conserve and protect designated habitats and protected species
B2	Maintain the biodiversity of interdependent habitats and species in the wider landscape
Population and Human Health	
HP1	To improve the working populations quality of life based on a high quality working environment, reduction in commuting distances and the promotion of sustainable modes of transport within, to and from IWAK.
HP2	To protect human health from incompatible land uses associated with locating at or adjoining airports
Soils and Geology	
SG1	To identify and protect areas which may be deemed to have a risk of landside
Water	
W1	To prevent deterioration of surface water bodies of good or high status
W2	To restore states of water bodies of moderate, poor and bad to good status
W3	To reduce surface water pollution from priority substances
W4:	To achieve water-related designated protected area objectives and to support the achievement of favourable conservation status wherever such plans exist.

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Air & Climatic Factors	
Air Quality	
AR1	Maintain good air quality status in line with CAFÉ Directive requirements and the National Climate Change Strategy.
Noise	
N1	To promote appropriate noise control measures on operations within the IWAK LAP area
N2	To encourage the implementation of control measures on road traffic noise within the IWAK LAP area
Climate	
C1	To maximise the areas contribution to the national decrease in greenhouse gas emissions.
Flooding	
F1	To prevent development on lands which pose – or are likely to pose in the future – a significant flood risk.
Material Assets	
Roads and Transport Infrastructure	
R1	To protect the road network
R2	To prevent any interference with the safety and efficiency of airport operations in the vicinity of the airport
Energy	
E1	To reduce the reliance on non sustainable energy sources by the promotion and use of renewable energy resources
Waste Water	
WW1	To provide adequate waste water infrastructure to meet existing and future demands for such provision
Drinking Water	
DW1	To prevent deterioration of the status of water bodies with regard to quality, quantity and to improve water body status of rivers, lakes and ground water to at least good status as appropriate to the WFD, providing good sources of abstraction for drinking water
Waste Management	
WM1	Minimise waste production and maximise recycling and recovery through the introduction of sustainable waste management practices.
Cultural Heritage	
Archaeology	
CH1	To protect the archaeological heritage and especially sites identified in the Record of Monuments and Places, National Monuments in the ownership or guardianship of the State and National Monuments that are subject to Preservation Orders and to safeguard the integrity of the archaeological sites in their setting.
Architectural Heritage	
CH2	To protect the architectural heritage of County Mayo with regard to protected structures, Architectural Conservation Areas and other elements highlighted in the baseline data (Section 4)
Landscape	
L1	To protect the landscape character of the area

Criteria for appraising the effects of Proposed Ireland West Airport (IWAK) Local Area Plan Scenarios on Environmental Protection Objectives

Scenario	Likely to Improve status of EPOs	Probable Conflict with status of EPOs- unlikely to be mitigated	Potential Conflict with status of EPOs- likely to be mitigated by measures	Uncertain interaction with status of EPOs	Neutral Interaction with status of EPOs	No Likely interaction with status of EPOs
Scenario 1		E1; HP1; HP2; L1	R1; WM1; CH1; C1 AR1; SG1; B1; B2	W1; W2; W3; W4; N1; N2	DW1; F1; WW1; CH2; R2	
Scenario 2	R1; F1	E1; HP1; HP2; L1	WM1; W1; W2; W3; W4; CH1; C1; N1; N2; SG1 B1; B2	AR1	DW1; WW1; CH2; R2	
Scenario 3	R1; WM1; F1 E1; C1		AR1; CH1; HP1; HP2; L1; N1; N2; SG1 B1; B2	W1; W2; W3; W4	DW1; WW1; CH2; R2	
Scenario 4	R1; WM1; F1; E1; C1; HP2		W1; W2; W3; W4; AR1; CH1; HP1; L1; N1; N2; SG1 B1; B2		DW1; WW1; CH2; R2	
Scenario 5	R1; WM1; F1; AR1; E1; C1; HP2		W1; W2; W3; W4; CH1; HP1; L1; N1; N2; SG1 B1; B2		DW1; WW1; CH2; R2	

EPO Codes:
B1-2 = Biodiversity, Flora & Fauna; **HP1-2** = Population & Human Health; **SG1** = Soils & Geology; **W1-4** = Freshwater; **AR1** = Air Quality; **N1-2** = Noise; **C1** = Climate Factors; **F1** = Flooding; **R1-2** = Roads and Transportation Infrastructure; **E1** = Energy; **WW1** = Waste Water; **DW1** = Drinking Water; **WM1** = Waste Management; **CH1** = Cultural Heritage (Archaeology); **CH2** = Cultural Heritage (Architectural Heritage); **L1** = Landscape

6.8.2 Preferred Scenario

The Assessment of Scenarios 1 and 2 indicates ‘Probable Conflict with the status of the EPOs – unlikely to be mitigated’. Scenario 3 is limited in terms of improvement of most of the EPS. Scenario 4 and 5 emerge as the most environmentally sustainable of the 5 alternatives as regards all EPOs’. However, Scenario 5 emerges as the most sustainable overall. All though the developable area in Scenario 5 is greater than Scenario 4, it offers more scope to locate development in areas with less impact on the environment. It also offers a greater area for the development of energy, waste, surface water, conservation initiatives and renewable energy projects. Scenario 5 scored highest in the ‘Likely to improve the status of the EPO’ category as it offers more scope for the development potential of the LAP area.

Having regard to planning considerations for the future development of the Area, Scenario 5 is also the option that emerges as the alternative that balances environmental protection with sustainable economic development. Therefore, Scenario 5 is the option that forms the basis of the draft Ireland West Airport Knock Local Area Plan. The detailed policies and objectives of the draft IWAK LAP are evaluated in Section 7 in order to identify potential areas of conflict between the EPOs established during the SEA process.

Section 7 Evaluation of the Policies and Objectives of the Draft LAP

7.1 Introduction

This section evaluates the policies and objectives of the draft LAP against the Environmental Protection Objectives which were established in Section 5. The interactions between the EPOs policies and objectives of the draft IWAK LAP determine the environmental effects of implementing the LAP. The process of evaluation of the detailed policies and objectives enables the likely significant effects on implementing the LAP to be identified and also for mitigation measures to be incorporated into the LAP where appropriate to address adverse impacts.

SEA is an interactive process, therefore some of the policies and evaluated below in the matrix below may have been amended to or added to at different stages of the SEA and LAP process. Any such changes are highlighted in the Matrix below and recorded in Section 8, Table 1 of the ER. New or amended policies are highlighted in green in the Matrix below as a result of the SEA process.

Note that with the LAP measures evaluated under the criteria as having an ‘Uncertain interaction with the status of the EPOs’, the interaction, and environmental impacts, if any, which the implementation of the LAP measures would have, would be determined by the nature and extent of development arising from these measures, and site specific environmental factors. The uncertainties can be avoided by the development management process only granting planning permission which would not conflict with the status of the EPOs. Measures are factored into the LAP recommended through the SEA process which if adhered to would likely avoid any conflicts.

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Policies / Objectives of draft IWAK LAP ↓		Likely to Improve status of EPOs	Probable Conflict with status of EPOs- unlikely to be mitigated	Potential Conflict with status of EPOs- likely to be mitigated by measures outlined in this SEA	Uncertain interaction with status of EPOs	Neutral Interaction with status of EPOs	No Likely interaction with status of EPOs
SDP1	It is the policy of the Council to promote and support the development of Ireland West Airport Knock (IWAK) as a strategically important international gateway to the Region through the continued growth of the Airport as a major transportation hub.			CH1; SG1; B1-2; AR1; N1-2; C1; F1; R1-2; E1; WW1; DW1; WM1; CH2; L1		W1-4; HP1-2	
SDP2	It is the policy of the Council to support and promote the development potential of the IWAK LAP area as a strategic economic/enterprise hub for the Region.			CH1; SG1; B1-2; AR1; N1-2; C1; F1; R1-2; E1; WW1; DW1; WM1; CH2; L1		W1-4; HP1-2	
SDO1	It is an objective of the Council to facilitate the sustainable development of the LAP area as a transportation and economic/enterprise hub of strategic importance for the Region through the implementation of the policies; objectives and design standards/guidance of this LAP.	SG1; HP1-2; AR1; N1-2; C1; F1; R1-2; E1; WW1; DW1; WM1; CH2; L1		CH1; B1-2		W1-4	
SDO2	It is an objective of the Council to request the Minister for Environment, Community and Local Government to designate the area of the IWAK Local Area Plan as a Strategic Development Zone following the adoption of this LAP	CH1; CH2; WM1; N1-2; E1; HP1-2; C1; F1; L1; DW1; WW1; R1-2; SG1		W1-4; AR1; B1-2; F1; WM1		HP1-2	

EPO Codes:

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SDO3	It is an objective of the Council to ensure that there are sufficient appropriately zoned lands to facilitate the sustainable development of the IWAK LAP area as a strategic transportation and economic/enterprise hub for the Region.	HP1-2; F1		CH1; SG1; W1-4; B1-2; AR1; N1-2; C1; R1-2; E1; WW1; DW1; WM1; CH2; L1			
SDO4	It is the objective of the Council to promote the orderly development of all lands zoned within the IWAK LAP area by encouraging, where necessary, land assembly and shared access arrangements.	SG1; F1		CH1; W1-4; B1-2; AR1; N1-2; R1-2; E1; WW1; DW1; L1		HP1-2	C1; WM1; CH2
SDO5	It is an objective of the Council to ensure that the development all lands zoned as 'Airport Development' in Section 4 of this LAP is managed in a sustainable way through the framework of a masterplan (outlined in Section 4 of this LAP)	SG1; W1-4; HP1-2; AR1; N1-2; C1; F1; R1-2; E1; DW1; WM1; CH2; L1		CH1; B1-2; WW1			
SDO6	It is an objective of the Council to promote a high quality working environment to ensure that the LAP area is an attractive place to work and visit.	W1-4; HP1; L1; SG1;		CH1; N1-2; AR1; E1; SG1; B1-2		WM1; CH2;	HP2; C1; F1; DW1; WW1; R1-2; DW1

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SDO7	It is an objective of the Council to promote the development of the IWAK LAP area in terms of the 'Green Economy' through the policies; objectives and design standards relating to sustainability outlined throughout this LAP	SG1; W1-4; B1-2; HP1; AR1; C1; E1; DW1; L1		CH1; R1-2; WW1; WM1		HP2	N1-2; F1; CH2
SDO8	It is the objective of the Council to ensure that all development proposals comply with the Design Standards and Guidance set out in Section 6 of this LAP	CH1; SG1; W1-4; B1-2; HP1-2; AR1; N1-2; C1; F1; R1-2; E1; WW1; DW1; WM1; CH2; L1					
LP1	It is the policy of the Council to rationalise the use of lands within the IWAK LAP area through appropriate land use zoning objectives as outlined in Section 4 of this LAP	WM1; N1-2; AR1; HP1; F1; WW1; DW1; R2;		CH1; E1; HP2; C1; L1; SG1; B1-2;	W1-4; CH2		R1
LO1	It is an objective of the Council to ensure that all development proposals comply with the land use zoning objectives outlined in Section 4 of this LAP; other uses may only be considered where it is demonstrated that they do not conflict with the primary land use zoning objective.	WM1; N1-2; AR1; E1; HP1-2; F1; DW1; WW1; R2		CH1; W1-4; C1; L1; SG1; B1-2	CH2		R1

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SP1	It is the policy of the Council to promote the use of sustainable options for all development proposals to support the 'Green Economy' concept within the IWAK LAP area.	SG1; W1-4; B1-2; HP1; AR1; C1; F1; E1; WW1; DW1; L1		CH1; R1-2		HP2	N1-2; CH2
SO1	It is an objective of the Council to encourage the use of energy efficiency in all new development proposals, with the ultimate aim of achieving a Carbon Neutral Status for the IWAK LAP area	B1-2; AR1; C1; F1; E1; DW1; L1		SG1; R1-2	CH1	HP1-2	W1-4; N1-2; WW1; CH2
SO2	It is an objective of the Council to support measures to raise public awareness of the value of the water resources by encouraging conservation, reuse and protection of water, in addition to the elimination of wastage of water through waste-water detection and enforcement of repairs and to replace deficient sections of pipe work where necessary	W1-4; WM1; HP1; C1; F1; DW1; WW1; B1-2;			E1	AR1;	CH1; CH2; N1-2; HP2; L1; R1-2; SG1
SO3	It is an objective of the Council promote the reduction of energy consumption through innovative design and layout with the appropriate use of materials and new technology in developments within the IWAK LAP area and to increase public awareness of best energy efficiency practices	WM1; N1-2; AR1; E1; HP1; C1; B1- 2		CH1; CH2; HP2; L1	W1-4;		F1; WW1; DW1; R1-2; SG1; DW1

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SO4	It is an objective of the Council to encourage a high quality design and layout of all development proposals to reduce the reliance on the motor car, support movement by pedestrians and cyclists, provide adequate and convenient access to public transport and connect well with the wider locality.	HP1; AR1; N2; C1; L1		CH1; SG1; B1-2	W1-4	HP2	N1; F1; E1; WW1; DW1; WM1; CH2
SO5	It is an objective of the Council to require that all new development proposals make adequate provisions for the reduction, reuse and recycling of waste, in both construction and post-construction stages and to implement the recommendations outlined in the Replacement Waste Management Plan for the Connacht Region 2006-2011 and any subsequent Waste Management Plan	W1-4; WM1; AR1; HP1		CH1; B1-2	C1	N1-2:	E1; HP2; F1; L1; DW1; WW1; R1-2; SG1 CH2;
TP1	It is the policy of the Council to encourage and support the use of more sustainable modes of transport to, from and within the IWAK LAP area including public transport; walking and cycling and to ensure that new developments accord with this aim	; WM1; N1-2; AR1; HP1; C1; R1		CH1; W1-4; B1-2	E1		CH2; HP2; F1; L1; WW1; DW1; R2; SG1
TP2	It is the policy of the Council to support the improvement of accessibility and vehicular movements to, from and within the IWAK LAP area.	N1-2; AR1; HP1; C1; R1		CH1; L1; W1-4; B1-2		WM1;	CH2; E1; HP2; F1; WW1; DW1; R2; SG1; CH2

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TP3	It is the policy of the Council to secure the implementation of the N17 Charlestown Bypass	N1-2; AR1; R1		CH1; CH2; W1-4; HP2; F1; L1; B1-2	C1	WM1;	E1; HP1; WW1; DW1; R2; SG1
TO1	It is an objective of the Council to protect lands adjoining the route of the proposed N17 Charlestown Bypass, within IWAK, from unsuitable and/or inappropriate development which could jeopardise the project	; N1-2; R1		CH1; CH2; F1; L1; W1-4	WM1;	AR1;	E1; HP1-2; C1; WW1; DW1; R2; SG1
TO2	It is an objective of the Council to comply with the requirements of the National Roads Authority in relation to National Roads in the Plan area	CH2; N1-2; AR1; R1		CH1; CH2	; W1-4; WM1;		E1; HP1-2; C1; F1; L1; WW1; DW1; R2; SG1
TO3	It is an objective of the Council to review, as the need arises, the circulation of traffic within the Plan area and to support the provision of any alterations in order to provide for the safe and efficient movement of vehicular and/or pedestrian traffic and to implement appropriate traffic management measures as required.	AR1; HP1; R1; N2		CH1; CH2; HP2; C1; F1; L1; SG1 W1-4	; WM1;	;E1	WW1; DW1; R2; N1

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TO4	It is an objective of the Council to assess, as the need arises, the adequacy of the road network in the LAP area in terms of capacity, width, alignment or surface condition in order to cater for increased traffic. Any deficiencies identified should be addressed within a reasonable timeframe by the relevant authority.	HP1; R1		CH1; SG1; W1-4; B1-2; N2; C1; F1; CH2			HP2; AR1; N1; R2; E1; WW1; DW1; WM1; L1
TO5	It is an objective of the Council encourage the used of shared access points onto the public road network.	N2; R1; L1		CH1; SG1; B1-2; F1		W1-4	HP1-2; AR1; N1; C1; R2; E1; WW1; DW1; WM1; CH2
TO6	It is an objective of the Council to co-operate with relevant interests to encourage the provision of a high standard of public transport services to the IWAK LAP area.	B1-2; N1-2; AR1;		CH1; C1	E1	WM1;	CH2; HP1-2; F1; L1; WW1; DW1; R1-2; SG1; CH2
TO7	It is an objective of the Council to support the reinstatement of the Western Rail Corridor and to support the provision of a rail link from the Western Rail Corridor to the LAP area	WM1; AR1; HP1; C1; R1		CH1; CH2; W1-4; N1-2; HP2; L1; SG1; W1-4; B1-2;		E1	F1; WW1; DW1; R2

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TO8	It is an objective of the Council to support the provision of car parking facilities, as the need arises, for the LAP area	HP1		CH1;; W1-4; WM1; N1-2; AR1; HP2; C1; F1; L1; SG1; B1-2			E1; WW1; DW1; R1-2 CH2
TO9	It is an objective of the Council to identify, support and secure a footpath and cycle path network for the LAP area	WM1; N2; AR1; HP1; C1; R1		CH1; W1-4; HP2; F1; SG1; B1-2			CH2; E1; DW1; WW1; R2; N1
IP1	It is the policy of the Council to support the provision of all infrastructure as appropriate, including water, waste, energy and communications, necessary to support the existing and future sustainable development of the LAP area in accordance with all national and EU Legislation	E1; HP1; WW1; DW1; B1-2		CH1; CH2; W1-4; WM1; AR1; C1; F1; L1; SG1			HP2; R1-2; N1-2:

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IO1	It is an objective of the Council to co-operate/co-ordinate, as appropriate, with the relevant Water Services Authority to ensure that an adequate supply of water is available to meet the current and future needs of the LAP area.	HP1; WW1; DW1		CH1; W1-4; B1-2		WM1; AR1;	CH2; E1; HP2; C1; F1; L1; R1-2; SG1; N1-2
IO2	It is an objective of the Council to co-operate/co-ordinate, as appropriate, with the relevant Water Services Authority to ensure high water quality standards are maintained by implementing the relevant European Community Water Quality Directives	W1-4; WM1; AR1; HP1; DW1; B1-2		CH1			CH2; E1; HP2; C1; F1; L1; WW1; R1-2; SG1; N1-2
IO3	It is an objective of the Council to co-operate/co-ordinate, as appropriate, with the relevant Water Services Authority to ensure that all drinking water in the area complies in full with the European Communities (Drinking Water) (No. 2) Regulations, or any subsequent regulations.	W1-4; WM1; N1-2; AR1; HP1; DW1		CH1	B1-2		CH2; E1; HP2; C1; F1; L1; WW1; R1-2; SG1; N1-2
IO4	It is an objective of the Council to co-operate/co-ordinate, as appropriate, with the relevant Water Services Authority in providing sufficient medium to long term supplies of potable water and waste water treatment facilities for the LAP area	HP1; DW1		CH1; W1-4; B1-2		WM1; AR1;	CH2; E1; HP2; C1; F1; L1; WW1; R1-2; SG1; N1-2

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IO5	It is an objective of the Council to monitor the situation regarding adequacy of piped water supply, as well as wastewater collection and treatment of the LAP area. Where the Council considers there are existing deficiencies in the provision of water supplies or sewerage facilities to meet the needs of a proposed development, such a development may be considered premature	E1; HP1; WW1; DW1; B1-2		CH1; CH2; W1-4; WM1; AR1; C1; F1; L1; SG1			HP2; R1-2; N1-2
IO6	It is an objective of the Council to ensure surface water systems are managed in a sustainable manner by encouraging the re-use of surface water where possible and to require that all new development proposals provide surface water drainage systems designed in accordance with Sustainable Urban Drainage Systems (SuDS)	W1-4; F1; R1; SG1; B1-2			AR1; C1	WM1;	CH1; CH2; N1-2; E1; L1; DW1; WW1; R2; HP1-2
IO7	It is an objective of the Council to ensure that surface water is adequately and safely disposed of in a manner compatible with achieving and maintaining 'salmonid water' quality in the receiving waters. (S.I. No. 293/1988: European Communities (Quality of Salmonid Waters) Regulations	; W1-4; F1; B1-2			C1	WM1; AR1;	CH1; CH2; N1-2; E1; HP1-2; L1; WW1; DW1; R1-2; SG1
IO8	It is an objective of the Council to support the appropriate expansion and upgrading of the Electricity Network to meet the needs of the LAP area.	HP1		CH1; CH2 W1-4;; E1; C1; L1; R2; SG1; B1-2		WM1; AR1;	N1-2; HP2; F1; WW1; DW1; R1

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IO9	It is an objective of the Council to support the appropriate expansion of the Metropolitan Area Networks (Communication System) to meet the needs of the LAP area.	AR1; E1; HP1		CH1; CH2 W1-4; B1-2		WM1;	N1-2; HP2; C1; F1; L1; WW1; DW1; R1-2; SG1
IO10	It is an objective of the Council to support the introduction of appropriate new information and communication technologies to meet the needs of the LAP area	: AR1;E1; HP1		CH1; W1-4; L1; SG1; B1-2		WM1;	CH2; HP2; C1; F1; WW1; DW1; R1-2; N1-2
IO11	It is an objective of the Council to assess any future provision of telecommunications infrastructure having regard to National policies, as well as interests of social and economic progress; public health; environmental quality and the protection of amenities and local heritage.	CH1; W1-4; N1-2; AR1; HP1-2; B1-2		CH2; L1; SG1	E1	WM1;	C1; F1; WW1; DW1; R1-2
IO12	It is an objective of the Council to support the appropriate extension of the gas network to meet the needs of the LAP area.	AR1;E1; HP1		CH1; W1-4; HP2; C1; SG1 CH2; B1-2		WM1; N1-2;	; F1; L1; WW1; DW1

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IO13	It is an objective of the Council to implement the Development Contribution Scheme and any Supplementary Contribution Schemes for future infrastructure upgrades for the LAP area.	WW1; DW1; R1			AR1;		CH1; CH2; W1-4; WM1; N1-2; E1; HP1-2; C1; F1; L1; R2; SG1; B1-2
AP1	It is the policy of the Council to support the current and future operational, safety, technical and development requirements of the Airport, as deemed appropriate	: AR1; HP1- 2; R2		CH1; C1; L1; SG1; B1-2; N1-2	WM1;	W1-4;	CH2; F1; WW1; DW1; R1; E1
AP2	It is the policy of the Council to promote appropriate land uses at IWAK by implementing the recommendations of the report “Public Safety Zones and Noise Contour Maps for Ireland West Airport Knock”, prepared for Mayo County Council by APD Ltd	N1; AR1; HP1-2; R2		CH1; C1; L1; SG1; B1-2	WM1;	W1-4;	CH2; F1; WW1; DW1; R1; N2; E1
AO1	It is an objective of the Council to support the extension to the existing runways and to safeguard the potential for future runway development, as deemed appropriate	R2		CH1; W1-4; N1- 2; HP2; C1; F1; L1; SG1; B1-2	WM1; AR1;	CH2	E1; HP1; WW1; DW1; R1; E1

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AO2	It is an objective of the Council to support the development of new taxi-ways as deemed appropriate	R2		CH1; W1-4; N1; AR1; HP2; C1; F1; L1; SG1; B1-2	WM1;	CH2	N2; E1; HP1; WW1; DW1; R1
AO3	It is an objective of the Council to support the orderly expansion of aircraft apron areas, to provide for improved aircraft facilities, as deemed appropriate	R2		CH1; W1-4; N1; AR1; HP2; C1; F1; L1; SG1; B1-2	WM1;	CH2	N2; E1; HP1; WW1; DW1; R1
AO4	It is an objective of the Council to encourage the on-going augmentation and improvement of appropriate freight / cargo facilities at IWAK.			CH1; CH2; N1-2; AR1; HP2; C1; F1; L1; WW1; DW1; R2; SG1; B1-2	W1-4; WM1;	E1	HP1; R1
AO5	It is an objective of the Council to ensure that there are sufficient appropriately zoned lands on the airfield with good access to the aircraft apron area and to the road network to cater for freight / cargo and other aircraft apron facilities	AR1;		CH1;CH2 N1-2; HP2; C1; F1; L1; WW1; DW1; R1-2; SG1; B1-2	W1-4; WM1;		E1; HP1
AO6	It is an objective of the Council to encourage the on-going development of terminal facilities at IWAK, as appropriate.	HP1		CH1;CH2 WM1; N1-2; AR1; E1; HP2; C1; F1; L1; WW1; DW1; R1-2; SG1 W1-4; B1-2			

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HP1	It is the policy of the Council to preserve, protect and enhance the character of the LAP area as defined by its natural heritage and biodiversity, its built environment, landscape and cultural heritage.	CH1; CH2; W1-4; AR1; HP1; C1; F1; L1; SG1; B1-2		E1; DW1; WW1		WM1;	N1-2; HP2; R1-2
HP2	It is the policy of the Council to support and encourage a high standard of environmental awareness throughout the LAP area	CH1;CH2; W1-4; WM1; N1-2; AR1; HP1; C1; F1; SG1; B1-2				E1	HP2; L1; DW1; WW1; R1-2
HP3	It is a policy of the Council preserve, enhance and conserve designated sites such as Candidate Special Areas of Conservation and Special Protection Areas through the implementation of Article 6(3) of the EU Habitats Directive, and to subject any future plan (e.g. masterplan) or project arising from the Plan likely to impact on Natura 2000 or European Sites (SACs, SPAs), whether directly, indirectly or in combination with other plans or projects, to an appropriate assessment in order to inform the decision making process.	W1-4; AR1; B1-2		E1		WM1; E1	CH1; CH2; HP1-2; C1; F1; L1; DW1; WW1; R1-2; SG1; N1-2

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HP4	It is the policy of the Council to have regard to the Convention Biological Diversity and support the implementation of the National Heritage and Biodiversity Plan; the County Heritage Plan and Local Biodiversity Action Plan and to encourage the 'halt biodiversity loss by 2010 – and beyond' campaign in accordance with the 2006 EU Biodiversity Action Plan	W1-4; B1-2; L1			DW1		CH1; SG1; HP1-2; AR1; N1-2; C1; F1; R1-2; E1; WW1; WM1; CH2
HP5	It is the policy of the Council to prevent the spread of, aquatic and terrestrial, invasive and alien invasive species	W1-4; B1-2			DW1		CH1; SG1; HP1-2; AR1; N1-2; C1; F1; R1-2; E1; WW1; WM1; CH2; L1
HO1	It is an objective of the Council to protect the archaeological heritage and especially sites identified in the Record of Monuments and Places, National Monuments in the ownership or guardianship of the State and National Monuments that are subject to Preservation Orders and to safeguard the integrity of the archaeological sites in their setting.	CH1		E1; WW1; DW1		W1-4; WM1; B1-2	CH2; N1-2; AR1; HP1-2; C1; F1; L1; R1-2; SG1;
HO2	It is an objective of the Council to require that planning applications within the zones of archaeological potential as outlined on the Record of Monuments and Places include an archaeological assessment set out in accordance with the requirements of the Mayo County Council. Any archaeological assessment shall also have regard to natural heritage legislation.	W1-4;		CH1; E1; DW1; WW1		WM1; B1-2	CH2; N1-2; AR1; HP1-2; C1; F1; L1; R1-2; SG1

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HO3	It is an objective of the Council to require that all significant planning applications (i.e. development of lands on 0.5ha. or more and 1km. or more in length) include an appropriate archaeological assessment in accordance with the requirements of the Council. Any archaeological assessment shall also have regard to natural heritage legislation	W1-4;		CH1; E1; DW1; WW1		WM1; B1-2	CH2; N1-2; AR1; HP1-2; C1; F1; L1; R1-2; SG1
HO4	It is an objective of the Council to require an ecological assessment, undertaken by a suitably qualified person, to inform decision making of all proposed significant planning applications, where it is considered that the proposed development may have an adverse impact on the environment of designated site.	SG1; W1-4; B1-2;			DW1		CH1; N1-2; C1; AR1; F1; R1-2; E1; WW1; WM1; CH2; L1
HO5	It is an objective of the Council to ensure that any development proposals, alone or in combination with other developments, do not have an adverse impact on any Natura 2000 site in the wider area. The Council may require Appropriate Assessment in accordance with Article 6(3) of the EU Habitats Directive	W1-4; AR1; B1-2		E1; DW1; WW1			CH1; CH2; WM1; HP1-2; C1; F1; L1; R1-2; SG1; N1-2; CH2
HO6	It is an objective of the Council to continue to protect all watercourses, in this regard any proposed development adjacent or close to watercourses shall be carefully assessed to ensure that there is no adverse impact to the watercourse or to any other water body into which it flows.	W1-4; F1; L1; B1-2		CH1; E1; DW1; WW1		WM1; AR1; SG1	CH2; N1-2; HP1-2; C1; R1-2;

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HO7	It is an objective of the Council to implement the relevant policies and objectives outlined in the Western River Basin District Management Plan.	W1-4; F1; B1-2		CH1; E1; WW1; DW1	WM1;	AR1;	CH2; N1-2; HP1-2; C1; L1; SG1
HO8	It is an objective of the Council to prevent deterioration of water bodies of good status and to improve those water bodies to status of at least good in accordance with national and EU legislation, within the Plan area	W1-4; B1-2		DW1; WW1	E1		CH1; CH2; WM1; N1-2; AR1; HP1-2; C1; F1; L1; R1-2; SG1
HO9	It is an objective of the Council to comply with the EU Floods Directive 2007/60/EC and S.I. No. 122/2010: European Communities (Assessment and Management of Flood Risks) Regulations	W1-4; F1; B1-2		DW1; WW1 CH2		E1	CH1; WM1; N1-2; AR1; HP1-2; C1; L1; R1-2; SG1
HO10	It is an objective of the Council to protect areas prone to flooding within the LAP area from inappropriate development and to ensure that all new developments do not result in an increased risk of flooding within the site or on other lands. All new development proposals within or close to flood risk areas shall submit a flood risk assessment which should incorporate flood protection and mitigation measures, as appropriate	W1-4; F1; B1-2		CH1; CH2; DW1; WW1		E1	WM1; N1-2; AR1; HP1-2; C1; L1; R1-2; SG1

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HO11	It is an objective of the Council to ensure that any proposed development is absorbed into the surrounding landscape so that it does not impinge in any significant way upon the character, integrity or uniformity of the landscape and that all development proposals consider that aspects of access, permeability and open space respond to the key landforms features and rural character of the LAP area.	W1-4; HP1; L1		CH1;CH2; N1-2; AR1; E1; SG1; B1-2		WM1;	HP2; C1; F1; DW1; WW1; R1-2
HO12	It is an objective of the Council to promote the retention, where possible, of all features of historic, architectural or natural interest, such as stone walls, hedgerows and/or bridges or other features, as appropriate, within the LAP area.	CH1; W1-4; HP1; CH2; L1		B1-2; E1; DW1			SG1; HP2; AR1 N1-2; C1; F1; R1-2; WW1; WM1
EP1	It is the policy of the Council to promote and support the development of the LAP area as an attractive location for economic investment as well as a desirable place to work and visit	E1; HP1		N1-2; AR1; HP2; C1; F1; L1; DW1; WW1; R1- 2; SG1 W1-4; B1-2	WM1;	W1-4	CH1; CH2

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EO1	It is an objective of the Council to support the development of appropriate airport related activities within the LAP area in accordance with the land use objectives set out in Section 4.	HP1		CH1;; N1-2; AR1;E1; WW1; DW1; HP2; C1; F1; R1-2; SG1 ; B1-2	WM1; CH2;	W1-4	
EO2	It is an objective of the Council to support the location of tourist related activities, where it is demonstrated that such an activity would be appropriate to an airport location	N1-2; E1; HP1		CH1;; W1-4; WM1; AR1; HP2; C1; F1; L1; DW1; WW1; R1- 2; SG1; B1-2	CH2		
EO3	It is an objective of the Council to protect the core function of LAP area as an airport and that future economic development is compatible with this aim.	E1; HP2; R2		CH1; SG1; B1-2	AR1; CH2 W1-4	WM1;	N1-2;; HP1; C1; F1; L1; DW1; WW1; R1

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Section 8 Mitigation Measures

8.1 Introduction

Mitigation is a measure to avoid/prevent, minimise/reduce or as fully as possible offset/compensate for any adverse effects on the environment as a result of implementing a plan. Mitigation involves ameliorating significant negative effects. Where there are significant negative effects, consideration is given in the first instance to preventing such effects or, where this is not possible for stated reasons, to lessening or offsetting those effects. Mitigation measures can be roughly divided into those that avoid effects; reduce the magnitude or extent, probability and/or severity of effect; repair effects after they have occurred, and; compensate for effects, balancing out negative impacts with other positive ones.

In addition to the mitigation measures detailed below, additional more detailed mitigation measures may also be required through the development management process (i.e. the planning application stage). The mitigation measures will be incorporated into the development management standards and guidance of the IWAK LAP and will assist in assessing planning proposal within the LAP area.

8.2 Mitigation Measures

8.2.1 Bio-diversity, Flora and Fauna

Mitigation	Measure
Mitigation 1	All development proposals with the potential to impact on Natura 2000 sites will be subject to Habitat Directive Assessment under Article 6(3) and 6(4) of the Habitats Directive
Mitigation 2	All development proposal shall include an Ecological Assessment where it is considered that it may have an adverse impact on the environment of a designated site (Appendix 3)
Mitigation 3	All development proposals should prevent the spread of, aquatic and terrestrial, invasive and alien species
Mitigation 4	Any archaeological assessment should also have regard to natural heritage legislation (Appendix 3)

8.2.2 Population and Human Health

Mitigation	Measure
Mitigation 1	<p>Develop design guidelines that represent a preferred set of standards that contribute to achieving quality development, in particular:</p> <ul style="list-style-type: none"> contemporary building design will be encouraged. Building materials should be of a high quality and the buildings should allow for some transparency to the activities of the interior to accomplish development which is responsive to the context, in particular the landscape character to ensure that future development contributes to the creation of a high quality landscape environment on the site, by achieving a high quality parkland type development scheme. to encourage sustainability objectives through environmentally responsible architectural design to create a focus for a wide variety of businesses that offers employees and visitors an attractive environment, that compliments and connects business activities with each other, and with high quality public space
Mitigation 2	Compliance with the Public Safety Zone, Obstacle Limitation and Noise Contour requirements (Appendix 1)

8.2.3 Soils and Geology

Mitigation	Measure
Mitigation 1	All development proposals that require peat or vegetation removal shall prepare a peat management and disposal plan. (Appendix 3)
Mitigation 2	Where development proposals involve the excavation of peat and soft soils on slopes a geotechnical assessment of the potential risk of landslides should be prepared. (Appendix 3)

8.2.4 Water

Mitigation	Measure
Mitigation 1	There should be full and strict compliance with the programme of measures developed to achieve the specific objectives of the Western River Basin Management Plan, in addition to enforcement of / compliance with local legislation and plans (RMCEI*, bye-laws and Water Management Unit specific measures), national and EU legislation.
Mitigation 2	A Habitats Directive Assessment (post screening) will be required to assess the potential adverse impacts of any plan or project, where considered appropriate, either individually or in combination with other plans or projects on a European Site, including SACs, SPAs and also RAMSAR sites (classified under the RAMSAR Convention, 1971) within or pertaining to the Plan Area. This should include waste assimilative capacity predictions to ensure that the capacity of existing surface waters is sufficient to accept new / increased discharges with no deterioration in current water body status.
Mitigation 3	Surface Water Management Plan should be prepared for all development proposals (Appendix 3)

8.2.5 Air and Climate Factors

Mitigation	Measure
Mitigation 1 (Air)	Prepare a dust minimisation plan for any development proposal
Mitigation 2 (Climate)	<p>All development proposals should include means to reduce the carbon footprint of the development scheme through innovate design and site layout solutions as well as implementing efficiency and renewable energy technologies. Development proposals should:</p> <ul style="list-style-type: none"> • combine energy efficiency measures with renewable energy technologies and resource consumption plans and examine features such as: <ul style="list-style-type: none"> ○ building fabric ○ heating ○ hot water controls ○ combined heat and power ○ ventilation and air conditioning ○ powering pumps and fans ○ lighting controls ○ office/catering equipment ○ transport requirements
Mitigation 3 (Noise)	Comply with Noise Contour requirements (Appendix 1)
Mitigation 4 (Noise)	Factor in noise barriers and noise protection into the building and site layout design

Mitigation 5 (Flooding)	All new development proposals within or close to flood risk areas shall submit a flood risk assessment which should incorporate flood protection and mitigation measures, as appropriate (Appendix 2)
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8.2.6 Material Assets

Mitigation	Measure
Mitigation 1 (Road network)	Assess the adequacy of the road network in the LAP area in terms of capacity, width, alignment or surface condition in order to cater for increased traffic. Any deficiencies identified should be addressed within a reasonable timeframe by the relevant authority
Mitigation 2 (Road Network)	Use of shared access points onto the public road network
Mitigation 3 (Energy)	Encourage the use of energy efficiency in all new development proposals, with the ultimate aim of achieving a Carbon Neutral Status
Mitigation 4 (Energy)	Reduce energy consumption through innovative design and layout with the appropriate use of materials and new technology in developments proposals (Appendix 4)
Mitigation 5 (Waste Management)	Prepare a waste management plan for construction and demolition projects
Mitigation 6 (Waste Management)	Prepare an Operation Waste Management Plan to minimise waste production and maximise recycling and recovery through the introduction of sustainable waste management practices in all development proposals (Appendix 3)

8.2.7 Cultural Heritage

Mitigation	Measure
Mitigation 1 (Archaeological)	<p>In order to safeguard the integrity of the archaeological sites in their setting in the landscape an archaeological assessment shall be submitted for:</p> <ul style="list-style-type: none"> planning applications that fall within the zones of archaeological potential as outlined on the Record of Monuments and Places all significant planning applications (i.e. development of lands on 0.5ha or more than 1km or more in length) <p>(Appendix 3)</p>
Mitigation 2 (Architectural)	<p>Provide an architectural and urban design palette that contributes to achieving quality development, in particular:</p> <ul style="list-style-type: none"> contemporary building design will be encouraged. Building materials should be of a high quality and the buildings should allow for some transparency to the activities of the interior to accomplish development which is responsive to the context, in particular the landscape character to ensure that future development contributes to the creation of a high quality landscape environment on the site, by achieving a high quality parkland type development scheme. to encourage sustainability objectives through environmentally responsible architectural design to create a focus for a wide variety of businesses that offers employees and visitors an attractive environment, that compliments and connects business activities with each other, and with high quality public space <p>(Appendix 4)</p>

Mitigation 3 (Architectural)	Retain, where possible, of all features of historic, architectural or natural interest, such as stone walls, hedgerows and/or bridges or other features (Appendix 4)
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8.2.8 Landscape

Mitigation	Measure
Mitigation 1	All proposed development should be designed to absorb into the surrounding landscape so that it does not impinge in any significant way upon the character, integrity or uniformity of the landscape and that all development proposals consider that aspects of access, permeability and open space respond to the key landforms features and rural character of the area (Appendix 4)
Mitigation 2	Development proposals should contribute to the creation of a high quality landscape environment by achieving a high quality parkland type of development scheme. (Appendix 4)

8.3 Incorporation of the Mitigation Measures into the LAP

The assessment of the policies and objectives of the draft LAP against the EPOs indicated that whilst several (see evaluation matrix) policies and objectives are likely to improve the status of the EPOs, there is also potential for conflict with the EPOs; however these are likely to be mitigated by measures outlined in the SEA. Table 8.1 shows and records the changes to the policies and objectives arising from incorporation of mitigation measures into the draft LAP.

The development standards and guidance section of the draft LAP incorporates all the mitigation measures arising from the SEA process. This includes the requirement that an Environmental Management Report (EMR) be prepared in respect of all planning proposals and submitted as part of the planning application process. The EMR will set out a detailed assessment and management plan in respect of each of the environmental factors outlined the SEA process. Detailed guidance on the preparation and contents of an EMR are included in Appendix 2 of this report.

Other elements relating to layout and design, which have taken into consideration factors highlighted through the SEA process are included in the Site layout and Building Design Standards that (See Appendix 3)

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Table 8.1 Record of Text amendments to Policies and Objectives arising from Assessment against EPOs

Policy/Objective	Change to Policy/Objective	Comment	Relevant Environmental Component
SDO1	It is an objective of the Council to facilitate the sustainable development of the LAP area as a transportation and economic/enterprise hub of strategic importance for the Region through the implementation of the policies; objectives and design standards/guidance of this LAP.	Change warranted to ensure the mitigation measures proposed for all development proposals are incorporated into the policies; objectives and design standards and Guidance of the LAP	B; HP; SG; W; AR; N; C; F; R; E; WW; DW; WM; CH1; CH2; L
SDO4	It is the objective of the Council to promote the orderly development of all lands zoned within the IWAK LAP area by encouraging, where necessary, land assembly and shared access arrangements.	New objective added to reduce ad-hoc development so that the LAP area can be managed in a plan led manner	B; HP; SG; W; AR; N; C; F; R; E; WW; DW; WM; CH1; CH2; L
SDO6	It is an objective of the Council to promote a high quality working environment to ensure that the LAP area is an attractive place to work and visit.	New objective added to strengthen the concept of sustainably developing a high quality environment to work and to visit	B; HP; AR; C; R; E; CH2; L
SDO7	It is an objective of the Council to promote the development of the IWAK LAP area in terms of the 'Green Economy' through the policies; objectives and design standards relating to sustainability outlined throughout this LAP	New objective added to strengthen the concept of sustainably developing a high quality environment in relation to building design and site layout	B; HP; AR; C; R; E; CH2; L

Environmental Component Code

B= Biodiversity, Flora & Fauna; **HP** = Population & Human Health; **SG**= Soils & Geology; **W**= Freshwater; **AR** = Air Quality; **N** = Noise; **C** = Climate Factors;

F= Flooding; **R** = Roads and Transportation Infrastructure; **E**= Energy; **WW** = Waste Water; **DW** = Drinking Water; **WM**= Waste Management; **CH1**= Cultural Heritage (Archaeology); **CH2** = Cultural Heritage (Architectural Heritage); **L** = Landscape

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Policy/Objective	Change to Policy/Objective	Comment	Relevant Environmental Component
SP1	It is the policy of the Council to promote the use of sustainable options for all development proposals to support the 'Green Economy' concept within the IWAK LAP area.	Change warranted to strengthen the use of sustainable options for use in the layout and design of development schemes	B; HP; AR; C; R; E; CH2; L
SO1	It is an objective of the Council to encourage the use of energy efficiency in all new development proposals, with the ultimate aim of achieving a Carbon Neutral Status for the IWAK LAP area	Change warranted to strengthen the use of sustainable options for use in the layout and design of development schemes	B; HP; AR; C; R; E; CH2; L
SO3	It is an objective of the Council promote the reduction of energy consumption through innovative design and layout with the appropriate use of materials and new technology in developments within the IWAK LAP area and to increase public awareness of best energy efficiency practices	Change warranted to strengthen the use of sustainable options for use in the layout and design of development schemes	B; HP; AR; C; R; E; CH2; L
SO4	It is an objective of the Council to encourage a high quality design and layout of all development proposals to reduce the reliance on the motor car, support movement by pedestrians and cyclists, provide adequate and convenient access to public transport and connect well with the wider locality.	New objective added to strengthen the 'green concept' of the LAP area and to reduce the reliance on motor vehicles	B; HP; AR; C; R; E; CH2; L

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F= Flooding; **R** = Roads and Transportation Infrastructure; **E**= Energy; **WW** = Waste Water; **DW** = Drinking Water; **WM**= Waste Management; **CH1**= Cultural Heritage (Archaeology); **CH2** = Cultural Heritage (Architectural Heritage); **L** = Landscape

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Policy/Objective	Change to Policy/Objective	Comment	Relevant Environmental Component
TO4	It is an objective of the Council to assess, as the need arises, the adequacy of the road network in the LAP area in terms of capacity, width, alignment or surface condition in order to cater for increased traffic. Any deficiencies identified should be addressed within a reasonable timeframe by the relevant authority.	New objective added to examine the impacts of traffic generation and to implement measures to improve permeability through the LAP area.	R; HP; N; L
TO5	It is an objective of the Council encourage the used of shared access points onto the public road network.	New objective added to ensure that development proposals are plan led rather than in an ad-hoc piecemeal manner	R; HP; N; L
HP1	It is the policy of the Council to preserve, protect and enhance the character of the LAP area as defined by its natural heritage and biodiversity, its built environment, landscape and cultural heritage.	Change warranted to strengthen the potential impact of all development proposals in terms of all aspects of the environment.	B; SG; W; AR; C; F; DW; CH1; CH2; L
HP3	It is a policy of the Council preserve, enhance and conserve designated sites such as Candidate Special Areas of Conservation and Special Protection Areas through the implementation of Article 6(3) of the EU Habitats Directive, and to subject any future plan (e.g. masterplan) or project arising from the Plan likely to impact on Natura 2000 or European Sites (SACs, SPAs), whether directly, indirectly or in combination with other plans or projects, to an appropriate assessment in order to inform the decision making process.	Change warranted to strengthen the potential impact of all development proposals in terms of designated sites	B; SG; W; AR; C; F; DW; CH1; CH2; L

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Policy/Objective	Change to Policy/Objective	Comment	Relevant Environmental Component
HP4	It is the policy of the Council to have regard to the Convention Biological Diversity and support the implementation of the National Heritage and Biodiversity Plan; the County Heritage Plan and Local Biodiversity Action Plan and to encourage the 'halt biodiversity loss by 2010 – and beyond' campaign in accordance with the 2006 EU Biodiversity Action Plan	New policy added to strengthen aspects of the natural heritage other than designated sites	B; SG; W; AR; C; F; DW; CH1; CH2; L
HP5	It is the policy of the Council to prevent the spread of, aquatic and terrestrial, invasive and alien invasive species	New policy added specifically to address the growing concern in relation to invasive species	B
HO2	It is an objective of the Council to require that planning applications within the zones of archaeological potential as outlined on the Record of Monuments and Places include an archaeological assessment set out in accordance with the requirements of the Mayo County Council. Any archaeological assessment shall also have regard to natural heritage legislation.	Change warranted to ensure that any archaeological testing has regard to natural heritage legislation	B
HO3	It is an objective of the Council to require that all significant planning applications (i.e. development of lands on 0.5ha. or more and 1km. or more in length) include an appropriate archaeological assessment in accordance with the requirements of the Council. Any archaeological assessment shall also have regard to natural heritage legislation	Change warranted to ensure that any archaeological testing has regard to natural heritage legislation	B

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Policy/Objective	Change to Policy/Objective	Comment	Relevant Environmental Component
HO4	It is an objective of the Council to require an ecological assessment, undertaken by a suitably qualified person, to inform decision making of all proposed significant planning applications, where it is considered that the proposed development may have an adverse impact on the environment of designated site.	New objective added to ensure that all development proposals examine aspects in relation to the natural heritage	B
HO8	It is an objective of the Council to prevent deterioration of water bodies of good status and to improve those water bodies to status of at least good in accordance with national and EU legislation, within the Plan area	New objective added to strengthen the status of all water bodies	B; W; DW
HO10	It is an objective of the Council to protect areas prone to flooding within the LAP area from inappropriate development and to ensure that all new developments do not result in an increased risk of flooding within the site or on other lands. All new development proposals within or close to flood risk areas shall submit a flood risk assessment which should incorporate flood protection and mitigation measures, as appropriate	Changed warranted to ensure that development proposal do not contribute to any flooding event	F

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F= Flooding; **R** = Roads and Transportation Infrastructure; **E**= Energy; **WW** = Waste Water; **DW** = Drinking Water; **WM**= Waste Management; **CH1**= Cultural Heritage (Archaeology); **CH2** = Cultural Heritage (Architectural Heritage); **L** = Landscape

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Policy/Objective	Change to Policy/Objective	Comment	Relevant Environmental Component
HO11	It is an objective of the Council to ensure that any proposed development is absorbed into the surrounding landscape so that it does not impinge in any significant way upon the character, integrity or uniformity of the landscape and that all development proposals consider that aspects of access, permeability and open space respond to the key landforms features and rural character of the LAP area.	Change warranted to strengthen the rural character of the area and to preserve as much of the rural character as possible	L
HO12	It is an objective of the Council to promote the retention, where possible, of all features of historic, architectural or natural interest, such as stone walls, hedgerows and/or bridges or other features, as appropriate, within the LAP area.	New objective added to ensure that key elements of the rural landscape are integrated into development proposals	L; CH2

Environmental Component Code

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Section 9 Monitoring

9.1 Introduction

The SEA Directive requires that the significant environmental effects of the implementation of plans and programmes are monitored. This environmental report puts forward proposals for monitoring the implementation of the LAP.

Monitoring enables, at an early stage, the identification of unforeseen adverse effects and the undertaking of appropriate remedial action. In addition to this, monitoring can also plan an important role in assessing whether the LAP is achieving its environmental objectives and targets – measures which the LAP can help work towards – whether these need to be re-examined and whether the proposed mitigation measures are been implemented. The monitoring programme will consist of assessment of the relevant indicators and targets against the data relating to each environmental component.

9.2 Indicators and Targets

Monitoring is based around indicators which were chosen earlier in the SEA process for the purpose of measuring changes to the various environmental components. They allow quantitative measures of trends and progress over time relating to the EPOs used in the evaluation process. Focus will be given to indicators which are relevant to the likely significant environmental effects of implementing the LAP and existing monitoring arrangements will be used in order to monitor the selected indicators. Each indicator to be monitored in accompanied by targets which are derived from relevant legislation.

Table 9.1 below shows the indicators and targets which have been selected with regard to the monitoring of the LAP.

9.3 Sources

Measurements for indicators should come from existing monitoring sources and no new monitoring should take place. Existing monitoring sources exist for the indicators and include those maintained by Mayo County Council and the relevant authorities e.g. the Environmental Protection Agency, the National Parks and Wildlife Service and the Central Statistics Office. The Development Management Process will provide passive monitoring of various indicators and targets on an application by application basis.

9.4 Reporting and Monitoring

Mayo County Council will be responsible for collating existing relevant monitored data, the preparation of a monitoring report, and recommend appropriate corrective action. It is recommended that a multidisciplinary team of suitably qualified persons be established to oversee the monitoring process. The Team will determine the frequency of the monitoring and input into the preparation of the Monitoring Report.

Table 9.1: Monitoring Table			
Environmental Component	Targets	Indicators	Source
Biodiversity, Flora & Fauna	Target B1i: No loss of protected habitats or species. Target B1ii: No loss or degradation of locally rare/distinctive habitats/species. Target B1iii: No loss or fragmentation of ecological corridors	Indicator B1i: Number of sites for Nature Conservation to be adversely affected by the implementation of the LAP. Indicator B1ii: Changes in population and range of protected species. Indicator B1iii: Number of sites containing locally rare/distinctive species/habitats to be adversely affected by the implementation of the LAP. Indicator B1 iv: Percentage loss of ecological connectivity between areas of local biodiversity as a result of implementation of the LAP.	Corine Mapping NPWS Records; Planning Register
	Target B2i: No loss of protected habitats or species. Target B2ii: No loss or degradation of locally rare/distinctive habitats/species. Target B2iii: No loss or fragmentation of ecological corridors	Indicator B2i: Number of sites for Nature Conservation to be adversely affected by the implementation of the LAP. Indicator B2ii: Changes in population and range of protected species. Indicator B2iii: Number of sites containing locally rare/distinctive species/habitats to be adversely affected by the implementation of the LAP. Indicator B2 iv: Percentage loss of ecological connectivity between areas of local biodiversity as a result of implementation of the LAP.	Corine Mapping NPWS Records Planning Register
Population and Human Health	HP1i: provide a good quality of recreation and green space within the working environment. HP1ii: reduction in commuting distance within the catchment area. Target HP1iii: increase of sustainable transport options including public transport, cycling and walking.	Indicator HP1i: that all development has sufficient recreation and open space for the working and visiting population to the area. Indicator HP1ii: reduction in the percentage of persons distance to work that is greater than the distance to the airport from the Census data Indicator HP1iii: promotion of cycleways and walkways for internal circulation throughout the Plan area and any increase in use of public transport or car sharing schemes for employees within the area.	CSO Planning Register Mayo County Council

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	Target HP2i: To ensure that all development complies with the land use requirements of the public safety zones, safe guarding maps and noise contour maps	Indicator HP2i: the avoidance of incompatible land uses in the area around the airport.	Mayo County Council Planning Register Health and Safety Authority (HSA)
Soils and Geology	Target SG1: No occurrence of landslides	Indicator SG1: Steepness of slopes, moisture content of peat, depth of peat, nature of layer below peat	Geological Survey of Ireland (GSA) Mayo County Council Planning Register
Freshwater	Target W1: No deterioration of surface waters of good and high status	Indicator W1: Quality elements for ecological status (biological, hydro morphological, chemical and physic-chemical elements)	WRBD Management Plans Mayo County Council EPA NPWS GSI
	Target W2: Achievement of at least good status by 2015, or by 2021 where this is not technically feasible, not environmentally sustainable and / or when restoration costs are disproportionately expensive	Indicator W2: Quality elements for ecological status (biological, hydro morphological, chemical and physic-chemical elements)	WRBD Management Plans Mayo County Council EPA NPWS GSI
	Target W3: No emissions, discharges or losses of priority substances to surface waters	Indicator W3: Chemical and physic-chemical elements of water bodies, in particular, specific pollutants	WRBD Management Plans Mayo County Council EPA NPWS

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	Target W4: No exceedance of specific water quality standards and no deviation from environmental quality objectives established to protect natural habitats and species	Indicator W4: Quality elements for ecological status (biological, hydro morphological, chemical and physic-chemical elements)	GSI WRBD Management Plans Mayo County Council EPA NPWS GSI
Air Quality	<p>Target AR1i: Ensure monitoring results are maintained within the appropriate emission limit values.</p> <p>Target AR1ii: An increase in the percentage of the people travelling to the airport by public transport.</p> <p>Target AR1iii: A decrease in the distance travelled to work/airport by users of IWAK. A reduction in car dependency will generate a reduction in car based emissions - increase coach transport, lobby for rail connection.</p> <p>Target AR1iv: Increase the number of energy efficient buildings and Co2 neutral developments in the area. Reduce waste of energy, and maximise use of renewable energy sources.</p>	<p>Indicator AR1i: Air monitoring data to indicate compliance with appropriate policies and legislative requirements.</p> <p>Indicator AR1ii: Percentage of workers/airport users travelling to the airport by public transport or non mechanical means.</p> <p>Indicator AR1iii: Average distance travelled to work/airport by the users of IWAK.</p> <p>Indicator AR1iv: No of BER certificates issued for Area.</p> <p>Indicator AR1v: No of Co2 neutral developments in the Area</p>	EPA Planning Register
Noise	Target N1: Minimise the number of incompatible developments within the various noise contour categories	Indicator N1: Number of developments located with the noise contour categories	Planning Register Mayo County Council
	Target N2: Reduce the percentages of vehicular traffic at IWAK	Indicator N2: Number of traffic movements at IWAK	Mayo County Council NRA Planning Process
Climate	<p>Target C1i: Increase the number of energy efficient buildings and Co2 neutral developments in the area. Reduce waste of energy, and maximise use of renewable energy sources</p> <p>Target C1ii: To implement the</p>	<p>Indicator C1i: No of BER certificates issued for Area.</p> <p>Indicator C1ii: No of Co2 neutral developments in the Area</p>	EPA SEAI Mayo Energy Agency

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	EU Emissions Trading Directive and Irelands National Allocation Plan for Emission Trading to ensure that the Area becomes Carbon Neutral	Indicator C1iii: to promote awareness of energy efficient technologies to off set emissions from increased aircraft movements to achieve a carbon neutral area.	Planning Register
Flooding	Target F1: Minimise developments granted permission on lands which pose – or likely to pose in the future- a significant flood risk	Indicator: F1: Number of developments granted permission on land which pose – or are likely to pose in the future – a significant flood risk.	OPW Mayo County Council Planning Register
Roads & Transport Infrastructure	Target R1i: to ensure that all traffic to the area uses the national road network Target R1ii: to reduce traffic using the local roads in the area to access the Plan area.	Indicator R1i: increase in traffic movements too and from the area at the junction with the national route. Indicator R1ii: reduction in traffic movements to and from the area via the local road network..	Mayo County Council. NRA Planning Register CSO
	Target R2: that all development complies with safety requirements and uses are compatible with location at airports	Indicator AR2: number of development projects permitted with the safety zones around the airport	Mayo County Council Planning Register Health and Safety Authority (HSA)
Energy	Target E1: to reduce energy consumption from non sustainable sources to a minimum by the adoption and use of renewable energy sources.	Indicator E1: increase in renewable energy projects Indicator E1ii: promotion of energy efficacy in the Plan area	EPA SEAI Mayo Energy Agency Planning Register
Waste Water	Target WW1i: to upgrade the existing waste water treatment infrastructure to provide increased capacity for the short term development Target C1iii: to provide new waste water treatment infrastructure for the estimated future development of the area.	Indicator WW1i: upgrade of WWTP from 700 PE to 1400PE capacity Indicator WW1ii: provide new WWTP for 5000 PE capacity	Mayo County Council EPA Appropriate Water Services Authority Planning Register
Drinking Water	Target DW1i: no deterioration of the status of waters and restoration to good status of	Indicator: DW1i: trophic status and faecal coliform count per 100ml of groundwater	Mayo County Council

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	waters currently at moderate, poor or bad status Target DW1ii: comply with the Drinking Water Regulations, 2007 Target DW1iii: progressively reduce chemical pollution in waters Target DW1iv: prevent deterioration of and limit pollution inputs to surface water and ground water.	Indicator DW1ii: drinking water annual report (EPA) Indicator DW1iii: interim water status report in 2011 Indicator DW1iv: Long Term water status report in 2015	EPA Appropriate Water Services Authority Planning Register Relevant Water Services Authority EPA
Waste Management	Target WM1i: 48% recycled 33% energy recovery and 19% landfilled. Attitude change. Target WM1ii: All Waste activity is regulated Target WM1iii: Diversion of bio-waste from landfill and reduction in landfill emissions. Target WM1iv: All waste activity is regulated.	Indicator WM1i: Reduced tonnage of waste collected with increased number of customers Indicator WM1ii: Reduction in enforcement actions required Indicator WM1iii: Indicator: Increase in the percentage of customers receiving a refuse collection service and decrease in proportion of waste arising being landfilled and increase in recovery and recycling tonnages	Mayo County Council Planning Register

Archaeological Heritage	Target CH1: No developments carried out over the lifespan of the Proposed Ireland West Airport (IWAK) Local Area Plan which result in the full or partial loss of the archaeological heritage and especially sites identified in the Record of Monuments and Places, National Monuments in the ownership or guardianship of the State and National Monuments that are the subject of Preservation Orders. No developments which result in the full or partial loss of the integrity of the archaeological sites in their setting.	Indicator CH1: Number of developments carried over the lifespan of the Proposed Ireland West Airport (IWAK) Local Area Plan which result in the full or partial loss of the archaeological heritage and especially sites identified in the Record of Monuments and Places, National Monuments in the ownership or guardianship of the State and National Monuments that are the subject of Preservation Orders. The integrity of the archaeological sites in their setting can also be impacted upon by new developments	Mayo County Council The Heritage Service (DoAHG) Planning Register
Architectural Heritage	Target CH2i: No development carried out over the lifespan of the LAP shall result in the full or partial loss of architectural heritage Target CH2ii: No development carried out over the lifespan of the LAP will result in the full or partial loss of heritage bridges of Mayo	Indicator CH2i: The number of developments carried out over the lifespan of the LAP which result in the full or partial loss of architectural heritage. Indicator CH2ii: The number of developments carried out over the lifespan of the LAP which result in the full or partial loss of the heritage bridges of Mayo.	Mayo County Council The Heritage Service (DoAHG) Planning Register

Landscape	Target L1i: to minimise the intrusion of new developments on the landscape character of	Indicator L1i: that all development proposals include measures to minimise any	Mayo County Council
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	<p>the area. Target L1ii: to minimise the intrusion of exiting development on the landscape character of the area.</p>	<p>intrusion that the development may have on the landscape character of the area. Indicator L1ii: that all development proposal examine if they can introduce measures to reduce the impact of existing structures on the landscape character.</p>	<p>Corine Mapping</p> <p>Planning Register</p>
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Appendix 1 Public Safety Zones and Noise Contour Maps

Public Safety Zones & Noise Contour Maps

Public Safety Zones (PSZ)

Mayo County Council retained Airport Planning and Development Ltd, in association with DNV Technology and Bickerdike Allen Partnership to prepare public safety zone maps for Ireland West Airport Knock. The methodology used was taken from the approach recommended by the Department of Transport and prepared by ERM in 2005, for the preparation of Public Safety Zones for Dublin Airport, Cork Airport and Shannon Airport.

The report recommends a policy that relates to permissible use to the third party risk from the possibility of aircraft crashing near an airport. The extent of suitable Inner and Outer Public Safety Zones have been determined for IWAK. The Inner PSZ extends a maximum of 1325m from the runway thresholds and is never more than 96 metres wide. The Outer PSZ extend a maximum of 5647m from the runway thresholds and is never more than 261m wide.

Both the inner and outer public safety zones extend beyond the boundary of the LAP area. The report gives guidance on the uses normally permitted within the both public safety zones but not all uses are permissible within the LAP Boundary. This appendix sets out the uses that would normally be permitted within the LAP boundary.

Inner Public Safety Zones

The extent of permitted development is set below:

- 1) no further development shall be permitted and existing development can remain.
- 2) the only exceptions for permitted development in the inner PSZ are:
 - developments where persons are not expected to be present.
 - long stay car parks (i.e.) greater than 24 hours, provided that persons are normally expected to park their car and then immediately leave the car park development. Buildings associated with car parks are subject to the guidance in 1 above.
 - roads and railways where vehicles and passenger trains / trams are not expected to be stationary. For example, road vehicles can be expected to be stationary at major road intersections, junctions and traffic lights. Therefore major road intersections, junctions, traffic lights and similar should not be permitted in the inner PSZ.

Outer Public Safety Zones:

The extent of permitted development within the LAP is set out below and based on the uses permitted in the ERM Report for Dublin, Cork and Shannon Airports.

- 1) Existing Development shall remain and new development shall be considered with following density provisions (including extensions or change of uses):
 - **Working Premises** factories, offices and facilities where persons are expected to congregate, such as railway stations.
etc
≤ 110 persons per half hectare
 - **Limited Use** use not exceeding (approximately) a maximum of 12 hours in one week, Sunday markets, car boot sales day fairs etc
≤ 220 persons per half hectare
- 2) exceptions to permitted development in the outer PSZ
In most cases, the guidance given in 1 above is sufficient to identify whether a proposed development should be permitted in the outer PSZ. However, there may be cases, in exceptional circumstances, where it is judged that developments socio-economic benefits (etc) outweigh the 'safety risk', and that it is impractical for such a development to be located elsewhere:

- **Airport Terminals**

To ensure risks to people are as low as reasonably practicable, it is desirable to locate airport terminals outside Public Safety Zones. However, this may not be practicable and there are precedents to accept a greater, but tolerable risk, where persons gain a direct benefit from the activity presenting the risk. In the case of an airport terminal, all those involved with using the terminal are receiving a direct benefit (i.e. related to employment or travel) and therefore an annual individual risk greater than 1 in one million (i.e. corresponding to the extent of the outer PSZ) but less than 1 in 100,000 (i.e. corresponding to the extent of the inner PSZ) is considered tolerable. Hence, location of an airport terminal in the outer PSZ is judged tolerable.

- **Extensions to Existing Developments**

Extensions to existing developments are permitted. This is provided the development is a permitted type and if extended does not result in the density figures listed in 1 above being exceeded.

- **Roads and Railways**

Roads and railways are permitted in the outer PSZs, including major road and rail intersections, junctions and traffic lights.

- **Bus and Rail Terminals**

Bus and rail terminals are permitted in the outer PSZs provided the density does not exceed 110 persons per half hectare

- **Car Parks**

Car parks are permitted in the outer PSZs. This is provided that persons are normally expected to park their car and then leave the car park development. Building associated with car parks are subject to the guidance given in 1 above.

Noise Contour Mapping

Mayo County Council retained Airport Planning and Development Ltd, in association with DNV Technology and Bickerdike Allen Partnership to prepare noise contour maps for Ireland West Airport Knock. The report determined airborne aircraft noise contours based on existing and future aircraft traffic movements as a result of implementation of the IWAK LAP. The scope of the work included prediction of noise contours for a 92 day summer period for scenarios based on existing and future movements. The noise contours are predicted based on actual and predicted aircraft movements using the federal Aviation Administration (FAA) Integrated Noise Model (INM) Version 7.0b aircraft noise prediction software. The contour methodology is recognised worldwide and is in accordance with the methodology used for strategic noise mapping under European Directive 2002/49/EC

Guidance on airborne noise levels is taken from the UK Planning Policy Guidance (PPG) 24 Planning and Noise (Department of Environment, 1994) as there is no equivalent noise guidance in Ireland. This guidance mainly deals with residential development but it has been clarified at recent UK public enquiries for airport development that the PPG24 levels are also useful in considering new airport developments.

The Noise Contour Maps shown include forecast movements for predicted aircraft movements up to the year 2025 using data supplied by the airport. The noise levels contours indicate the impact of daytime aircraft noise in terms of daytime $L_{Aeq,16h}$ noise contours determined from the average summer day aircraft movements. There is no night time noise impact from flights as the airport does not operate through the night except in the case of emergencies, therefore noise disturbance at night is considered minimal.

The following table outlines the development control standard that should be implemented depending where the location fits within the Noise Contours.

Guidance with regard to airborne noise

Noise Contour $L_{Aeq,16h}$, dB	Guidance for development of building where persons are present.
< 57	Noise need not be considered as a determining factor in determining a planning application, although the noise level at the high end should not be regarded as a desirable level and advice may be given to ensure adequate protection against noise.
57 - 66	Noise should be taken into consideration when determining a planning application and , where appropriate, conditions should be imposed to ensure an adequate level of protection against noise.
66 – 72	Permission should not normally be granted. Where it is considered that permission should be given conditions should be imposed to ensure a commensurate level of protection against noise.
> 72	Planning permissions should not be permitted

Appendix 2 Strategic Flood Risk Assessment for the IWAK LAP

Strategic Flood Risk Assessment for the IWAK LAP

Strategic Flood Risk Assessment

Introduction

This Strategic Flood Risk Assessment has been carried out for the draft Ireland West Airport Knock Local Area Plan 2012-2018. It provides an appraisal and assessment of available flood risk data for the land use proposals within the boundary of the draft IWAK LAP. The process identifies flood risk indicators in each area and where it is demonstrated that lands may be at risk of flooding, recommends modifications to land-use proposals or the carrying out of more detailed flood risk assessment as appropriate.

Stage 1 Flood Risk Identification

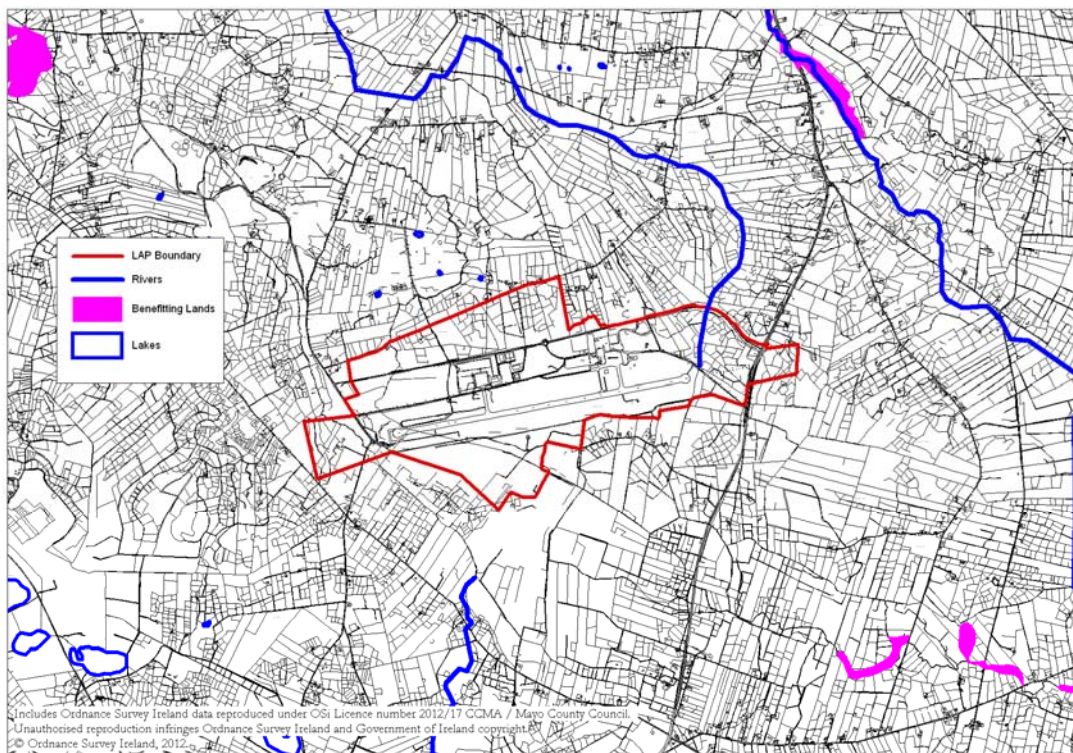
This Section identifies whether there may be any flooding or surface water management issues related to the plan area that may warrant further investigation. The following sources of information were used to identify possible flood risk for the draft IWAK LAP.

Office of Public Works

The OPW is currently undertaking flood risk assessment mapping showing areas of significant Flood Risk in collaboration with the Local Authorities.

As part of the National Flood Risk Management Policy, the OPW developed the www.floodmaps.ie web based data set which contains information concerning historical flood data and displays related mapped information and provides tools to search for and display information about selected flood events. The nearest flooding event recorded on www.floodmaps.ie is located 4 km away to the North West of draft IWAK LAP at Killaturly Lough. No other flooding event is identified within the 4km radius of the draft IWAK boundary. Map 1 below shows the locations of river, lakes and benefitting lands.

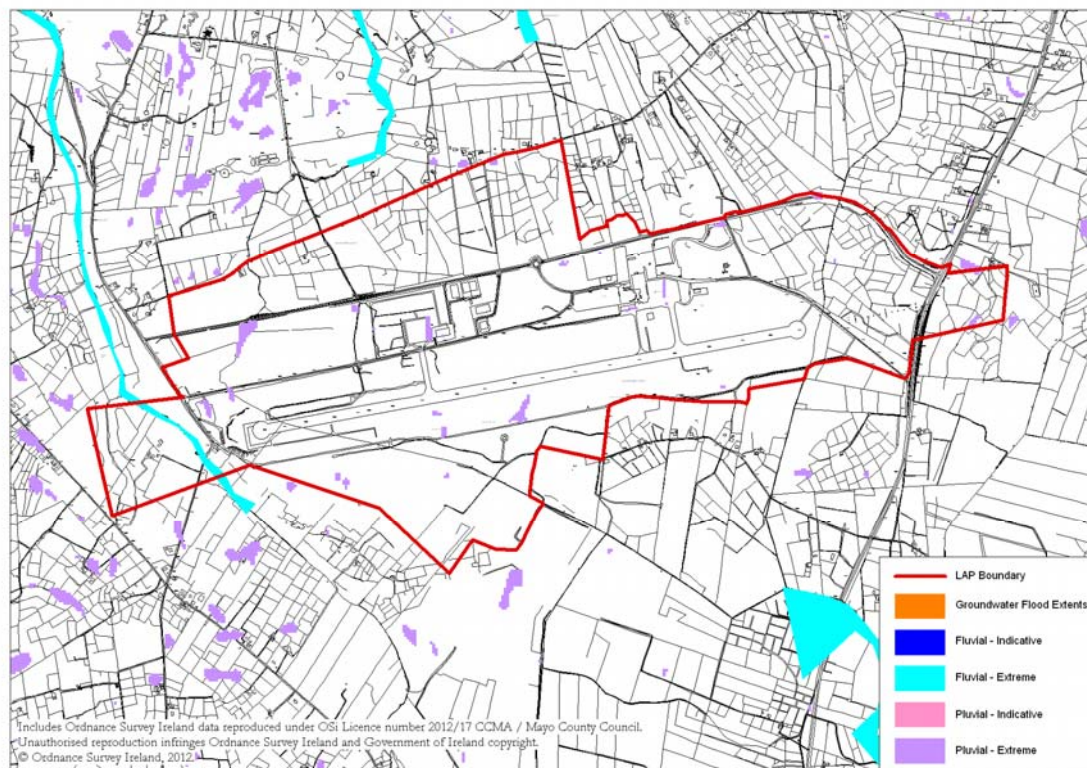
Map 1: showing rivers, lakes and benefitting lands



Map 1 shows that there is one river that starts within the draft LAP boundary to the East of the existing runway; this is classified as a second order stream that is a tributary of the Sonnagh River to the North of the draft LAP boundary. There are no benefitting lands located within or near the draft LAP boundary.

Draft Preliminary Flood Risk Assessment Maps are now available from the OPW. Map 2 shows the PFRA data for the area around the airport.

Map 2: Draft Preliminary Flood Risk Assessment Map



The Draft PFRA maps indicate that there are both Fluvial (river flooding) and Pluvial (surface Water) events in and adjoining the LAP boundary.

The OPW will have flood hazard mapping by the end of 2013 and Flood Risk Management Plans by the end of 2015.

6" (1:10560) Ordnance Survey Maps

6" Ordnance Survey maps include areas which are marked as being "Liable to Floods" the exact areas are not delineated but give an indicative indication of areas which have undergone flooding in the past. The OS maps associated with the draft IWAK LAP did not give any indication of flooding within or adjoining the draft LAP boundary.

Aerial Photography

Aerial photography from the Ordnance Survey does not give any indications of flooding events at this location.

Public Consultations / Local Authority Personnel

As part of the Plan making process, a public consultation day was held for members of the public to highlight any relevant issues. Written submissions were also invited as part of the process. The Public consultation process highlighted three areas where flooding occurred that are not recorded on any mapping. The first is to the North of the Plan boundary where a local road floods, caused by the adjoining drain to overflow, during heavy rainfall, prior to discharging to a nearby stream. The second location identified is to the West of the Runway where ponding occurs, again just after heavy rainfall. The third relates to lands across from the N17 which floods, again after heavy rain.

The first and second flooding events have been confirmed by local authority personnel and the third would appear to be indicated as a location on the Draft PFRA map.

Other Sources of Information

The guidelines give a list of other possible sources of information that may be available for the indication of flood risk events for the LAP area. This is not an exclusive list and other sources may be available. There are no other sources of information to indicate flood events for the draft IWAK LAP.

Stage 2 Initial Flood Risk Assessment

Following Stage 1 Flood Risk Identification, if the planning authority considers that there is a potential flood risk issue, it should move onto Stage 2. The purpose of the initial FRA is to ensure that all relevant flood risk issues are assessed in relation to the decisions to be made and potential conflicts between flood risk and development are addressed to the appropriate level of detail.

Assessment of Flood Risks Identified for IWAK

The main flood risks identified for IWAK are determined in Section 2.2 above. The main risk is from the Pluvial – Extreme category. Pluvial flooding can be defined as flooding which results from rainfall generated overland flow and / or ponding which may occur during or immediately after intense rainfall events, before the runoff enters any water course or sewer.

The draft PRFA map shows a fluvial extreme event along the western boundary of the draft LAP. Using the sequential approach outlined above, IWAK would be categorised in Flood Zone C as there are no areas of the plan where zones A or B apply.

Table 2 above indicates that all land use and development type categories identified in the Vulnerability Classes in Table 1 are appropriate at IWAK and there is no requirement to apply a justification test for lands zoned within the proposed LAP area.

Under the sequential approach (Fig 2), Flood Zone C does not limit any development potential. The next stage under the sequential approach is the mitigation stage which is to prepare the land use strategy for flood risk and surface water management as part of the flood risk assessment.

Land Use Strategy for the Draft IWAK LAP

Map 3 below indicates the proposed land use zoning that will be included in the draft Ireland West Airport Knock Local Area Plan. The Zoning objectives are as follows:

Airside Zone

Objective: To protect, improve and develop the Airport Zone of IWAK to its full potential and to provide for all facilities necessary, incidental or ancillary to Airport Operations.

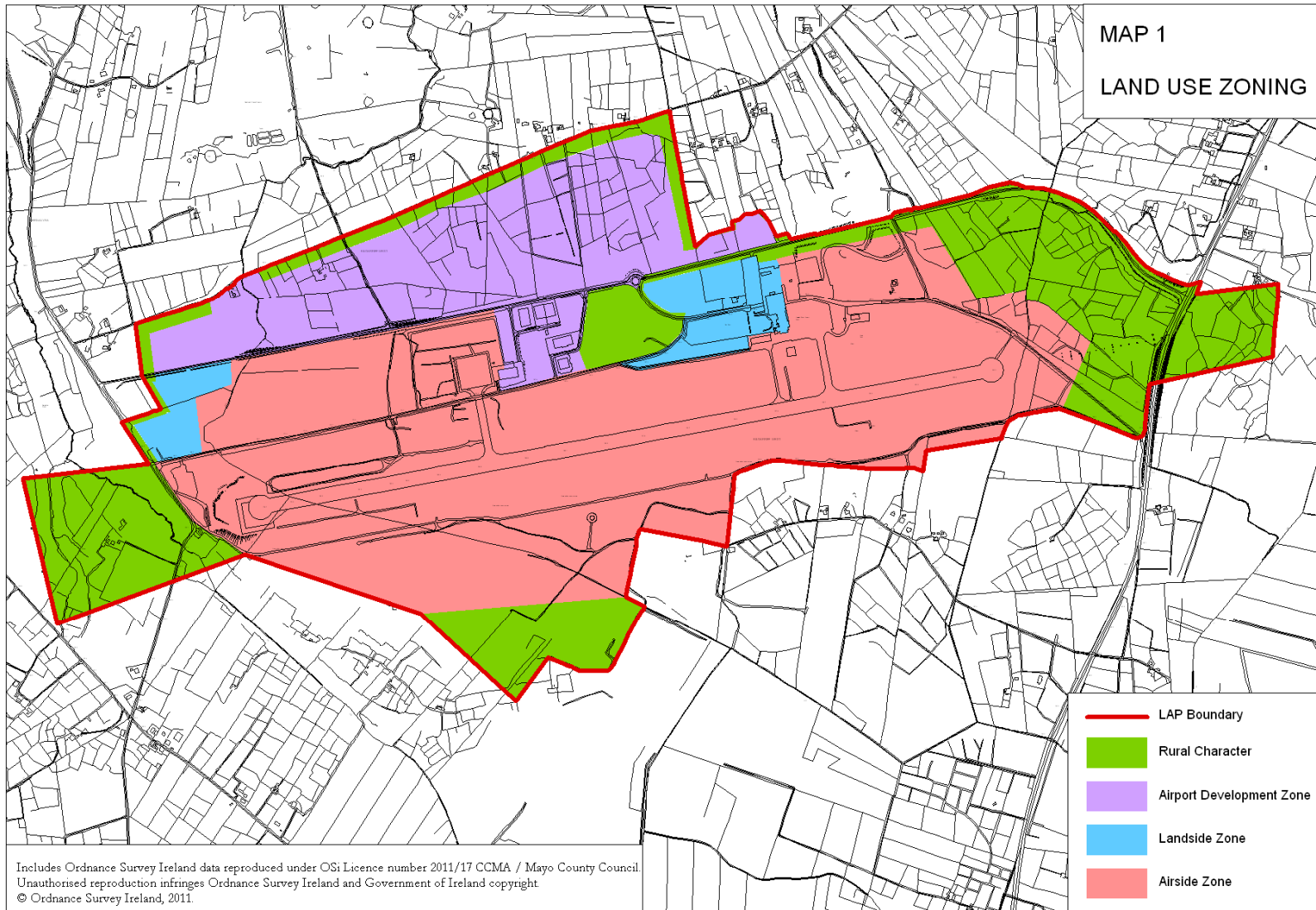
The area covered by this zoning objective has experienced Pluvial – Extreme flooding events. The sequential approach, outlined above, allows for all development proposals considered appropriate for this zoning objective (as outlined in the draft IWAK LAP). Mitigation measures are proposed in the draft LAP and are outlined in Section 2.3.3

Landside Zone

Objective: To protect, improve and develop the Landside Zone of IWAK to its full potential and to provide for all facilities necessary, incidental or ancillary to Airport Operations and to facilitate accessibility to the Airport Campus.

The area covered by this zoning objective has experienced Pluvial – Extreme flooding events. The sequential approach, outlined above, allows for all development proposals considered appropriate for this zoning objective (as outlined in the draft IWAK LAP). Mitigation measures are proposed in the draft LAP and will be outlined in Section 2.3.3.

Map 3: Land Use Zoning



Rural Character Zone

Objective: to protect the setting, character and environmental quality of IWAK.

The area covered by this zoning objective has experienced Pluvial – Extreme and Fluvial – Extreme flooding events. The sequential approach, outlined above, allows for all development proposals considered appropriate for this zoning objective (as outlined in the draft IWAK LAP). The areas to the East and to the West, which includes the fluvial event are reserved and protected in the draft LAP for future navigational equipment. Any development that occurs will require surface water management mitigation measures outlined in Section 2.3.3 below.

Airport Development Zone

Objective: to facilitate appropriate development in order to strengthen the strategic role of IWAK as a key economic/enterprise hub for the region, whilst protecting the future operations of the Airport.

There are no flood events indicated in the area zoned for Airport Development; as the LAP area is considered Flood Zone C all development proposals considered appropriate for this zoning objective (as outlined in the draft IWAK LAP) are permitted. This area is undeveloped at present, therefore mitigation and surface water management will be necessary, and are outlined in Section 2.3.3 below.

Flood Risk and Surface Water Management.

The land use zoning strategy has been prepared to avoid and manage any flood risk that has been identified for the area. The draft LAP sets out policies, objectives and best practice approaches to mitigate against any further risk from flooding as a result of and arising from development of the area.

The draft Local Area Plan includes the following objectives in relation to surface water management:

SO2	It is an objective of the Council to support raising public awareness of the value of the water resources by encouraging conservation, reuse and protection of water, in addition to the elimination of wastage of water through waste-water detection and enforcement of repairs and to replace deficient sections of pipe work where necessary
IO6	It is an objective of the Council to ensure surface water systems are managed in a sustainable manner by encouraging the re-use of surface water where possible and to require that all new development proposals provide surface water drainage systems designed in accordance with Sustainable Urban Drainage Systems (SuDS)
IO7	It is an objective of the Council to ensure that surface water is adequately and safely disposed of in a manner compatible with achieving and maintaining 'salmonid water' quality in the receiving waters. (S.I. No. 293/1988: European Communities (Quality of Salmonid Waters) Regulations
HO9	It is an objective of the Council to comply with the EU Floods Directive 2007/60/EC and S.I. No. 122/2010: European Communities (Assessment and Management of Flood Risks) Regulations
HO10	It is an objective of the Council to protect areas prone to flooding within the LAP area from inappropriate development and to ensure that all new developments do not result in an increased risk of flooding within the site or on other lands. All new development proposals within or close to flood risk areas shall submit a flood risk assessment which should incorporate flood protection and mitigation measures, as appropriate

The draft IWAK Local Area Plan includes a section in the Development Management Standards and Guidelines that requires all development proposals to be accompanied by an Environmental Management Report, which should include surface water management proposals at all stages of the development application process. The LAP gives guidance on mitigation measures appropriate to the level of detail required depending on the development proposal.

The Development Standards also requires that Surface Water Systems shall be designed in accordance with SuDS (Sustainable Urban Drainage Systems) and Surface Water Attenuation provided in order to restrict flows from development to Greenfield run off rates.

Flooding Outside of the IWAK LAP.

The draft Preliminary Flood Risk Assessment map indicates flooding events outside the Draft Local Area Plan boundary. These are mainly categorised as Pluvial – Extreme events relating to rainfall and ponding. It has not been established if rainfall run-off from the existing airport campus is a contributing factor to these flooding events. It is considered that the implementation of the draft LAP will not contribute further to these events, and if the airport is a contributing factor, implementation of the surface water management mitigation measures of the draft LAP should either alleviate the flooding event or reduce any impact that the airport development may have on these flooding events.

Conclusion

As a result of the Flood Risk Identification; the Initial Flood Risk Assessment (Stages 1 & 2); the application of the sequential approach outlined in the Planning System and Flood Risk Management, Guidelines for Planning Authorities, DoEHLG, 2009 and The Planning System and Flood Risk Management Guidelines for Planning Authorities; Technical Appendices; DoEHLG, 2009; and the incorporation of mitigation measures into the Draft LAP, it is not considered necessary to subject the Draft IWAK LAP to Stage 3 Detailed Flood Risk Assessment.

Appendix 3 Environmental Management Report

Environmental Management Report

Environmental Management Report (EMR)

In order to assess the potential impact of any development proposal on the environmental quality of the area, all development application shall be accompanied by an EMR.

The following subsections are a guide as to the content of the EMR. A list of guidance documents and reports are listed in Appendix 7 of this LAP as reference material that may aid in the compilation of the EMR. This is not an exclusive list of documents and others may also be referenced if considered appropriate to the relevant development proposal.

Contents of the Environmental Management Report

The EMR shall examine the development proposal through all three phases of the development process, i.e. planning phase, construction phase and operational phase. The EMR shall examine the potential impact on the environment through all three phases of the development process.

The environmental factors to be examined in the EMR relate to the environmental factors of the Strategic Environmental Assessment process.

Environmental Factors		
Biodiversity, Flora and Fauna	Fresh Water Quality	Soils and Geology
Air, Climate and Energy	Noise	Flooding
Drinking Water and Waste Water	Archaeology and Architectural Heritage	Waste Management
Landscape		

The EMR should be set out in accordance with the details below:

- description of the development proposal
- Identification of the environmental factors affected by the development proposal. If it is demonstrated that the development proposal does not affect an environmental factors, this should be clearly shown in the EMR.
- identification of the assessments required under each environmental factor
- inclusion of all assessments
- details of specific mitigation measures and monitoring procedures that will be put in place for the development proposal for all three phases of the development process
- details of emergency responses in the event of failure of any proposed mitigation measure.

The following is a guide as to the type of assessment or plan that may be required under each environmental factor which should be included as part of the EMR. Other reports/assessments should also be included if relevant to the development proposal.

Environmental Factor	Assessment/Plan
Biodiversity, Flora and Fauna	• Ecological Assessment (See 6.3.2)
Soils and Geology	• Peat Management and Disposal Plan (See 6.3.3 & Appendix 6) • Geotechnical Assessment (See 6.3.4)
Fresh Water Quality	• Surface Water Management Plan (See 6.3.5)
Air, Climate, Energy	• Air, Climate and Energy Factors (See 6.3.6 & 6.4) • Dust Minimisation (See Appendix 7)
Noise	• Guidance Notes (See Appendix 7)
Flooding	• Strategic Flood Risk Assessment for the IWAK LAP

	• Guidance Notes (See Appendix 7)
Drinking Water/Wastewater	See 6.6 & 6.7
Waste Management	Construction and Demolition Waste Plan (See Appendix 7) Replacement Waste Management Plan for Connacht Region 2006-2011 Operational Waste Management Plan (See 6.3.7)
Archaeology/ Architectural Heritage	Archaeological Assessment (See 6.3.8) Architectural Options (See 6.4)
Landscape	Landscape Plan (See 6.4.2.2)

Ecological Assessment

All development proposals shall include an ecological assessment as part of the EMR, generally in accordance with the guidance set out below.

The assessment shall be carried out by suitably qualified persons and any surveys shall be conducted at the appropriate time of year.

Ecological Assessment
<p>The Ecological Assessment should include the following details:</p> <ol style="list-style-type: none"> 1. a detailed habitat map which shall include an overlay of the development proposal. Scale to be agreed with Planning Authority. 2. written descriptions of all habitats within the receiving environment. Habitat mapping should be carried out in accordance with Heritage Council draft Guidelines for Survey of Habitats or equivalent standard. Habitats should be identified, described and mapped to level 3 of the Fossit¹ (2000) classification system. EU Habitats Directive² Annex I Habitats should also be referenced. 3. key species of flora and fauna shall be identified, with particular emphasis on any rare, protected or annexed species by reference to the following: <ul style="list-style-type: none"> • Irish Red Data Books 1 (plants) and 2 (animals)³ • Annex I of the EU Habitats Directive • Annex I of the EU Birds Directive⁴ • Red or amber listed bird species in the current list of Birds of Conservation Concern in Ireland⁵ 4. reference to any previous studies and old ecological records for the site. 5. evaluation of ecological significance of habitats and species occurring within the site; 6. assessment of the likely impact of the proposed development both during construction and afterwards on habitats and rare or protected species within and adjacent to the site and a statement regarding the significance of these impacts. <p>Where appropriate, the report should include mitigation proposals. It should be shown that these are fully integrated into the design and layout and landscaping of the proposed development. The following should be provided:</p> <ol style="list-style-type: none"> a. evidence of how mitigation will be secured and implemented and by whom; b. evidence of the degree of confidence in likely success of proposed mitigation; c. timescale, relative to the plan or project, for implementation of mitigation or

- completion;
d. evidence as to how the measures will be monitored and, should mitigation failure be identified, how that failure will be rectified.

¹ Fossitt, J.A. (2000) *A Guide to Habitats in Ireland*. Heritage Council, Kilkenny.

² Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (as amended)

³ <http://www.npws.ie/en/PublicationsLiterature/RedLists/>

⁴ Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (as amended)

⁵ <http://www.birdwatchireland.ie/>

Peat Management and Disposal Plan

Any development proposal that requires peat or vegetation removal shall be accompanied by a project specific Peat Management and Disposal Plan as part of the EMR. This shall be in accordance with the Guidance Peat Management and Disposal Plan outlined in Appendix 6 and the brief description set out below.

Peat Management and Disposal Plan

The plan should identify arrangements to be made for:

- the management of construction works to minimise the potential for peat slides
- means and locations for temporary storage of peat pending use in reinstatement works
- measures for the disposal of surplus peat
- measures for the restoration of any disused peat cuttings; and
- whenever necessary, confirmation that the required consents exist from owners, tenants and any relevant regulatory body for the proposed works.

The plan should also include measures for the removal of subsoil and bedrock

(Full Details of the Peat Management and Disposal Plan guidance is in Appendix 6 of the LAP)

Geotechnical Assessment

Where development proposals involve the excavation of peat and soft soils on slopes, a geotechnical assessment of the potential risk of landslides should be included as part of the EMR.

Geotechnical Assessment

- the first stage of the assessment should consist of a desk top study and site visit undertaken by a suitably qualified person
- pending the findings, further ground investigation may be required to determine factors such as the steepness of slopes, moisture content of peat, depth of peat and the nature of the layer under the peat layer.
- where necessary, measures should be incorporated into the development proposal by a geotechnical specialist to prevent landslides.

Surface Water Management Plan

A surface water management plan should be prepared for any proposed development within the LAP area, as part of the EMR. This should include measures to ensure that the development proposed alone or cumulatively with other proposals will not adversely affect the water quality of

the area. The Surface Water Management Plan should focus on all stages of the development process, i.e. planning phase, the construction phase and the operational phase.

Surface Water Management Plan
<p>The Surface Water Management Plan should include:</p> <ul style="list-style-type: none"> • details of Surface Water Systems which shall be designed in accordance with SUDS (Sustainable Urban Drainage Systems) and Surface Water Attenuation provided in order to restrict flows from development to Greenfield run off rates. Waste oils should not be disposed of in public or private sewer systems or discharged to watercourses. All surface water drainage systems should be fitted with petrol/oil interceptor traps. • details relating to capacity predictions to ensure that the capacity of existing surface waters are sufficient to accept new/increased discharges with no deterioration in current water body status • details of drainage systems which should be designed to limit any potential of contamination from surface water runoff from reaching underlying soil and groundwater. • other best practice techniques could incorporate the following measures: <ul style="list-style-type: none"> ○ to reduce runoff and sediment control ○ contamination prevention

Air, Climate and Energy Factors

The following factors should be considered in the design of all development proposals and should be included as part of the EMR.

Climate and Air Quality
<p>All development proposals should include means to reduce the carbon footprint of the development scheme through innovate design and site layout solutions as well as implementing efficiency and renewable energy technologies. Development proposals should:</p> <ul style="list-style-type: none"> • combine energy efficiency measures with renewable energy technologies and resource consumption plans and examine features such as: <ul style="list-style-type: none"> ○ building fabric ○ heating ○ hot water controls ○ combined heat and power ○ ventilation and air conditioning ○ powering pumps and fans ○ lighting controls ○ office/catering equipment ○ transport requirements

Operational Waste Management Plan

The EMR should highlight any measures for the control and management of waste during the operational phase of any development proposal

Operational Waste Management Plan
<p>Details should include measures to minimise waste production and maximise recycling and recovery through the introduction of sustainable waste management practices in all development proposals. Estimates should be indicated for each of the following categories of waste reduction:</p>

♦ Strategic Environmental Assessment ♦
Environmental Report for the draft Ireland West Airport Knock Local Area Plan

• % of waste recycled	Target	48% recycled
• % of energy recovery	Target	33% energy recovery
• % to landfill	Target	19% to landfill

and outline on-going measures/monitoring procedures to ascertain if the targets above can be achieved and/or improved.

Archaeological Assessment

Development proposals have the potential to impact on the archaeological heritage of sites identified in the Record of Monuments and Places, National Monuments, which are in the ownership or guardianship of the State are subject to Preservation Orders. Therefore in order to safeguard the integrity of the archaeological sites in their setting in the landscape an archaeological assessment shall be submitted as part of the EMR for:

- planning applications that fall within the zones of archaeological potential as outlined on the Record of Monuments and Places
- all significant planning applications (i.e. development of lands on 0.5ha or more than 1km or more in length)

All archaeological assessments should be undertaken by a suitably qualified archaeologist and set out in accordance with the requirements of Mayo County Council and shall also have regard to natural heritage legislation.

Archaeological Assessment

The first part of the assessment should consist of a site visit and a desk top study undertaken by a suitably qualified archaeologist. Pending the findings of the assessment, one and/or more of the following may be required as part of any development proposal within the Plan area:

- geophysical and/or other invasive surveys (including architectural survey)
- licensed pre-development testing
- licensed archaeological excavation
- archaeological monitoring of ground works

A full underwater Archaeological Assessment (where appropriate) should also be completed.

The Archaeological Assessment should establish the extent of archaeological material associated with the archaeological site or monument and the potential impacts (if any) on the site or monument. The assessment should also define the buffer area or area contiguous with the archaeological site or monument which will preserve the setting and visual amenity of the site or monument.

The area of the archaeological site or monument and its buffer zone should not be included as part of the open space requirement demanded of a specific development but should be additional to the required open spaces.

Should an archaeological site or monument lie adjacent to or within the open space requirement for a development, a conservation plan for that archaeological site or monument should be required as part of the landscape plan for that development.

All archaeological sites and monuments included in the Record of Monuments and Places (RMP), any sites and features of historical and archaeological interest and any subsurface archaeological features that may be discovered during the course of infrastructural/development works should be preserved *in-situ* or by record.

Appendix 4 Site Layout and Building Design Guidelines

Site Layout And Building Design Guidelines

Site Layout and Building Design Guidelines

Objectives of the Design Guidelines

The guidelines are primarily for development within the Airport Development Zone which is considered the most suitable location for an enterprise/business park development. The general concepts set out below should also be considered for all development proposals within the LAP. A design statement should be included with all planning applications to demonstrate that the site layout and building design guidelines have been incorporated into the development proposal.

The design guidelines represent a preferred set of standards that contribute to achieving quality development, in particular:

- contemporary building design will be encouraged. Building materials should be of a high quality and the buildings should allow for some transparency to the activities of the interior
- to accomplish development which is responsive to the context, in particular the landscape character
- to ensure that future development contributes to the creation of a high quality landscape environment on the site, by achieving a high quality parkland type development scheme.
- to encourage sustainability objectives through environmentally responsible architectural design
- to create a focus for a wide variety of businesses that offers employees and visitors an attractive environment, that compliments and connects business activities with each other, and with high quality public space

The overall aim of the guidelines is to establish a set of clear standards to guide future development at IWAK in respect of the design of the site and the buildings.

Site Design

Access, Public Realm and Permeability

Infrastructure should allow for the safe and efficient movement of vehicles and pedestrians. Access points should be kept to a minimum and should provide safe ingress/egress for vehicles and pedestrians/cyclists. The permeability of the site is influenced by a number of factors including the siting of the infrastructure and buildings, building setbacks, landscaping setbacks, tree planting and landscape design.

The layout and design of any proposed development will give consideration to the needs of the aged, people with disabilities and people with children. Footpaths and public areas should be accessible and safe for people with disabilities and/or reduced mobility by ways of footpaths, location of crossings etc.

Public Realm objectives

- accessible public open space that responds to key landform features such as high points and areas of water retention
- landscaping theme that establishes identity and local character designed to create an open parkland setting
- the layout should favour the use of more sustainable forms of transport (cycle, bus) for circulation throughout the LAP area.
- vehicular parking areas should not be a dominate feature, with footpaths and cyclesways linking all buildings and public areas.

The amenity and appearance will be established and maintained by adherence to these design guidelines and the siting and design of the buildings and other structures should be such as to minimise changes to the existing topography.

Landscaping

A landscape plan shall be submitted showing details of levels, materials, plant species, spacing and size, lighting and irrigation. Irrigation of areas using recycled water is encouraged. Planting of native species is encouraged, and no alien invasive species shall be permitted. Where possible existing vegetation should be retained. Boundary treatments should act as noise buffers where necessary, the use of green walls and green roofs shall be encouraged to further screen development on the landscape and the use of retention ponds will be encouraged to enhance the public realm. All landscaping proposals shall be designed so as that it does not interfere with aircraft safety, for example the attraction of increased bird numbers may interfere with aircraft safety and operations.

Vehicle Access and Service Areas

Adequate provision for on-site parking for employees and visitors should be provided, based on the nature and scale of activities planned. Visitor parking shall be located convenient to administration and office areas. HGV parking areas shall be separate from car parking areas.

Storage and Service Areas

All service areas, storage areas and waste disposal areas must be adequately screened from public view by proper siting and screening with fences, courtyard walls or landscaping. Areas screened from public view should be provided for refuse containers and similar equipment, and should be accessible for servicing vehicles.

Signage

One identification only sign may be used for the promotion of the Airport Development Zone. The colour, form and finish of the sign shall be compatible with colours and materials used in the building forms. Building facades should incorporate an area for sign placement.

Lighting

Lighting of buildings, signs and landscaping will be incorporated into the structure or landscaping so that the lighting is discreet. Light standards and bollards shall be a contemporary style. All car parking and access ways shall be illuminated. See Section 6.5 for best practice guidance for lighting

Building Design

Context

The orientation of buildings should take advantage of solar gain and should respond to the context of the airport, current infrastructure and the topography.

Massing and Form

Contemporary building design will be encouraged. There should be consistency in terms of height and scale across the development zone. A mix of building types ranging from incubator units to larger units is advised.

Architectural Appearance

Buildings should be set out to form high quality public spaces within the development zone. The buildings should allow for some transparency to the activities of the interior so as to afford more visual interest. Building materials should be of a high quality.

Sustainability

The use of green building products and sustainable energy for individual buildings or collectively will be encouraged. The design should take advantage of solar gain and the use of renewables including photovoltaics, wind and rain harvesting.