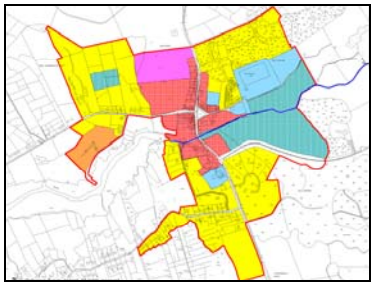
ENVIRONMENTAL REPORT

OF THE

CLARINBRIDGE LOCAL AREA PLAN 2007 - 2013

STRATEGIC ENVIRONMENTAL ASSESSMENT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Section 1 SEA Introduction & Background

1.1 Introduction and Terms of Reference

This is the Environmental Report on the Draft Clarinbridge Local Area Plan (LAP). The purpose of the report is to provide the Elected Members of Galway County Council with a clear understanding of the likely environmental consequences of decisions regarding the future accommodation of growth in Clarinbridge. CAAS (Environmental Services) Limited were commissioned by Galway County Council to carry out the SEA in June 2006.

The Environmental Report is part of the Strategic Environmental Assessment (SEA) of the Draft Clarinbridge LAP which is being carried out in order to comply with the provisions of the SEA Regulations. This report should be read in conjunction with the Draft Clarinbridge LAP.

1.2 SEA Definition

Environmental assessment is a procedure that ensures that the environmental implications of decisions are taken into account before the decisions are made. The development of environmental assessment has meant that the term environmental impact assessment, or EIA, is generally used for describing the process of environmental assessment which is limited to individual projects such as waste incinerators, housing developments or roads while strategic environmental assessment, or SEA, is the term which has been given to the environmental assessment of plans, and other strategic actions, which help determine what kind of individual projects take place.

SEA is a systematic process of predicting and evaluating the likely environmental effects of implementing a proposed plan, or other strategic action, in order to insure that these effects are appropriately addressed at the earliest appropriate stage of decision-making on a par with economic and social considerations.

What kind of development occurs in Clarinbridge and where it occurs will be significantly determined by the implementation of a LAP. By anticipating the effects and avoiding areas in which growth cannot be accommodated and by directing development towards compatible land uses and robust receiving environments real improvements in environmental management and planning can occur in Clarinbridge- planning applications are more likely to be granted permission and the scope of any EIAs which may be required are likely to be reduced.

1.3 Legislative Context

Directive 2001/42/EC of the European Parliament and of the Council, of 27 June 2001, on the assessment of the effects of certain plans and programmes on the environment, referred to hereafter as the SEA Directive, introduced the requirement that SEA be carried out on plans and programmes which are prepared for a number of sectors, including land use planning. The SEA Directive came into force in all European Union (EU) member states, including Ireland, from 21 July 2004 requiring that an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment.

The SEA Directive was transposed into Irish Law through the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 [Statutory Instrument Number (SI No.) 435 of 2004], and, the Planning and Development (Strategic

Environmental Assessment) Regulations 2004 (SI No. 436 of 2004). Both sets of regulations became operational on 21 July 2004.

1.4 Implications for Galway County Council & Elected Members

As a result of the above legislation, certain plans and programmes which are prepared by Galway County Council are required to undergo SEA. The findings of SEA are expressed in an Environmental Report which is submitted to the Elected Members alongside the relevant plan or programme. The Elected Members must take account of the Environmental Report before the adoption of the plan or programme.

When the plan or programme is adopted a statement must be made public, summarising, inter alia: how environmental considerations have been integrated into the plan or programme, and; the reasons for choosing the plan or programme as adopted over other alternatives detailed in the Environmental Report.

Section 2 SEA Methodology

2.1 Introduction

This section details how the SEA for the Draft Clarinbridge LAP has been undertaken. The SEA process up until the submission of this report has been carried out from June until September 2006. Site visits were made to Clarinbridge during the pre-scoping and scoping stages of the SEA by representatives from CAAS, Galway County Council and the Environmental Protection Agency (EPA)[1].

Consultations were made with: the EPA; the Department of the Environment, Heritage and Local Government, including individual consultations with the National Parks and Wildlife Service; the Department of Communications, the Marine and Natural Resources; a number of departments at Galway County Council, and; a number of local Clarinbridge organisations.

The findings of the SEA were communicated to the plan making team at Galway County Council on an ongoing basis from the outset in order to allow for their integration into the draft plan thus minimising the potential for significant negative environmental effects arising from implementation of the plan.

2.2 Screening

The Planning and Development (Strategic Environmental Assessment) Regulations 2004 makes SEA mandatory for the preparation or review of Local Area Plans where the population of the area is 10,000 persons or more. The Draft Clarinbridge LAP is concerned with a population of less than 10,000 persons and therefore screening was required in order to determine whether implementation of a LAP would be likely to have significant environmental effects. Galway County Council determined that the implementation of a LAP for Clarinbridge would be likely to have significant environmental effects thus requiring the plan to undergo SEA. Significant impacts predicted by the Council included those relating to:

- biodiversity, flora and fauna within designated wildlife sites, Cow Park, Kilcornan Woods, Stradbally North, the Clarin River and Dunbulcan Bay;
- ground and surface water if a waste water treatment plant is not installed, and;
- the quality of the oysters, which are importance to the local economy, if a wastewater treatment plant is not installed.

2.3 Scoping

In consultation with the relevant authorities, the scope of environmental issues which is dealt with by the SEA together with the level of detail through which the scope will be addressed was broadly decided after preliminary data collection. Scoping of the SEA was continuous with certain issues being selected for further examination after certain data was obtained.

[1] Site visits were made by:
David L'Estrange, Strategic Environmental Planning Consultant (CAAS)
Paula Connaughton, Forward Planner (Galway County Council)
Tadhg O'Mahony, Office of Licensing and Guidance (EPA)
Ian O'Connor, Office of Licensing and Guidance (EPA)

Scoping helped the SEA to become focused upon the important issues, such as those relating to existing environmental problems, not wasting resources on unnecessary data collection.

2.4 Environmental Baseline Data and Other Strategic Actions

The SEA process is led by the environmental baseline, the current state of the environment, with the baseline providing the basis for the identification, evaluation and subsequent monitoring of the effects of the plan, and the alternatives. Data was collected to describe the environmental baseline and its likely evolution without implementation of the plan or programme. Information is provided on existing environmental problems which are relevant to the LAP, thus, helping to ensure that the LAP does not make existing environmental problems in Clarinbridge worse. Strategic action which the Draft Clarinbridge LAP is constrained by,

The SEA Directive requires that information on the baseline environment be focused upon the relevant aspects of the environmental characteristics of areas likely to be significantly affected and the likely evolution of the current environment in the absence of the strategic action. Any information that does not focus upon this is surplus to requirements; therefore, the Draft Clarinbridge LAP SEA focuses on the significant issues, disregarding the less significant ones. Also, the SEA Directive aims to avoid duplication of the assessment whereby a strategic action forms part of a hierarchy- if certain matters are more appropriately assessed at different levels of the hierarchy in which the Draft Clarinbridge LAP is positioned, or, if certain matters have already been assessed by a different level of the hierarchy then additional assessment is not needed.

In order to describe the environmental baseline, the current state of the environment, at Clarinbridge, data was collated from currently available, relevant environmental data sources. Primary data collection was carried out on behalf of Galway County Council[2] and by the National Parks and Wildlife Service[3] in order to describe certain aspects of the flora and fauna at Clarinbridge.

2.5 Alternatives

The SEA Directive requires that reasonable alternatives, taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated for their likely significant effects on the environment.

Taking into account the objectives and the geographical scope of the Draft Clarinbridge LAP, alternatives to the LAP were formulated through consultation with the EPA, the plan making team at Galway County Council and a number of departments at Galway County Council.

2.6 The Environmental Report

The likely environmental effects of the Draft Clarinbridge LAP and the alternatives are predicted and their significance evaluated with regard to the environmental baseline in this Environmental Report, which is submitted to the Elected Members alongside the Draft Clarinbridge LAP. The Environmental Report provides the decision-makers, the Elected Members of Galway County Council, who decide whether or not to adopt the draft plan, with a clear understanding of the likely environmental consequences of decisions regarding the future accommodation of growth in Clarinbridge. Mitigation measures to prevent or reduce significant adverse effects posed by, and maximise any benefits offered by, the Draft

[2] Elaine O'Riordan, Ecological Consultant (National University of Ireland, Galway)
[3] Dr. Julie Fossitt, Divisional Ecologist (National Parks and Wildlife Service)

Clarinbridge LAP and the alternatives are also presented in this report as are measures concerning monitoring.

The Environmental Report may be required to be altered should the Elected Members propose to adopt a LAP which includes new objectives which have not been evaluated by the SEA and which may be likely to have significant environmental effects.

2.7 Making the Elected Members' Decision Public

When the Draft Clarinbridge LAP is adopted a document must be made public, referred to in the SEA Directive as the SEA Statement, which is required to include information on: how environmental considerations have been integrated into the LAP, highlighting the main changes to the plan which resulted from the SEA process; how the Environmental Report and consultations have been taken into account, summarising the key issues raised in consultations and in the Environmental Report and indicating what action, if any, was taken in response, and; the reasons for choosing the LAP in the light of the other alternatives, identifying the other alternatives considered, commenting on their potential effects and explaining why the LAP was selected.

The information to be included in the statement, which must be made public, including how environmental considerations have been integrated throughout the process and how the preferred alternative was chosen, introduces accountability, credibility and transparency into the strategic decision-making process.

2.8 Conformity with Legislation

This report complies with the provisions of the SEA Regulations and is written in accordance with Schedule 2B of the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (SI No. 436 of 2004). Figure 1 is a reproduction of the checklist of information to be contained in the Environmental Report (DEHLG, 2004)[4] and includes the relevant sections of this report which deal with these requirements.

[4] Department of the Environment, Heritage and Local Government (2004) *Implementation of SEA Directive (2001/42/EC): Guidelines for Regional Authorities and Planning Authorities* Dublin: Government of Ireland.

Information Required to be included in the Environmental Report	**Corresponding Section of this Report**
(A) Outline of the contents and main objectives of the plan, and of its relationship with other relevant plans and programmes	Section 4, 5 and 6
(B) Description of relevant aspects of the current state of the environment and the evolution of that environment without implementation of the plan	Section 3
(C) Description of the environmental characteristics of areas likely to be significantly affected	Sections 3, 4 and 7
(D) Identification of any existing environmental problems which are relevant to the plan, particularly those relating to European protected sites	Section 3
(E) List 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	Section 4 and 7
(F) Describe the likely significant effects on the environment	Section 7
(G) Describe any measures envisaged to prevent, reduce and as fully as possible offset any significant adverse environmental effects of implementing the plan	Section 8
(H) 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 and 2
(I) A description of proposed monitoring measures	Section 9
(J) A non-technical summary of the above information	Appendix I
(F) Interrelationships between each Environmental topic	Addressed as it arises within each Section

Table 1: Information Required and Corresponding Sections of this Report

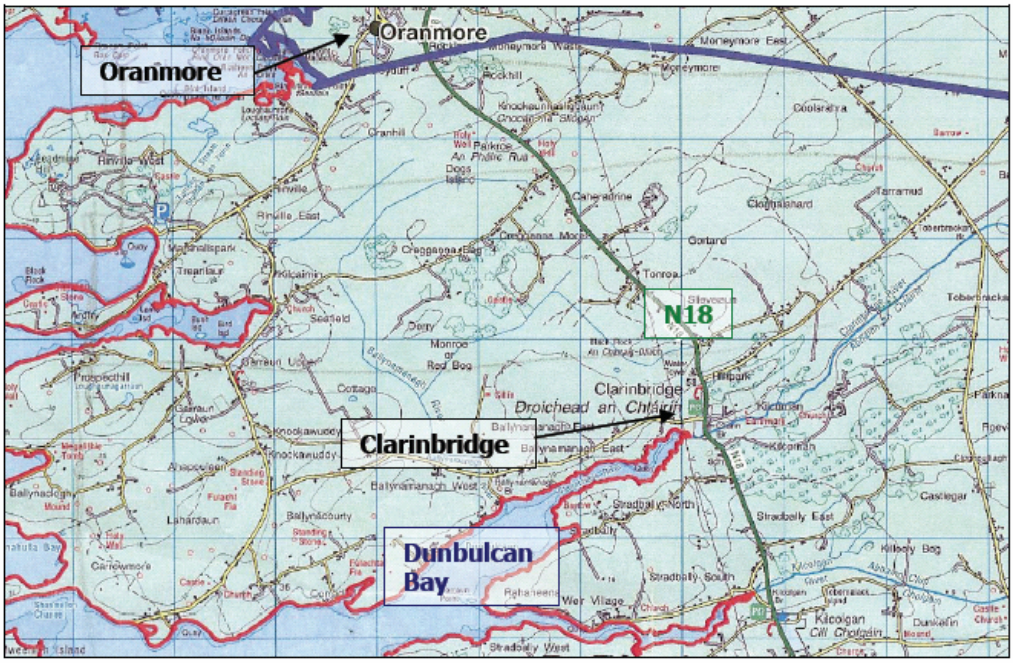
2.9 Difficulties Encountered

Gaps in the available environmental baseline data for Clarinbridge for the environmental components of flora and fauna were identified. These gaps were overcome by the carrying out of primary data collection.

Section 3 Environmental Baseline

3.1 Introduction

The environmental baseline in and around Clarinbridge is described in this section. The environmental baseline and Strategic Environmental Objectives, which are outlined in Section 4, are used in order to identify, describe and evaluate the likely significant environmental effects of implementing the Draft Clarinbridge LAP and in order to determine the required monitoring measures. The environmental baseline is described in line with the legislative requirements and encompasses the following components: biodiversity, flora and fauna; population; human health; soil; water; air and climatic factors; material assets; cultural heritage; landscape, and; the interrelationship between these components. A description of the likely effects upon each environmental component under a do-nothing scenario, the likely evolution of the environment without the implementation of a LAP for Clarinbridge, in question is also included. Map 1 sows the location of Clarinbridge in the context of the surrounding area in County Galway.



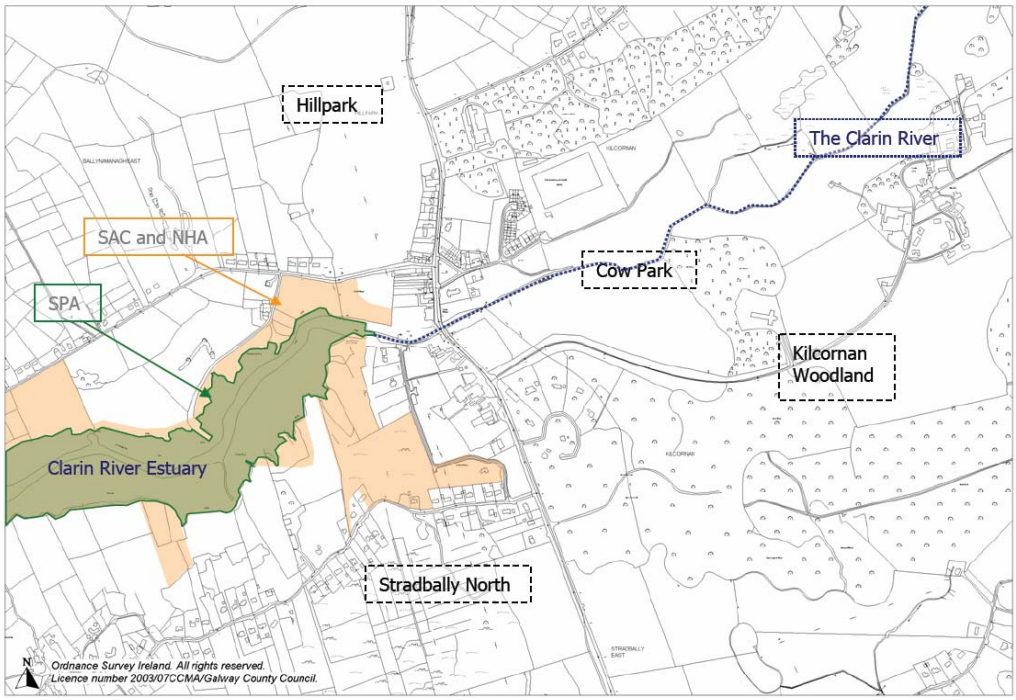
Map 1 Village Location Map

3.2 Biodiversity, Flora and Fauna

3.2.1 Designated Wildlife Sites

Certain areas in and around the village of Clarinbridge are subject to a number of conservation designations. These designated areas are shown alongside the location of other local biodiversity areas on Map 2. Site Synopsis for the SAC and SPA are provided in Appendix II, of the Draft Clarinbridge Local Area Plan SEA Report.

Certain areas in and around the village of Clarinbridge, but not within the preferred alternative boundary, are subject to a number of conservation designations. It is noted that the pNHA designation does not apply to lands which support new development and/or have been prepared for new development.



Map 2 Biodiversity, Flora and Fauna

- **The Inner Galway Bay Special Protection Area (SPA) (Site Code 004031)**

SPAs are areas of conservation value for birds of importance in the European Union the designation and protection of which are internationally mandated under the Birds Directive 1979 (79/409/EEC), enacted into Irish law by the European Communities (Conservation of Wild Birds) Regulations 1985. The European Communities (Natural Habitats) Regulations 1997 (SI 94/1997) (which have been amended twice with SI 233/1998 and SI 378/2005) also cover the Birds Directive.

The Inner Galway Bay SPA designation covers the area of water body of the Clarin River estuary and Dunbulcan Bay to the east of the village.

The entire SPA is of immense ornithological importance, supporting an excellent diversity of wintering wetland birds, with divers, grebes, cormorants, dabbling duck, sea duck and

waders. Two wintering species have populations of international importance in the Bay and a further sixteen species have populations of national importance, including seven species which are listed on Annex I of the Birds Directive - Red-throated Diver, Black-throated Diver, Great Northern Diver, Golden Plover, Bar-tailed Godwit, Sandwich Tern and Common Tern (NPWS, 2005)[5].

- **The Galway Bay Complex Special Area of Conservation (SAC) (Site Code 000268) and Natural Heritage Area (NHA)**

SACs are areas of conservation value for habitats and/or species of importance in the European Union the designation and protection of which are internationally mandated under the Habitats Directive 1992 (92/43/EEC) enacted into Irish law by the European Communities (Natural Habitats) Regulations 1997 (SI 94/1997) (which have been amended twice with SI 233/1998 and SI 378/2005). NHAs are areas of conservation value for ecological and/or geological/geomorphological heritage in Ireland the designation and protection of which are nationally mandated under the Wildlife (Amendment) Act 2000.

The Galway Bay Complex designations cover the banks of the Clarin River estuary and Dunbulcan Bay to the east of the village. Near the current plan boundary the SAC and NHA boundaries overlap so the SAC designation effectively takes precedence.

The highly indented nature of the coastline and the sheltering of coastal waters from Atlantic currents in and around Clarinbridge and the mixture of fresh and salt water as a result of the presence of the Clarin River have provided the necessary conditions for the development of habitats which support a high biodiversity. Habitats in and around Clarinbridge and Dunbulcan Bay include habitats which are listed under Annex I of the Habitats Directive namely: mudflats and sandflats which are not covered by seawater at low tide; salt marsh areas; orchid-rich calcareous grassland; shingle and stony beaches, and; the Clarin Estuary. The wider Galway Bay sustains a nationally significant population of common seals, a species which is afforded protection as a result of being listed in Annex II of the Habitats Directive, together with breeding populations of otter. The site also has four Red Data Book plant species and a host of rare or scarce marine and lagoonal animal and plant species. Oysters, mussels and other shellfish grow naturally and artificially in the Clarin Estuary, Dunbulcan Bay and surrounding waters (NPWS, 2001)[6].

3.2.2 Terrestrial Biodiversity, Flora and Fauna

- **Cow Park**

Cow Park is 17-hectare site located to the east of the village centre on the edge of the Kilcornan Woodlands. The area was cleared for commonage a number of centuries ago and is ecologically rich due to centuries of traditional grazing practices. The Cow Park is a valuable community asset, used by a small number of individuals for grazing and by the wider community as parkland for recreation. The most dominant habitat in Cow Park is orchid rich calcareous grassland which is of valuable conservation importance and corresponds to a priority habitat under Annex 1 of the Habitats Directive. Other habitats isolated stands of trees, the edges of Kilcornan Woodland and scrub which is encroaching from the boundaries in places as a result of the decline in grazing over time.

[5] National Parks and Wildlife (2005) Site Synopsis Inner Galway Bay Special Area of Protection (004031) Dublin: Government of Ireland
[6] National Parks and Wildlife (2001) Site Synopsis for Galway Bay Complex Special Conservation Area (000268) Dublin: Government of Ireland

The Clarin River bisects Cow Park as it flows towards the estuary. Together with the Clarin River, the Cow Park provides a high degree of ecological connectivity between the Kilcornan Woodland, the edge of the village centre and the estuary.

- **Kilcornan Woodland**

  Kilcornan Woodland, most of which is managed by Coillte, stretches three kilometres from the N18 eastwards and consists of approximately 133 hectares (328 acres) of clusters of mixed woodland. The site was formerly part of Reddington Estate and there are ruins of a 13th century church and a monument on the site. Kilcornan Woodland has a car park and about 8 km of forest trails which are used by the community and wider public.

  The tree vegetation in the woodland is dominated by non-native broad leaved and conifer species, namely beech and cedar species as well as commercial species including Norway spruce and Sitka spruce. There is a significant proportion of native broadleaf species present including mature oak and ash trees. In peripheral areas and along pathways there is a greater proportion of native broadleaves including Rowan, holly, birch, willow and hazel. In felled areas there appears to be significant natural regeneration of native broadleaves which is in line with Coillte policy in old woodland sites. Mature mixed broadleaf and coniferous woodlands are not an abundant habitat in the west of Ireland and so this site is of high local importance. The diversity of bird and mammal fauna at the site is relatively high and includes the jay, long-eared owl, badger, red squirrel, pine marten and bats (O'Riordan, 2006a)[7].

  Habitat Loss and Fragmentation has occurred in part of Kilcornan Woodland as a result of a number of tree clearances: along the avenue to Kilcornan House in order to provide a roadside verge; at and around the sites of a number of older buildings in the woodlands such as Kilcornan House and the 13th century church; at Cow Park in order to provide commonage many years ago, and; more recently, at a site to the south east of the village centre called Bridgewood in order to provide for low density residential development. The recent Bridgewood development has adversely impacted upon an area of the Kilcornan Woodlands to the south east of the village centre on the lands immediately to the east of the N18 road by reducing the ecological value of this area and by reducing the ecological connectivity between Kilcornan Woodland and the edge of the village.

- **Hillpark**

  Hillpark is an area of sloping grassland, which is located to the north west of the village centre. The approximate area of the Hillpark within the town plan boundary is 10.56 hectares. Hillpark is part of a larger site of ecological value which extends outside the plan area to the north, then to the west and north-west which contains three habitats which are not part of any designated site but which correspond to habitats included under Annex I of the Habitats Directive. Two of the three habitats are priority types, or natural habitat types in danger of disappearance. The aim of the Habitats Directive is to contribute towards ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora. Measures taken pursuant to the Directive are to be designed to maintain or restore, at favourable conservation status natural habitats and species of wild fauna and flora of Community interest. Measures taken pursuant to this Directive are to take account of economic, social and cultural requirements and regional and local characteristics**.** It is noted that the ecological connectivity of the southern part of Hillpark is somewhat reduced as it is set in a context of being bordered on two sides, to the south and east, by roads,

[7] O'Riordan, E. (2006a) *Ecological Assessment of Kilcornan Woods* Galway: Galway County Council

and on one side, to the west, by an amount of residential development, however, apart from the road, there is good ecological connectivity between the southern end of Hillpark and the cSAC further south.

Areas in Hillpark have been identified as corresponding to: dry heath or low scrub, an Annex I habitat, although of a reduced conservation value in places due to clearance of vegetation, and; species rich calcareous grassland with abundant orchids, an Annex I priority habitat. To the north west of Hillpark, outside the plan boundary, the grassland grades into a turlough and alkaline fen, referred to as Tonroe Turlough on the old Ordnance Survey's Six-inches-to-One-Mile mapping of the area, an Annex 1 priority habitat, where periodic flooding occurs. There is also a small turlough in the south-west corner of Hillpark (Fossitt, 2006a).

- **Stradbally North**

Stradbally North is an area consisting of a number of different habitats which is located south of the village centre on lands to the west of the N18. The area of Stradbally North within the town plan boundary is 494 hectacres. There is a large field adjacent to the N18 road at Stradbally North which consists of semi natural dry meadow habitat which is of a reduced conservation importance. To the west of this field, the predominant core habitat is semi-natural woodland. This woodland has developed over an area of calcareous soils with limestone outcrops possibly as a result of hedgerows and small copses of trees overgrowing and encroaching through lack of grazing and management over time. There are proportions of hazel, mature oak, ash, holly, willow, hawthorn, rowan, and blackthorn trees. There are also a number of yew trees, which are rare in Ireland today. The woodland supports a variety of bird and mammal species of local importance including red squirrels and pine martens. The presence of this type of woodland is of national conservation importance as it is limited in extent in Ireland (O'Riordan, 2006b)[8]. The Woodland has been disturbed recently from the installation of wooden poles carrying power lines through the area.

There are patches of semi-natural calcareous grassland around the woodland which support a high diversity of calcareous wild flowers. Some areas of these grasslands are of a lower conservation importance than the woodland as: the grasslands have been greatly encroached upon by scrub in recent years, and; the area of grassland which is found between two housing units, along the access road stretching east of the N18, appears to have been disturbed over time through building operations in the vicinity (O'Riordan, 2006b)[9].

There is a high degree of ecological and habitat connectivity between the Stradbally site and the Galway Bay Complex SAC to the north of the site and woodland and well-developed hedgerows to the south and east of the site (Fossitt, 2006b)[10].

[8] O'Riordan, E. (2006b) *Ecological Assessment of Stradbally North* Galway: Galway County Council
[9] O'Riordan, E. (2006b) *Ecological Assessment of Stradbally North* Galway: Galway County Council
[10] Fossitt, J. (2006b) *Preliminary Ecological Assessment Stradbally North* Dublin: National Parks and Wildlife Service)

3.2.3 Aquatic Biodiversity, Flora and Fauna

- **Estuarine and Coastal Biodiversity, Flora and Fauna**

The Clarin River Estuary is located to the east of the village centre and is part of Dunbulcan Bay, the most easterly inlet of Galway Bay. Both the estuary and bay are part of the Clarinbridge/ Kinvarra Bay Shellfish Waters, one of fourteen shellfish waters which are designated and afforded protection under the European Communities (Quality of Shellfish Waters) Regulations 2006 (SI No. 268 of 2006), which is transposes the Shellfish Waters Directive 1979 (79/923/EEC) into Irish law, and the Quality of Shellfish Waters Regulations 1994 (SI No. 200 of 1994). Both Regulations require that the shellfish waters are protected from the effects of the functions of planning authorities which are required to be performed in a manner that will comply with certain values for water quality which are specified in the Regulations.

Oysters, mussels and clams grow naturally and artificially in the Clarin Estuary, Dunbulcan Bay both of which provide the ideal combination of natural elements that are essential for oyster development including the easterly nature of the inlet which protects the bay from the full force of Atlantic waves and storms and the mixture of fresh and salt water which is vital for producing high quality oysters. The oysters are significantly important to the local economy and local tourism (see Section 3.7 Material Assets).

Oysters are classified by the Department of Marine and Natural Resources who regularly monitor the oysters for human consumption. Oysters in areas where monitoring registers less than 300 faecal coliforms per 100ml of shellfish flesh are suitable for direct human consumption and are given 'Grade A' classification. Faecal coliforms are microorganisms which found in human and animal faeces and are a useful indicator of the likely level of pathogens in wastewater. 'Grade A' classification is the most valuable classification as 'Grade A' oysters are subject to the highest consumer demand and there is no need for purification and the associated costs. In May 2005 the Department of Marine and Natural Resources downgraded the classification of Clarin Estuary and Dunbulcan Bay oysters from 'Grade A' to 'Grade B' but has recently in, September 2006 reinstated the oysters with 'Grade A' (DCMNR, 2005)[11].

As a result of the concerns raised by the shellfish industry, a Clarinbridge Shellfish Waters Liaison Group was formed in May 2005. The group includes representatives of shellfish producers, Bord Iascaigh Mhara, the Western Regional Fisheries Board, the Department of the Marine, Communications, Marine and Natural Resources and Galway County Council. A joint survey of water quality was carried out at 4 locations on the lower river and estuary in July/August 2005. The water quality results confirm that the faecal coliform levels intermittently reach levels that could result in a breach of the 300/100ml of shellfish flesh standard. Follow-up actions since then include septic tank surveys and farm surveys in the area, and a review of all of private wastewater treatment systems.

- **Biodiversity, Flora and Fauna of the Clarin River**

The Clarin River is a salmonid river supporting populations of Atlantic salmon as well as sea trout, brown trout, sticklebacks and eels. Atlantic salmon found in fresh water are afforded protection under Annex II of the Habitats Directive. The river has reached its carrying capacity for imposed nutrient loads and is moderately polluted with high levels of phosphorous and low levels of dissolved oxygen (see Section 3.5 Water). In July 2006 a fish kill occurred on the Clarin River upstream of Clarinbridge near Athenry resulting in the deaths of hundreds of trout and salmon fry and parr as well as some adult trout. The

[11] Department of Communications, Marine and Natural Resources (2005) *Irish Quality Oysters Scheme Report 2005* Dublin: Department of Communications, Marine and Natural Resources

pollution status of the river and the occurrence of fish kills have both placed pressure on fish populations.

3.2.4 Existing Environmental Problems

- **Designated Biodiversity, Flora and Fauna**

The moderately polluted status of the Clarin River may be adversely impacting upon the biodiversity, flora and fauna of the areas of the identified designated wildlife sites to the immediate east of Clarinbridge. This pollution is attributed to imposed loads of inappropriately treated sewage (see Section 3.5 Water).

The Moderately polluted status of the Clarin River may be indirectly impacting upon biodiversity in the wider Galway Bay – there are maerl and Zostera beds further out in the bay that are extremely sensitive to water quality.

- **Terrestrial Biodiversity, Flora and Fauna**

  - **Kilcornan Woodlands**

    Kilcornan Woodland has been recently fragmented at a site to the south east of the village centre as a result of a low-density residential development. This development has reduced the ecological value of this area of the woodland and has reduced the ecological connectivity between woodland and the edge of the village.

  - **Stradbally North**

    Recent installation of wooden poles carrying power lines and an amount of one off housing development has occurred along the access road stretching east of the N18 in Stradbally North. This has degraded the grasslands, resulted in habitat loss and has caused partial habitat fragmentation, reducing ecological connectivity between the Stradbally site and the Galway Bay Complex SAC to the north of the site.

- **Aquatic Biodiversity, Flora and Fauna**

  - **Estuarine and Coastal Biodiversity, Flora and Fauna**

    As a result of a higher concentration of faecal coliforms in the estuary and bay waters, the amount of faecal coliforms in monitored oysters increased in May 2005 thus reducing their quality grade. Although the amount of faecal coliforms was subsequently reduced, the presence of increased faecal coliforms in the oysters in 2005 provides evidence of an emerging water quality problem. The high level of faecal coliforms has been attributed to imposed loads of inappropriately treated sewage in the Clarin River and from developments within Clarinbridge village (see Section 3.5 Water).

  - **Biodiversity, Flora and Fauna of the Clarin River**

    Fish populations in the Clarin River are currently being adversely impacted upon by the moderately polluted status of the Clarin River which is attributed to imposed loads of inappropriately treated sewage (see Section 3.5 Water). A fish kill which occurred on the Clarin River in July 2006 and resulted in the deaths of hundreds of trout and salmon fry and parr as well as some adult trout and this has put further

strain on fish populations. The cause of the fish kill has been attributed to sewage discharge to the river near Athenry (WRFB)[12].

3.2.5 Evolution of Biodiversity, Flora and Fauna in the absence of a LAP

- **Designated Wildlife Sites**

In the absence of implementation of a Local Area Plan for Clarinbridge, one off housing development would be likely to continue on the edges of the Galway Bay Complex SAC and NHA, both north and south of the Clarin River estuary to the east of the village centre. The effects of wastewater generated as a result of future developments could, if not mitigated against, deteriorate the quality of the estuarine waters and adversely impact upon biodiversity, flora and fauna. There are no plans to begin construction of a wastewater treatment plant in Clarinbridge until 2009 at the earliest (see Section 3.7 Material Assets). Also, one off housing development on the edges of the designated wildlife sites has the potential to cumulatively reduce the ecological connectivity between the sites and surrounding terrestrial habitats.

- **Terrestrial Biodiversity, Flora and Fauna**

  - **Cow Park**

    In the absence of implementation of a Local Area Plan for Clarinbridge, Cow Park would remain largely as it is. If the grassland was not maintained by grazing or otherwise, scrub would spread across the grasslands followed by a climax woodland habitat emanating from the existing tree stands and the edges of Kilcornan Woodlands. It is likely, however, that the grasslands would be maintained due to the value of this important community resource. Planning applications could be submitted which could, if granted, impact upon biodiversity, flora and fauna, however, it is likely that such applications would conflict with the current community use and would meet an amount of resistance.

  - **Kilcornan Woodland**

    In the absence of implementation of a Local Area Plan for Clarinbridge, Kilcornan Woodland would continue to be managed by Coillte with populations of trees being felled and replanted over time. Applications for development in areas other than Bridgewood could be submitted which would, if granted, result in habitat loss and reduce ecological connectivity in the woodland.

  - **Hillpark**

    In the absence of implementation of a Local Area Plan for Clarinbridge, Hillpark would remain as it is with scrub spreading to grasslands if no maintenance of the grassland was carried out. Planning applications could be submitted which could, if granted, impact upon biodiversity, flora and fauna.

  - **Stradbally North**

    In the absence of implementation of a Local Area Plan for Clarinbridge, one off housing development would be likely to continue along the access road stretching east of the N18 and possibly in other locations in Stradbally North.

[12] Western Regional Fisheries Board (2006) *Press Release July 19, 2006: Trout and Salmon wiped out in Clarin River Fish Kill* Galway: Western Regional Fisheries Board

This would result in habitat loss and habitat fragmentation, reducing connectivity between the Stradbally site and the Galway Bay Complex SAC to the north of the site.

- **Aquatic Biodiversity, Flora and Fauna**

  - **Estuarine and Coastal Biodiversity, Flora and Fauna**

In the absence of implementation of a Local Area Plan for Clarinbridge, increased housing in Clarinbridge without appropriate or appropriately maintained waste water treatment could lead to a further decline in water quality in the estuary and bay and could impact upon more sensitive species including oyster populations which are of value to the economy and tourism as well as being of ecological value. There are no plans to begin construction of a wastewater treatment plant in Clarinbridge until 2009 at the earliest (see Section 3.7 Material Assets).

  - **Biodiversity, Flora and Fauna of the Clarin River**

In the absence of implementation of a Local Area Plan for Clarinbridge, increased housing in Clarinbridge without appropriate or appropriately maintained waste water treatment is likely to lead to a further decline in water quality in the Clarin River and could impact upon more sensitive species. There are no plans to begin construction of a wastewater treatment plant in Clarinbridge until 2009 at the earliest (see Section 3.7 Material Assets). Instances of pollution occurring in the Clarin River upstream of Clarinbridge in areas such as Athenry would not be affected in the absence of a Local Area Plan.

3.3 Population and Human Health

3.3.1 Population

Survey work carried out by Galway County Council in April 2005 estimated the population within a radius of approximately 1km from the centre of the village to be 363 persons. The population of the wider Clarinbridge District Electoral Division was 2,092 in 2002, a 24.5% increase in population from 1,680 in 1996.

Most recent new development in Clarinbridge has taken place on the approach roads to the village and along the two local roads north and south of the Clarin River estuary in the form of one-off ribbon development. This type of development makes the provision of services uneconomical and is socially, physically and environmentally unsustainable. The current development of a Strategic Economic Corridor at Oranmore, less than 5km north of Clarinbridge, together with Clarinbridge's proximity to Galway City together make Clarinbridge an attractive commuter settlement moving into the future.

Within the period of the Galway County Development Plan 2003 to 2009, 930 residential units have been allocated by the plan's Settlement Strategy to Small Settlements / Rural Areas in the Oranmore Electoral Area, in which Clarinbridge is designated as a Small Settlement. The County Development Plan states that 50% of the household allocation for Small Settlements / Rural Areas should be allocated to development within the settlement centres. The remaining 50% can be allocated between the Small Settlements and the Rural Areas. Although the amount of residential units is not specified for each settlement centre, if Clarinbridge received an average allocation it would amount to between 52 and 104 additional residential development units depending on the amount of units which are allocated to Rural Areas.

3.3.2 Human Health

Human health has the potential to be adversely impacted upon by the contamination of drinking water. Clarinbridge's drinking water at the spring has exceeded E. coli levels on a number of occasions – a likely result of imposed loads of inappropriately treated sewage from residential development in Clarinbridge caused by incorrectly installed percolation areas and failure to desludge septic tanks. E. coli is present in very high numbers in human or animal faeces and is rarely found in the absence of faecal pollution. E. coli is often not in itself a harmful organism but indicates that harmful organisms may be present (see Section 3.5 Water and Section 3.7 Material Assets).

3.3.3 Existing Environmental Problems

- **Population**

  Most recent new development in Clarinbridge has taken place on the approach roads to the village and along the two local roads north and south of the Clarin River estuary in the form of one-off ribbon development. This type of development makes the provision of services uneconomical and is socially, physically and environmentally unsustainable. Clarinbridge's proximity to Galway City and the Strategic Economic Corridor at Oranmore together with the housing allocations for Clarinbridge under the County Development Plan Settlement Strategy means that residential development is certain to occur in and around the village. There is a necessity to provide for the proper residential and associated infrastructural development of Clarinbridge and this can be done through a Local Area Plan.

- **Human Health**

  Contamination of drinking water in Clarinbridge presents an existing an environmental problem which is a threat to human health.

3.3.4 Evolution of Population and Human Health in the absence of a LAP

- **Population**

  There will be a continued demand for housing in Clarinbridge which is likely to be satisfied in a piecemeal fashion with the location of developments determined by individual applications with no specific guidance for Clarinbridge as to where development should take place. This is likely to lead add to further accentuate the current problem of unsustainable one-off ribbon development leading to problems relating to infrastructure provision of wide areas and more significant environmental impacts.

- **Human Health**

  If the evolution of population in Clarinbridge, as described above, was not accompanied by appropriate waste water treatment then human health is likely to be adversely impacted upon by drinking water contamination.

3.4 Soil

3.4.1 Soil

Clarinbridge is underlain by Carboniferous limestone geology which is overlain by glacial deposit subsoil and shallow brown earth soils (An Foras Talúntais, 1977)[13]. This brown earth is well drained and supports agriculture, with grazing practiced on a number of fields surrounding the village, and forestry, consisting of the Kilcornan Woodland. The brown earth in the north west of Hillpark is less well drained and borders an area of basin peat which makes up Monroe or Red Bog. In areas where the soil is thin, such as at Stradbally North and to the north east of Hillpark, there are a number of limestone rock outcrops.

Clarinbridge is located at the westerly extremity of Esker Riada, the largest esker in Ireland. The esker is a ridge of stratified sand and gravel which was deposited by a stream flowing from a retreating glacier at the end of the last ice age. Esker Riada traverses across the east of Ireland country from Dublin to Galway. The esker was quarried a number of years ago to the north-east of Clarinbridge however quarrying activities nearby have since ceased.

Soil can be considered as a non-renewable natural resource because it develops over very long timescales. To date, there is no legislation which is specific to the protection of soil resources however an EU Directive on soil is currently proposed which will sets out common principles for protecting soils across the EU. Soil is encompassed in both the description of the environment in the SEA Directive to which this report relates and in the EIA Directive. The protection of other resources such as water under the Water Framework Directive has positive implications for soil, the quality of which is directly linked to that of ground and surface waters.

3.4.2 Existing Environmental Problems

Existing environmental problems relating to soil include the building upon, and thereby sealing off of, soil together with pollution and contamination of soil as a result of surface and ground water pollution and contamination (see Section 3.5 Water).

3.4.3 Evolution of Soil in the absence of a LAP

In the absence of implementation of a Local Area Plan for Clarinbridge, soil would be sealed off in line with development and the quality of soil would depend on the quality of surface and ground water.

3.5 Water

3.5.1 Surface Water- The Clarin River

The Clarin River flows through Clarinbridge Village and into Galway Bay via Dunbulcan Bay with its estuary stretching for approximately 2km east of the village. Its flows from Pollnacirca, a turlough situated approximately five kilometres north east of Clarinbridge, and it flows through Kilcornan Woodland and Cow Park before it passes under the Clarin Bridge near the village centre. The Clarin River is fed by water from the turlough which is filled all year round by the upper course of the Clarin River, sometimes referred to as the Lavally River, and during winter, but not summer, from an underground network of caves. As a result, the volume of water in the river during summer months is much lower thus making it more susceptible to pollution from imposed loads. The upper course of the Clarin River, which enters into Pollnacirca, flows through agricultural land and through the town of Athenry before it reaches the turlough. The river supports aquatic life (see Section 3.2 Biodiversity,

[13] An Foras Talúntais (1977) *National Soil Survey of Ireland* Wexford: An Foras Talúntais

Flora and Fauna) and is an important natural amenity and focal point in the village. The lower course of the Clarin River, together with a number of items relevant to water in Clarinbridge, is shown on Map 3.

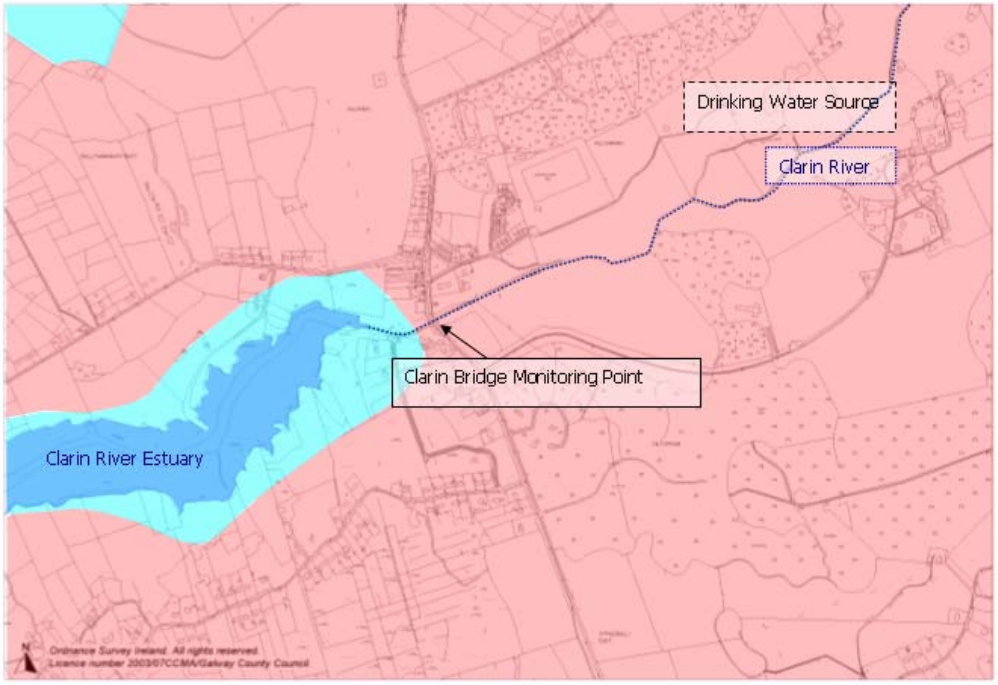
The Clarin River is located in the Western River Basin District (WRBD), which includes parts of Clare, Galway, Galway City, Leitrim, Mayo, Roscommon and Sligo. An integrated management system is being prepared for the WRBD in order to implement the requirements of the principle legislation governing river water quality in Ireland- the Water Framework Directive. The WRBD is divided into a number of Hydrometric Areas - the Clarin River is located in Hydrometric Area 29, 'Galway Bay South East', which includes the surface catchment drained by all streams entering tidal water in Galway Bay between Black Head and Renmore Point. The Clarin River is monitored by the EPA, at the Clarin Bridge (Sampling Point Number 0500) on the edge of Clarin Bridge village, and by Galway County Council.

The Clarin River has been identified as being moderately polluted in the three most recent EPA monitoring surveys- in 1997, 2000 and 2003[14]. The most recent triennial report (EPA, 2005)[15] identifies that the Clarin River has high phosphorus levels which are attributed to imposed loads of inappropriately treated sewage. Phosphorous is a major limiting vegetative growth factor in fresh surface waters and these high levels have led to an accelerated growth of algae which has resulted in reduced dissolved oxygen levels especially during periods of low flow. The reduced levels of dissolved oxygen have placed pressures on fish populations in the river (see Section 3.2 Biodiversity, Flora and Fauna). The Clarin River's capacity for assimilating phosphorous has been exceeded; the Clarin River has no more capacity to assimilate phosphorous.

The most recent sampling of phosphorous carried out by Galway County Council of the river at the Clarin Bridge in 2005 (Galway County Council, 2005)[16] identified phosphorous levels to be in excess of the recommended 30µg per litre for rivers to be of good water quality status.

Four out of five measurements exceeded the 30µg standard, with levels reaching 32, 33, 69 and 257 µg per litre, further highlighting the problem of phosphorous levels in the Clarin River.

[14] Environmental Protection Agency (Various) *Results of the 1997, 2000 and 2003 Investigations* Wexford: Environmental Protection Agency
[15] Environmental Protection Agency (2005) *Water Quality in Ireland 2001 – 2003* Wexford: Environmental Protection Agency
[16] Galway County Council (2005) *Water Quality Monitoring at Sampling Site 3: GY-CE-PB* Galway: Galway County Council



Map 3 Water
Major Aquifer of Extreme Vulnerability
Flood Hazard Zone

3.5.2 Ground Water

Groundwater is stored in the void spaces in underground layers of rock, or aquifers. These aquifers are permeable allowing both the infiltration of water from the soils above them and the yielding of water to surface and coastal waters. Clarinbridge and its surrounding areas are located over a limestone aquifer which is important on a regional and local level for the supply of drinking water (see Section 3.7 Material Assets). Limestone aquifers have high fissure permeability as a result of both the composition of the limestone and are easily permeated by water from the above soils with movement of water through the aquifer relatively quick. Because of this short infiltration time the aquifer is extremely vulnerable to pollution such as imposed contaminant loads from wastewater.

The Geological Survey of Ireland rates the aquifers of Ireland according to their productivity and their vulnerability to pollution. The limestone aquifer over which Clarinbridge and its surrounding areas are located has been the highest production rating available and the highest vulnerability to pollution rating- it is a 'Major Aquifer of Extreme Vulnerability' (GSI, 2001)[17].

The only monitoring data relating to groundwater quality which exists relates to the monitoring of Clarinbridge's drinking water supply which is sourced from a spring originating from groundwater in the Kilcornan Woodlands (see Section 3.7 Material Assets). The water has exceeded E. coli levels on a number of occasions[18]– a likely result of imposed loads of inappropriately treated sewage from residential development in Clarinbridge caused by incorrectly installed percolation areas and failure to desludge septic tanks. E. coli is present

[17] Geological Survey of Ireland (2001) *Aquifer Vulnerability Ratings for County Galway* Dublin: Geological Survey of Ireland
[18] Galway County Council (Various) *Clarinbridge Kilcolgan [GY010] Drinking Water Monitoring Results* Galway: Galway County Council

in very high numbers in human or animal faeces and is rarely found in the absence of faecal pollution. E. coli is often not in itself a harmful organism but indicates that harmful organisms may be present.

3.5.3 Estuarine Waters

The Clarin River estuary stretches 2km westwards from the Clarin Bridge. The estuarine waters are located within the highly indented coastline of Dunbulcan Bay which shelters the waters from Atlantic currents and this, together with the mixture of fresh and salt water from the Clarin River, has provided a habitat in which oysters and other shellfish can be cultivated (see Section 3.2 Biodiversity, and Section 3.7 Material Assets). The estuary also forms part of the designated wildlife sites in the area (see Section 3.2 Biodiversity, Flora and Fauna)

The water quality of the estuary is influenced by the inflow of water from Clarin River together with the yielding of water from the surrounding aquifer. The pollution of both of these water bodies as a result of inappropriately treated sewage has implications for water quality in the estuary: water from the Clarin River has been identified as being moderately polluted[19], and; elevated levels of E. coli in Clarinbridge's water supply which originates from groundwater have been identified. Also, in May 2005 the Department of Marine and Natural Resources (2005)[20] measured an increase in the faecal coliforms in oysters in the estuary attributing the results to inappropriately treated sewage. Although there is no regular monitoring system in place for the estuarine waters, it is likely that the quality of the estuarine waters is being affected by pollution in the Clarin River and in the groundwater. Contamination is likely to be a result of imposed loads of inappropriately treated sewage from residential development in Clarinbridge, caused by incorrectly installed percolation areas and failure to desludge septic tanks, together with contaminant loads brought to the estuary from further upstream the Clarin River.

3.5.4 Flooding

The Office of Public Works (2006)[21] identified multiple/ recurring flood points to the north west of Hillpark, approximately 1km from the centre of the village. This area, Tonroe Turlough, was also identified on the on the old Ordnance Survey's Six-inches-to-One-Mile mapping of the area and in the ecological study of Hillpark as being liable to flooding.

As a result of global warming in the future, land at the edges of the Clarin River estuary and at the edges of Dunbulcan Bay (see Map 3) may be threatened by rising sea levels.

3.5.5 Existing Environmental Problems

- **Surface Water- The Clarin River**

  The Clarin River has been identified as being moderately polluted with high phosphorus levels as a result of imposed loads of inappropriately treated sewage. The pollution has the potential to impact upon aquatic life especially in the summer when the volume of water in the river is lower than in winter. High phosphorous levels have led to an accelerated growth of algae which has reduced dissolved oxygen levels and has put pressure on the fish populations.

[19] Environmental Protection Agency (Various) *Results of the 1997, 2000 and 2003 Investigations* Wexford: Environmental Protection Agency
[20] Department of Communications, Marine and Natural Resources (2005) *Irish Quality Oysters Scheme Report 2005* Dublin: Department of Communications, Marine and Natural Resources
[21] Office of Public Works (2006) *National Flood Hazard Mapping: Summary Local Area Report for Clarinbridge M413 203* Dublin: Office of Public Works

- **Ground Water**

Groundwater from a spring in the Kilcornan Woodlands has been monitored by Galway County Council and has exceeded E. coli levels on a number of occasions. E. coli is present in very high numbers in human or animal faeces and is rarely found in the absence of faecal pollution. The ground water therefore is likely to have been impacted upon by inappropriately treated sewage (see Section 3.7 Material Assets) - a likely result of incorrectly installed percolation areas and failure to desludge septic tanks in residential developments in Clarinbridge.

- **Estuarine Waters**

Water from the Clarin River together with the yielding of water from the surrounding aquifer supply the estuary with water therefore it is subject to the effects of pollution and contamination from both of these water bodies. The quality of the oysters in the estuary was reduced in 2005 (see Section 3.2 Biodiversity, Flora and Fauna) as a result of increased faecal coliforms levels in the estuary which are likely to have originated from inappropriately treated waste water treatment.

- **Flooding**

The northwest of Hillpark is an area which is liable to floods and the land at the edges of the Clarin River estuary and at the edges of Dunbulcan Bay may be threatened in the future by potential rising sea levels as a result of global warming. It is noted that to date there has been little development in the either of the aforementioned areas.

3.5.6 Evolution of Water in the absence of a LAP

- **Surface, Ground and Estuarine Water**

  The issues identified above relating to the pollution and contamination of the water bodies in Clarinbridge are likely to continue into the future if wastewater is not appropriately treated.

- **Flooding**

  Flooding or rising sea levels are unlikely to have major economic or social consequences in Clarinbridge unless the northwest of Hillpark and/or the edges of the Clarin River estuary and Dunbulcan Bay are developed. Flooding is likely to occur periodically in the north west of Hillpark while potential rising sea levels may result in the loss of land at the edges of the Clarin River estuary and Dunbulcan Bay.

3.6 Air and Climatic Factors

3.6.1 Air and Climatic Factors

Air quality issues have been determined to be more appropriately assessed at higher levels in the land use and environmental protection hierarchies, at a regional level by the EPA, as well as at relevant individual project levels. However, it is noted that the effects of global warming on sea levels should be considered while directing development towards certain areas in Clarinbridge. Areas which may be susceptible to flooding as a result of this rise in sea levels are dealt with by Section 3.5 Water.

3.6.2 Existing Environmental Problems

No existing environmental problems have been identified in Clarinbridge with regard to air and climatic factors.

3.6.3 Evolution of Air and Climatic Factors in the absence of a LAP

The air quality in Clarinbridge would remain largely unchanged in the absence of a LAP.

3.7 Material Assets

3.7.1 Waste Water

There is no public sewerage system in Clarinbridge at present. Existing wastewater treatment in Clarinbridge is provided by septic tanks or private wastewater treatment plants. Most of these schemes discharge to groundwater after initial treatment and subsequent drainage through a designed percolation area. Continuous monitoring is carried out under licence, at six of the larger wastewater treatment plants in the village which serve commercial properties however there is no continuous monitoring of individual septic tanks serving houses. It is likely that these septic tanks are the major source of pollutants and contaminants in Clarinbridge's groundwater and drinking water supply as well as being a major contributing source of pollutants and contaminants in the Clarin River and the Clarin Estuary. The Clarinbridge Sewerage Scheme which is to provide public wastewater treatment for Clarinbridge is to start construction in 2009 at the earliest while the provision of the scheme will not be in action until 2010 at the earliest.

3.7.2 Drinking Water Infrastructure

Drinking water is currently supplied in Clarinbridge from a spring in Kilcornan Woodlands which is yielded from groundwater. The water is piped from the spring and is stored in the water tower in Hillpark from which it is piped through a public water supply network to developments in the area. As part of Galway County Council's 2004 to 2006 Water Services Investment Programme the Tuam Regional Water Supply Scheme is to be extended to Clarinbridge, providing an increased supply for new developments.

The drinking water at the spring is monitored by Galway County Council and has exceeded E. coli parameters, as well as a number of other biological and chemical components, on a number of occasions[22] – a likely result of imposed loads of inappropriately treated sewage from residential development in Clarinbridge caused by incorrectly installed percolation areas and failure to desludge septic tanks. E. coli is present in very high numbers in human or animal faeces and is rarely found in the absence of faecal pollution. E. coli is often not in itself a harmful organism but indicates that harmful organisms may be present.

3.7.3 Transport Infrastructure

Clarinbridge is situated on the National Primary Route N18 which forms part of the main road artery from Galway to Limerick. Clarinbridge's location on the National Primary Route brings a significant amount of traffic through the village including commuters and heavy goods vehicles travelling to and from Galway City. The emissions and noise which result from high levels of traffic in Clarinbridge Village Center contribute to the creation of an environment which is harsh for pedestrians. The Regional Planning Guidelines prioritise the development of the proposed new Galway to Limerick route the new N18 which would by-pass the village and

[22] Galway County Council (Various) *Clarinbridge Kilcolgan [GY010] Drinking Water Monitoring Results* Galway: Galway County Council

alleviate the amount of traffic passing though Clarinbridge thus improving the environment for pedestrians and cyclists.

There are two local roads which have been built to the west of the N18, providing access to residential development on both the north and south sides of the Clarin river estuary. To the north of the village a local road provides a north easterly route out of the village towards the R348 regional road which leads to Athenry.

3.7.4 Oyster Production

At the mouth of the Clarinbridge River the Clarinbridge Oyster Co-Operative Society Ltd. operates two Oyster Fisheries - the Clarinbridge Oyster Co-Op Fisheries and the St. George Oyster Fishery. Fishermen from the Society also operate a third fishery in the area, the Clarinbridge Public Oyster Beds. These fisheries provide both full time and part time work and income for up to sixty families. The income generated by these fisheries provides spin off effects and agglomeration opportunities for local businesses and the local economy.

Local tourism is largely based upon the oyster industry with the village attracting a considerable number of visitors each September as people come to participate in the internationally recognised oyster festival which has taken place annually since 1954. During the week of the festival alone some 10,000 people visit the area significantly contributing to the local economy.

In May 2005 the Department of Marine and Natural Resources downgraded the classification of oysters from Dunbulcan Bay from 'Grade A' to 'Grade B' but has since reinstated the oysters with 'Grade A' (DCMNR, 2005)[23]. Grade B oysters are less valuable than Grade A oysters which are subject to the highest consumer demand and do not require purification and the associated costs of installing purification systems.

3.7.5 Existing Environmental Problems

- **Waste Water**

  Inappropriately treated sewage from residential development in Clarinbridge caused by incorrectly installed percolation areas and failure to desludge septic tanks is likely to be adversely impacting on various environmental components. Further development in Clarinbridge without the construction of a public waste water treatment plant could lead to: cumulative direct adverse impacts on ground, drinking, surface and estuarine waters (see Section 3.5 Water), and; indirect adverse impacts on human health and biodiversity, flora and fauna (see Section 3.2 Biodiversity, Flora and Fauna), including oysters, the economy and tourism (see Section 3.7 Material Assets).

- **Drinking Water**

  The drinking water at the spring is monitored by Galway County Council and has exceeded E. coli levels on a number of occasions suggesting that groundwater quality is being adversely impacted upon by inappropriately treated sewage[24].

[23] Department of Communications, Marine and Natural Resources (2005) *Irish Quality Oysters Scheme Report 2005* Dublin: Department of Communications, Marine and Natural Resources
[24] Galway County Council (Various) *Clarinbridge Kilcolgan [GY010] Drinking Water Monitoring Results* Galway: Galway County Council

- **Oyster Production**

  The quality classification of Clarinbridge oysters was downgraded in May 2005 as a result of contamination by faecal coliforms occurring as a result of inappropriately treated sewage however the oysters were subsequently upgraded. It is a concern that further inappropriately treated sewage could lead to a downgrade in the oyster classification in the future which could impact upon the economy and tourism.

3.7.6 Evolution of Material Assets in the absence of a LAP

- **Waste Water**

  Existing wastewater treatment in Clarinbridge will continue to be provided by septic tanks or private wastewater treatment plants until a municipal wastewater treatment plant and collection system is constructed and operational. The Clarinbridge Waste Water Scheme which is to provide public wastewater treatment for Clarinbridge is not likely to be in place until some time after 2010. If wastewater treatment was not improved in the interim Clarinbridge's water bodies and the oyster industry would continue to be adversely impacted upon.

- **Drinking Water**

  Drinking water will remain to be supplied from a spring in Kilcornan Woodlands which is susceptible to ground water pollution from inappropriately treated sewage. Water will be supplied from the Tuam Regional Water Supply Scheme when the necessary infrastructure is put in place.

- **Transport**

  A significant amount of commuter and heavy good traffic travelling to and from Galway will continue to pass through Clarinbridge until the proposed new Galway to Limerick route which would by-pass the village and alleviate the amount of traffic passing though Clarinbridge is built.

- **Oyster Production**

  Oyster production would be likely to continue to be impacted upon with the loading of the Clarin Estuary with inappropriately treated sewage. New development not accompanied by the construction of a wastewater treatment plant would lead to an increase in one off treatment systems in Clarinbridge, which would be likely to cumulatively impact upon the oyster quality, tourism and the economy.

3.8 Cultural Heritage

3.8.1 Introduction

Implementation of a Local Area Plan for Clarinbridge has the potential to beneficially impact upon cultural heritage, both archaeological and architectural, through a number of heritage protection policies and objectives outlined in the plan as well as through the Plan's Village Design Framework and various development control standards. Adverse impacts as a result of any development which occurs under the LAP are more appropriately assessed at project level. Archaeological and architectural heritage are protected by the legislation listed below and any developments will be required to comply with this legislation on a site specific basis. Description of the general context of cultural heritage – including cultural and historic landscapes – is provided for in Section 3.9 below.

3.8.2 Archaeological Heritage

The Record of Monuments and Places for Clarinbridge lists and protects monuments and places under Section 12 of the National Monuments (Amending National Monument Acts from 1930 to 1987) Act, 1994. Monuments are any artificial or partly artificial building, structure, or erection. Monuments protected under the Act include prehistoric monuments and any monuments and places associated with commercial, cultural, economic, industrial, military, religious or social history. The Act includes all monuments in existence before 1700 A. D. (Government of Ireland, 1994)

There are three entries in the Record of Monuments and Places in and around Clarinbridge providing evidence of early settlement, namely: a hilltop enclosure (Monument No. Ga-095-058), in the grounds of Kilcornan Woodlands; a church (Monument No. Ga-095-069), also in the grounds of Kilcornan Woodlands, and; a Chapel (Monument No. Ga-095-144) in Stradbally North.

3.8.3 Architectural Heritage

Clarinbridge village centre is a proposed Architectural Conservation Area (ACA), a designation that requires that planning permission must be obtained before significant works can be carried out to the exterior of a structure in the ACA which might alter the character of the structure or the ACA.

The Records of Protected Structures included in the Galway County Development Plan are legislated for under Section 51 of the Planning and Development Act 2000 and include structures which form part of the architectural heritage and which are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. All structures, buildings, or erections, which came into existence after 1700 A.D., can be protected through enlistment in the Record of Protected Structures. Protection can apply to all parts of the structure, surrounding lands and any other structure on surrounding lands.

There are eight entries in the Record of Protected Structures (RPS) in and around Clarinbridge, namely: St Mary's Catholic Church/ Church of the Annunci (RPS No. 235), near the centre of the village; Clarinbridge Green (RPS No. 236), near the centre of the village; Clarinbridge School House/Parish Hall (RPS No. 237), near the centre of the village; Clarinbridge Antiques (RPS No. 494), near the centre of the village; Clarinbridge Bridge (RPS No. 238) where the Clarin River passes under the N18; Kilcornan House (RPS No. 232), in Kilcornan Woodland; St. Cornan's Church (RPS No. 233), in Kilcornan Woodland, and; the Oyster Manor Hotel (RPS No. 234), in Stradbally North.

As well as there being a number of buildings in Clarinbridge included on the record of protected structures, there a number of other buildings that have no special protection but are of significance to the character of the village. Such buildings include Clarinbridge Crystal, buildings in the rear yards of Barrack St, houses and the Schoolhouse Restaurant.

3.8.4 Existing Environmental Problems

No existing environmental problems have been identified in Clarinbridge with regard to cultural heritage.

3.8.5 Evolution of Cultural Heritage in the absence of a LAP

In the absence of a Local Area Plan for Clarinbridge, the evolution of cultural heritage would depend upon the nature of development in the area. The designation of the village as an ACA

would add to the protection of cultural heritage in Clarinbridge afforded by the National Monuments Act 1994 and the Planning and Development Act 2000.

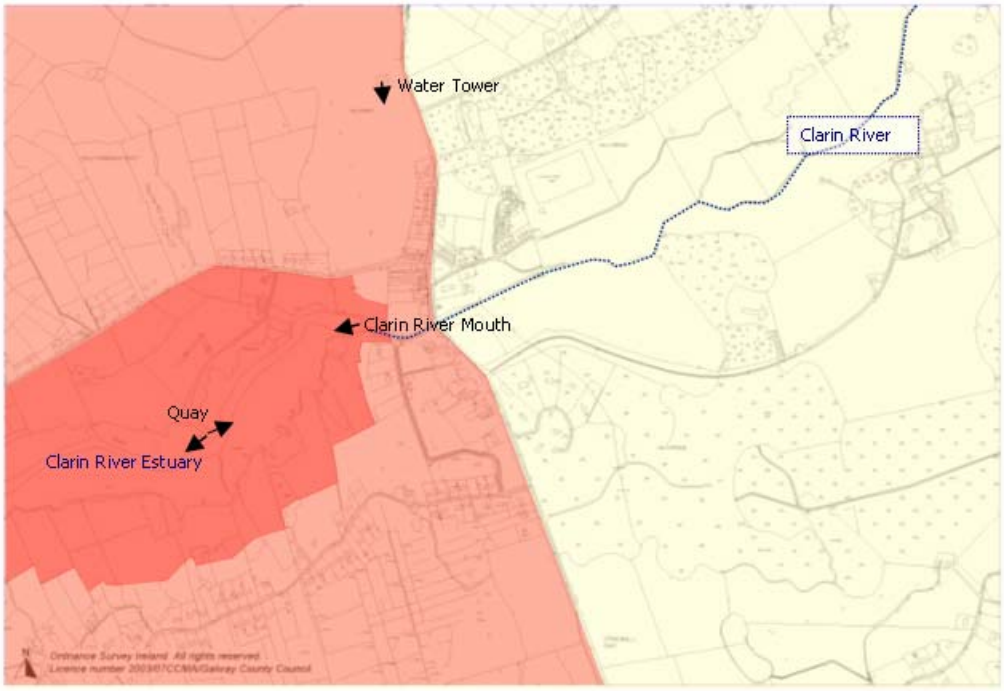
3.9 Landscape

3.9.1 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; landcover, 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 landcover.

Galway County Council's (2003)[25] Landscape Character Assessment classifies landscapes in Galway according to their sensitivity, their ability to accommodate change or intervention without suffering unacceptable effects to character and values. The most sensitive landscapes are 'Class 5 - Unique', 'Class 4- Special' and 'Class 3- High' while landscapes of lesser sensitivity are 'Class 2- Moderate' and 'Class 1- Low'. To the west of the N18 in Clarinbridge, along the banks of the Clarin River estuary, the landscape is 'Class 4- Special', while to the north and south of the estuary the landscape is 'Class 3- High'. The area of Clarinbridge to east of the N18 is 'Class 1- Low'.

Map 4, taken from Galway County Council's 2003 Landscape Character Assessment, highlights the most sensitive landscapes found at Clarinbridge along with important landscape focus points and views which are mentioned in the proceeding sections.



[25] Galway County Council (2003) *Landscape Character Assessment* Galway: Galway County Council

3.9.2 Landscapes of Special Sensitivity – The Clarin River Estuary

The landscape of the Clarin River estuary and its banks are classed of special sensitivity. The Clarin River estuary is part of the wider Dunbulcan Bay which is the most easterly inlet of Galway Bay, a context which makes the estuarine and surrounding landscape rare. The area covered by the special sensitivity classification follows the topography of the land stretching back to the local access road on the northern estuary banks while stretching back a similar distance on the on the southern banks – the banks are low lying making them sensitive to development. The landscape here is largely unspoilt, although a small number of houses which have been built are visible from the low-lying estuary banks. The level of water in the estuary changes with the in-flow and out-flow of the tide, with seaweed covered rocks revealed at low tide. The shingle and stony beaches at the edge of the estuary graduate into grassy banks which are covered by standings of trees in places.

Examining the landscape during site visits to Clarinbridge as well as discovering the natural and human values which are embedded in the landscape helped to identify two views of notability along the banks of the estuary: the view of both northern and southern banks of the estuary eastwards from the west of the Clarin Bridge, and; the views of Dunbulcan Bay and the surrounding banks from Mooring Posts Quay located on the northern banks of the estuary. The landscape has social and economic importance as it includes the estuary which has facilitated the local oyster industry which is important to the economic and tourism sectors as well as to the annual Clarinbridge Oyster Festival. The landscape here also includes designated wildlife sites (see Section 3.2 Biodiversity, Flora and Fauna).

3.9.3 Landscapes of High Sensitivity- West of the N18

The landscape to the west of the N18 in Clarinbridge, to the north and south of the landscape of special sensitivity, is of high sensitivity. To the north of the village, the sloping grasslands of Hillpark, together with the adjoining Monroe or Red Bog, provide the largest open area in Clarinbridge. The rising height of the land to the north of the village means that the Hillpark overlooks the village, the low lying lands to the south of the village and parts of Dunbulcan Bay. This gives rise to an expansive view from Hillpark southwards which is designated a 'focal point/ view' in Galway County Council's 2003 Landscape Character Assessment. A similarly expansive view can be gotten by travelling into Clarinbridge southwards on the N18 adjacent to Hillpark. Hillpark includes what is the most recognisable man made focal point in the area- the Clarinbridge Water Tower. The tower is distinctive, standing out strikingly from the surrounding grasslands and can be seen from a number of points within the village, to the south of the village and on entry to the village from the north.

Landscapes of high sensitivity include the areas to the south of the village, west of the N18. These areas are divided into small fields with a network of stone walls and hedgerows providing boundaries. The areas overlook the village, Dunbulcan Bay and the Clarin River estuary in places, however access is restricted. One local road stretching west of the N18 provides access to housing units which have developed in a linear fashion along the road and have visually impacted upon the landscape.

3.9.4 Landscapes of Low Sensitivity- East of the N18

The area of Clarinbridge to east of the N18 is of low sensitivity. The Kilcornan Woods together with a number of tree standings provide natural screening for development which reduces its impact upon the surrounding landscape.

Located to the east of the village centre on the edge of the Kilcornan Woodlands, the Cow Park is the largest open space in Clarinbridge which is used by the local community as a recreational resource. The landscape was cleared for commonage a number of centuries ago and as a result there is a sense of public ownership attached to it with its cultural, social and

amenity value widely appreciated in the local community. The Cow Park is linked to the village and Dunbulcan Bay by way of the Clarin River which meanders through the Cow Park, adding an additional layer to the landscape.

Kilcornan Woodlands make up approximately 328 acres of mixed woodland and include the ruins of a 13th century church and a monument as well as 8 km of forest trails which are used by the community and wider public.

3.9.5 Existing Environmental Problems

An emerging environmental problem with regard to the environmental component of landscape is the visual impact which one off housing unit developments are beginning to have on the landscape of special sensitivity of the Clarin River estuary and its banks.

Although this locally valued and rare landscape is largely unspoilt, a small number of houses which have been built are visible from the low-lying estuary banks. Such one off housing unit developments, which individually would not have significant adverse impacts, would have the potential to cumulatively and adversely significantly impact upon this landscape of special sensitivity.

3.9.6 Evolution of Landscape in the absence of a LAP

Change in the landscapes at Clarinbridge would be dependent upon residential and other developments. Such development which would be visible from the Clarin River estuary banks would cumulatively and adversely significantly impact upon this landscape of special sensitivity.

Section 4 Development of Strategic Environmental Objectives (SEOs)

4.1 Introduction to Strategic Environmental Objectives

Strategic Environmental Objectives (SEOs) are methodological measures against which the environmental effects of the LAP can be tested. If complied with in full, SEOs would result in an environmentally neutral impact from implementation the plan. The SEOs are set out under a range of topics and are used as standards against which the zoning objectives of the LAP can be evaluated in order to help identify areas in which significant adverse impacts are likely to occur, if unmitigated against.

SEOs are distinct from the objectives of the LAP - although they will often overlap - and are developed from international, national and county policies which generally govern environmental protection objectives. Such policy includes that of various European Directives which have been transposed into Irish law together with the Galway County Development Plan 2003 to 2009 which contains a number of environmental protection policies which should be implemented by at the local village level in Clarinbridge.

The SEA Directive requires that the evaluation of plans be focused upon the relevant aspects of the environmental characteristics of areas likely to be significantly affected and, in compliance with this requirement, SEOs have been developed for the relevant environmental components of this SEA. Focus has been developed throughout the SEA from the scoping stage to the compilation of the existing environmental baseline with most attention given to environmental components which are likely to be impacted as a result of implementation of a LAP and environmental components for which existing environmental problems exist.

A number of SEOs are linked to indicators, in order to facilitate the monitoring of the LAP, and targets, in order to provide a measure which the LAP can help work towards.

The primary source used in formulating the SEOs was Table 4B of the SEA Guidelines (DEHLG, 2004)[26]. This list has been amended to take affect of objectives that are considered relevant to the LAP. The use of SEOs, although not a statutory requirement, does fulfil obligations set out in Schedule 2B of the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (SI No. 436 of 2004).

4.2 Biodiversity, Flora and Fauna

4.2.1 Designated Wildlife Sites

SPAs are designated and protected under the Birds Directive 1979 (79/409/EEC), transposed into Irish law by the European Communities (Conservation of Wild Birds) Regulations 1985 and the European Communities (Natural Habitats) Regulations 1997 (SI 94/1997) (which have been amended twice with SI 233/1998 and SI 378/2005).

SACs are designated and protected under the under the Habitats Directive 1992 (92/43/EEC) transposed into Irish law by the European Communities (Natural Habitats) Regulations 1997 (SI 94/1997) (which have been amended twice with SI 233/1998 and SI 378/2005). NHAs are designated and protected under the Wildlife (Amendment) Act 2000.

[26] Department of the Environment, Heritage and Local Government (2004) *Implementation of SEA Directive (2001/42/EC): Guidelines for Regional Authorities and Planning Authorities* Dublin: Government of Ireland.

The habitats and species occurring in the both SPAs and SACs are protected from effects of development occurring outside their boundaries under the Section 18 "Prohibition of works on lands outside a European site" of the European Communities (Natural Habitats) Regulations 1997. The Regulations require that where a development is proposed to be carried out, on any land that is not within a protected site and is liable to have an adverse impacts on the protected site in question, including direct, cumulative and indirect impacts, an appropriate assessment, which conforms to an environmental impact assessment, of the likely effects of the proposed development on the site is undertaken. Depending on the conclusions of this assessment such development may be refused planning permission.

Policies of the Galway County Development Plan relating to biodiversity, flora and fauna include: to ensure that heritage protection is an integral part of coherent policies of economic and social development and of urban and rural planning (Policy 121); to support national agencies, local and community groups in protection, conservation and enhancement of the landscape and wildlife habitats (Policy 139); to recognise that nature conservation is not just confined to designated sites and acknowledge the need to protect non-designated habitats and landscapes and to conserve the biological diversity of the County (Policy 145); to protect and conserve habitats, which have been identified in the Habitats Directive, Birds Directive, Wildlife Act 2000 and the Flora Protection Order nature reserves, Connemara National Park, Ramsar Sites and any other Directives, Acts or Policies which may be issued during the lifetime of this Plan (Policy 1470, and; to protect flora and fauna and natural habitats along the coastline (Policy 165).

SEO B1:	To avoid loss of habitats and flora and fauna in designated wildlife sites
Indicator B1:	Percentage of habitat or percentage of species lost in designated wildlife sites
Target B1:	No losses of habitat or species in designated wildlife sites during the lifespan of the LAP

SEO B2:	To avoid significant adverse impacts, including direct, cumulative and indirect impacts, by development within and outside designated wildlife sites to habitats and flora and fauna, including oysters, within these sites
Indicator B2:	Number of significant impacts by development within and outside designated wildlife sites to habitats and flora and fauna, including oysters, within these sites
Target B2:	No significant impacts by development within and outside designated wildlife sites to habitats and flora and fauna, including oysters, within these sites during the lifespan of the LAP

4.2.2 Terrestrial Biodiversity, Flora and Fauna

The Habitats Directive aims to ensure the conservation of natural habitats and flora and fauna which are at favourable conservation status listed in Annex I and Annex II taking into account economic, social and cultural requirements as well as regional and local characteristics. Article 10 of the Directive also recognises the importance of ecological networks and corridors and stepping stones for wildlife, including for migration, dispersal and genetic exchange of species of flora and fauna. The Directive requires that ecological connectivity and areas of ecological value outside the network of designated wildlife sites are

maintained and it recognises the need for the management of these areas through land use planning and development policies.

Habitat fragmentation includes habitat loss, disturbance, severance or alteration, and the creation of physical or other barriers (caused by noise or light) for wildlife.

SEO B3:	To conserve natural habitats listed in Annex I and flora and fauna listed in Annex II which are at favourable conservation status taking into account economic, social and cultural requirements as well as regional and local characteristics

SEO B4:	To prevent the fragmentation of locally significant habitats and features such as trees and maintain ecological connectivity and ecological corridors within the plan area. Note that for connectivity, the habitats need not always be of particular value but the physical links should be present or, in other words, physical or other barriers should be absent.
Indicator B4:	Area of locally significant habitat which is fragmented
Target B4:	No habitat fragmentation of locally significant habitats to occur during the lifespan of the LAP

4.2.3 Aquatic Biodiversity, Flora and Fauna

The shellfish waters at Clarinbridge are designated and afforded protection under the Quality of Shellfish Waters Regulations 1994 (SI No. 200 of 1994) and the Shellfish Waters Directive 1979 (79/923/EEC) which is transposed into Irish law through the European Communities (Quality of Shellfish Waters) Regulations 2006 (SI No. 268 of 2006). Both Regulations require that the shellfish waters are protected from the effects of the functions of planning authorities which are required to be performed in a manner that will comply with certain values for water quality which are specified in the Regulations. The Shellfish Waters Directive and the Shellfish Regulations only specify a guideline value for faecal coliforms per 100 ml of shellfish flesh and intervalvular liquid: faecal coliforms should be less than or equal to 300 counts per 100 ml of shellfish flesh and intervalvular liquid. The amount of faecal coliforms in shellfish relates to compliance with especially **SEO M1** (see Section 4.7 below) below and also SEOs **W1, W2, W3** (see Section 4.5 below).

Atlantic salmon found in fresh water are afforded protection under Annex II of the Habitats Directive and their protection in Clarinbridge is covered by **SEO B3** (above) and **SEO W1** (see Section 4.5 below).

4.3 Population and Human Health

Most recent new development in Clarinbridge has taken place on the approach roads to the village and along the two local roads north and south of the Clarin River estuary in the form of one-off ribbon development. This type of development makes the provision of services uneconomical and is socially, physically and environmentally unsustainable.

SEO P1:	To prevent unsustainable piecemeal ribbon development and support higher density residential development and the economical and efficient use, provision and maintenance of infrastructure[27]

SEO P2:	To allow for new economic developments in Clarinbridge, providing new job opportunities[28]

Human health has the potential to be adversely impacted upon by the pollution of drinking water as a result of inappropriately treated sewage. This aspect of human health is covered by **SEO M2** (see Section 4.7 below).

4.4 Soil

Soil can be considered a non-renewable natural resource because it develops over very long timescales. Existing environmental problems relating to soil include the obliteration and removal of topsoil and/or loss of soil profile by compaction due to building upon soil together with the pollution and contamination of soil as a result of surface and ground water pollution and contamination.

S1	To maintain the quality of soil

S2	To maximise the sustainable re-use of brownfield lands where possible
Indicator S2:	Area of brownfield land available
Target S2:	No brownfield land to be available (subject to availability on the open Market and demand for such land) at the end of the LAP's lifespan

4.5 Water

4.5.1 Surface, Ground and Estuarine Waters

The principle legislation governing water quality in Ireland is the European Communities (Water Policy) Regulations 2003 (SI No. 722 of 2003) which transposes the Water Framework Directive (200/60/EC). The Water Framework Directive sets out that all member states shall implement the necessary measures to prevent deterioration of the status of all waters - surface, ground, estuarine and coastal -, and shall protect, enhance and restore all waters with the aim of achieving good status by 2015. Also, all public bodies, including Galway County Council, are required 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

[27] SEO P1 was found to potentially conflict with other SEOs as development by its nature impacts upon the environment
[28] SEO P2 was found to potentially conflict with other SEOs as development by its nature impacts upon the environment

up to good status by 2015. Good status as defined by the WFD equates to approximately Q4 in the national scheme of biological classification of surface waters as set out by the EPA. River quality in Ireland is also governed by the Phosphorous Regulations, prepared under Article 4(4) of the Local Government (Water Pollution) Act 1977. The Phosphorous Regulations require that river quality be maintained or improved with regard to phosphorous levels and identify that phosphorous should be less than or equal to 30µg per litre for rivers to be of good water quality status. Phosphorous is a major limiting vegetative growth factor in fresh surface waters and high levels can, as they have in the Clarin River, lead to an accelerated growth of algae resulting in reduced dissolved oxygen levels and placing pressures on fish populations.

Policies of the Galway County Development Plan relating to water include: to implement water protection measures to prevent any deterioration of good status waters and to restore substandard waters to good status (Policy 111).

SEO W1:	To improve the quality of surface waters
Indicator W1a:	µg of Phosphorous per litre of surface water
Target W1ai:	To reduce the amount of phosphorous in surface waters over the lifespan of the LAP
Target W1aii:	To achieve of a level of less than 30µg of phosphorous per litre of surface water, in line with the requirements to achieve good water status under the Water Framework Directive, by 2015
Target W1b:	To achieve a biotic quality rating of Q4, in line with the requirement to achieve good water status under the Water Framework Directive by 2015

Detailed provisions to achieve the aims of the Water Framework Directive for ground water will be presented in a Daughter Directive which is currently undergoing preparation. 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 EPA (2005)[29] have set interim guideline values for both total coliforms (0 counts per 100ml) and faecal coliforms (0 counts per 100ml) in groundwater which are the same as the values set by the European Communities (Drinking Water) Regulations, 2000 and trigger values set by the Geological Survey of Ireland (1999)[30].

SEO W2:	To prevent pollution and contamination of ground water
Indicator W2a:	Total Coliform Counts per 100ml of groundwater
Target W2a:	0 Total Coliform Counts per 100ml of groundwater
Indicator W2b:	Faecal Coliform Counts per 100ml of groundwater
Target W2b:	0 Faecal Coliform Counts per 100ml of groundwater

[29] Environmental Protection Agency (2005) Towards Setting Guidelines for the Protection of Groundwater in Ireland – Interim Report Wexford: Environmental Protection Agency
[30] Geological Survey of Ireland (1999) *Protocol for the delineation of Source Protection Zones (including Nitrate Vulnerable Zones) around public groundwater supply sources* Dublin: Geological Survey of Ireland

SEO W3:	To prevent pollution and contamination of estuarine water
Indicator W3a:	Total Coliform Counts per 100ml of estuarine water
Target W3a:	0 Total Coliform Counts per 100ml of estuarine water
Indicator W3b:	Faecal Coliform per 100ml of shellfish flesh
Target W3b:	Less than 300 Faecal Coliform per 100ml of shellfish flesh

4.5.2 Flooding

Areas of Clarinbridge have been identified as being liable to flooding and land at the edges of the Clarin River estuary and at the edges of Dunbulcan Bay were identified as being vulnerable to the effects of global warming (see Section 3.5).

SEO W4:	To mitigate the effects of floods including vulnerability to potential sea level rise as a result of global warming
Indicator W4:	Number of developments granted permission in areas liable to floods or rising sea levels
Target W4:	No development to be granted permission in areas liable to floods or rising sea levels during the duration of the LAP

4.6 Air and Climatic Factors

Air quality issues have been determined to be more appropriately assessed at higher levels in the land use and environmental protection hierarchies, at a regional level by the EPA, as well as at relevant individual project levels (see Section 3.7).

Evaluation of the LAP with relating to the effects of global warming is dealt with by **SEO W4** (see Section 4.5 above).

4.7 Material Assets

4.7.1 Waste Water

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 (S.I. 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 the treatment of waste water is relevant to the Water Framework Directive which requires all public bodies, including Galway 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.

Policies of the Galway County Development Plan relating to waste water include: to provide and maintain quality water and wastewater services necessary for environmental purposes, and for economic, regional and rural development purposes (Policy 46); to ensure that all dwellings outside town sewerage systems have an appropriate wastewater treatment system, correctly installed and maintained (Policy 117), and; to ensure that all new septic tank systems comply with the relevant EPA wastewater manuals (Policy 119).

SEO M1 (below) relates to the protection of the environment from the adverse effects of the wastewater discharges. This includes soil, water bodies and flora and fauna, in particular the oysters in the Clarin Estuary and Dunbulcan Bay.

It was previously noted that the Shellfish Waters Directive and the Shellfish Regulations only specify a guideline value for faecal coliforms per 100 ml of shellfish flesh and intervalvular liquid: faecal coliforms should be less than or equal to 300 counts per 100 ml of shellfish flesh and intervalvular liquid. The legislation does not set values for microbiological quality of the ambient waters; however, international best practice[31] has adopted a precautionary approach with regard to discharges to such waters whereby the discharger must demonstrate design to achieve no more than 100 faecal coliforms per 100 ml of wastewater discharged directly or indirectly to shellfish waters or waters flowing into shellfish waters.

SEO M1:	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
Indicator M1a:	µg of Phosphorous per litre of wastewater discharge
Target M1a:	To achieve of a level of less than or equal to 30µg of phosphorous per litre of wastewater discharge from all new wastewater treatment systems
Indicator M1b:	Faecal Coliforms per 100ml of wastewater discharge
Target M1b:	To achieve of a level of less than or equal to 100 faecal coliforms per 100ml of wastewater discharge from all new wastewater treatment systems

4.7.2 Drinking Water

Drinking water is regulated by the European Communities (Drinking Water) Regulations, 2000. Under this legislation there are two microbiological, 26 chemical and 20 indicator standards that must be adhered to in order to prevent contamination of drinking water supplies. Total coliforms (0 per 100 ml) is an indicator standard under the Regulations and is used as an indicator to accompany SEO M2.

SEO M2:	To prevent contamination of drinking water
Indicator M2:	Total Coliforms per 100ml of drinking water
Target M2:	0 Total Coliforms per 100ml of drinking water

[31] Scottish Environmental Protection Agency (2001) *Policy No 27A Microbiological Standards and Design Criteria for Discharges to Shellfish Waters* Stirling: Scottish Environmental Protection Agency

4.7.3 Oyster Production

See Section 4.2.3, **SEO M1** (above) and **SEOs W1, W2, W3** (see Section 4.5 above).

4.8 Cultural Heritage

Implementation of a LAP for Clarinbridge has the potential to impact upon cultural heritage, both archaeological and architectural, however such potential impacts have been determined to be more appropriately assessed at project level. Archaeological and architectural heritage are protected by the legislation listed below and any developments will be required to comply with this legislation on a site specific basis.

The Record of Monuments and Places for Clarinbridge lists and protects monuments and places under Section 12 of the National Monuments (Amending National Monument Acts from 1930 to 1987) Act, 1994. The Records of Protected Structures included in the Galway County Development Plan are protected under Section 51 of the Planning and Development Act 2000. Clarinbridge village centre is a proposed Architectural Conservation Area (ACA), a designation that requires that planning permission must be obtained before significant works can be carried out to the exterior of a structure in the ACA which might alter the character of the structure or the ACA. Protection of the general context of cultural heritage – including cultural and historic landscapes – is provided for in Section 4.9 below.

4.9 Landscape

Ireland signed and ratified the European Landscape Convention on 22 March 2002 with the Convention entering into force in Ireland from 1 March 2004. The Convention fills the legal vacuum caused by the absence, at European level, of a specific, comprehensive reference text devoted entirely to the conservation, management and improvement of European landscapes in the international legal instruments on the environment, regional planning and the cultural heritage. 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.

Galway County Council's (2003)[32] Landscape Character Assessment classifies landscapes in Galway according to their sensitivity - their ability to accommodate change or intervention without suffering unacceptable effects to character and values. The most sensitive landscapes are 'Class 5 - Unique', 'Class 4- Special' and 'Class 3- High' while landscapes of lesser sensitivity are 'Class 2- Moderate' and 'Class 1- Low'.

Policies of the Galway County Development Plan relating to landscape include: Include landscape Sensitivity Ratings as an important factor in determining development uses in areas of the county (Policy 104), and; to conserve the character, quality and distinctiveness of seascapes (Policy 154).

[32] Galway County Council (2003) *Landscape Character Assessment* Galway: Galway County Council

SEO L1:	To conserve and maintain the significant or characteristic features of landscapes of special sensitivity
Indicator L1:	Number of developments located in landscapes of special sensitivity
Target L1:	No developments conspicuously located in landscapes of special sensitivity during the lifespan of the LAP

SEO L2:	To protect views which have significant natural value or human values
Indicator L2:	Number of views which have significant natural value or human values significantly impacted upon
Target L2:	No views to be significantly adversely impacted upon during the lifespan of the LAP

Section 5 A Local Area Plan for Clarinbridge

5.1 A Local Area Plan for Clarinbridge

This report should be read in conjunction with the Draft Clarinbridge LAP. The vision for the Draft Clarinbridge LAP is to create a framework for the sustainable development of Clarinbridge, identifying sufficient suitable land for future housing, community facilities, economic development and open space whilst protecting and preserving the villages distinctive character, heritage, amenity and local identity.

The framework for the future development of the village is described in the text of the LAP and is spatially represented in the LAP zoning map which shows where certain land uses will be directed to during the six-year life span of the Plan. These land uses include residential, village centre (mixed development), recreation and amenity, community facilities, enterprise / industry and tourism.

Sections 6 and Section 7 identify, describe and evaluate different alternatives of how to achieve the vision which is set out for a LAP for Clarinbridge taking into account the relevant land use strategic actions, the SEOs identified in Section 4 as well as the geographical scope of the LAP. The evaluation of alternatives results in the identification of a preferred alternative which will be submitted to the Elected Members of Galway County Council along with this Environmental Report for consideration.

5.2 The Galway County Development Plan 2003 to 2009

The Draft Clarinbridge LAP is nested in a hierarchy of strategic actions which formulate policy and planning for County Galway. The Draft Clarinbridge LAP must comply with the national and regional policy framework in which it is situated, translating key strategic decisions made at national and regional level to the local level. The National Spatial Strategy 2002-2020 and the West Regional Authority Regional Planning Guidelines 2004-2016 are being implemented at county level by the Galway County Development Plan 2003 to 2009 (as varied by Variations No. 1 to 7, 2006). The County Development Plan is to be implemented at the local village level in Clarinbridge through the LAP.

The County Development Plan contains the County Settlement Strategy providing a planning framework for the location of development and population over the six-year life span of the County Development Plan. The County Settlement Strategy identifies Clarinbridge as a Small Settlement – these settlements provide a small range of services to their community, such as convenience goods, primary education and healthcare, serving an important community purpose and providing the basis for further future development.

Within the period of the Galway County Development Plan 2003 to 2009, 930 residential units have been allocated by the Settlement Strategy to Small Settlements / Rural Areas in the Oranmore Electoral Area. The County Development Plan states that 50% of the household allocation for Small Settlements / Rural Areas should be allocated to development within the settlement centres. The remaining 50% can be allocated between the Small Settlements and the Rural Areas. Although the amount of residential units is not specified for each settlement centre, if Clarinbridge received an average allocation it would amount to between 52 and 104 additional residential development units depending on the amount of units which are allocated to Rural Areas.

The County Development Plan contains a number of environmental protection policies, including those which have been identified in Section 4. The LAP must be consistent with the County Development Plan and implement these policies at the local village level in Clarinbridge.

Section 6 Alternative Options

6.1 Introduction

This section identifies and describes different alternative options of how to achieve the various parts of the vision which is set out for the Draft Clarinbridge LAP, taking into account the Galway County Development Plan 2003 to 2009 as well as the geographical scope of the LAP. These alternative options are evaluated in Section 7 resulting in the identification of a number of preferred options. These preferred alternative options are accompanied by mitigation measures in Section 8. Mitigation measures attempt to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the LAP. The preferred alternative options together with the mitigation measures make up the framework for development of the Draft Clarinbridge LAP which is submitted, with this environmental report, to the Elected Members.

6.2 Methodology for Identifying Alternative Options

In order to identify what alternative options should be chosen for consideration in this SEA a hierarchy of alternatives was explored.

6.2.1 Need

At the top of the hierarchy it is checked whether there is, or will be in the future, a need for a LAP for Clarinbridge. This determines whether or not the LAP is necessary. This is the equivalent of the 'do nothing' alternative, examining the continuation of existing trends, and identifying the likely effects this will have on needs and on the environment;

- It was determined that there is a need for the a LAP for Clarinbridge as a higher level strategic action requires the making of the plan - Objective 5 of Section 2.27 of the Galway County Development Plan 2003 to 2009 (as varied by Variations No. 1 to 7, 2006) requires that LAPs be prepared for certain areas surrounding the East Galway Strategic Corridor. The location of Clarinbridge less than 4km south of this corridor, as well as making a LAP necessary under the aforementioned objective, presents further need for a LAP in order to provide a framework for development which will be encouraged by the corridor. The SEA Directive requires information on the likely evolution of the current state of the environment without implementation of the plan or programme- this is the 'do nothing' alternative. Although the do-nothing alternative is not one of the reasonable alternatives which are required to be considered under the SEA Directive where plans or programmes are legally required to be made this alternative has been described in Section 3.

6.2.2 Method

As a LAP for Clarinbridge was deemed to be necessary different ways or methods of providing for the need were explored. The need is to implement the vision for the Draft Clarinbridge LAP through allocation of sufficient amounts of land for the various landuses including land for residential use as set out under the Settlement Strategy and for village centre (mixed development), recreation and amenity, community facilities, enterprise / industry and tourism uses.

- Alternative methods for facilitating various landuses include urban renewal or greenfield development. There is a limited amount of land available in Clarinbridge for urban renewal, however, as the use of such lands would prevent an amount of greenfield development, and its associated effects, it was decided to zone all such lands on the zoning map, and insert Policy 3.7.1 into the Local Area Plan– to promote

the revitalisation of the village centre in a manner that is sympathetic to the character of its surrounds through promoting the redevelopment of derelict, obsolete and brownfield sites.

6.2.3 Location and Scale

Once the method of meeting the need was determined, alternative options relating to the locations of development to be provided for under the LAP were explored.

- Residential development under the Settlement Strategy must be accommodated in the LAP and the scale of this residential development has been determined by the range of housing units allocated to Clarinbridge under the Strategy. It is noted that around three times the amount of residential land needed is zoned in order to ensure that sufficient amounts of land are made available to the market by land owners.

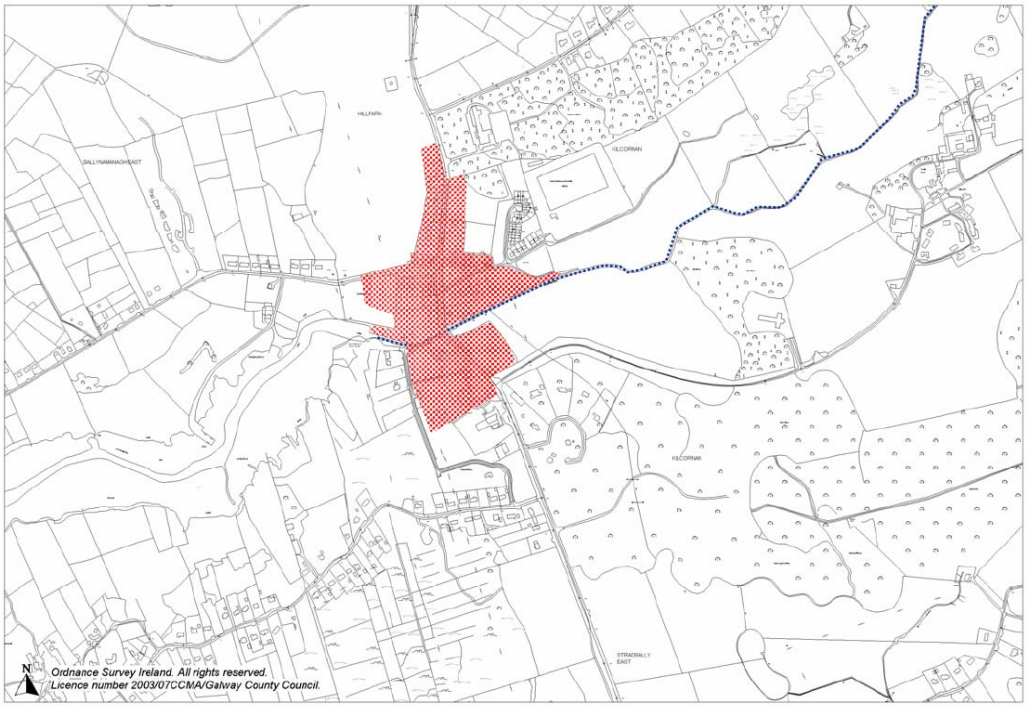
  Alternative options with regard to the locations for providing residential, industrial, transport, enterprise / industry and tourism development were identified through consultation between CAAS and Galway County Council. These alternative options are described in Sections 6.3 to 6.9. Community facilities are already located and established in and around Clarinbridge therefore locations relating to such facilities were not explored. There are a number of alternative options with regard to locations evaluated for the land uses which results in the determination of preferred alternative locations for each land use.

6.2.4 Design

Finally, at the bottom of the hierarchy, are the most detailed and least strategic alternatives about how development should be phased, designed or managed. Such alternatives were not identified in the SEA due to their reduced strategic nature. It is noted that the density of development has been given consideration during the formulation of the LAP which includes development standards with regard to density for residential development. These standards comply with higher level strategic actions including the West Regional Authority Regional Planning Guidelines 2004-2016 and the Galway County Development Plan 2003 to 2009.

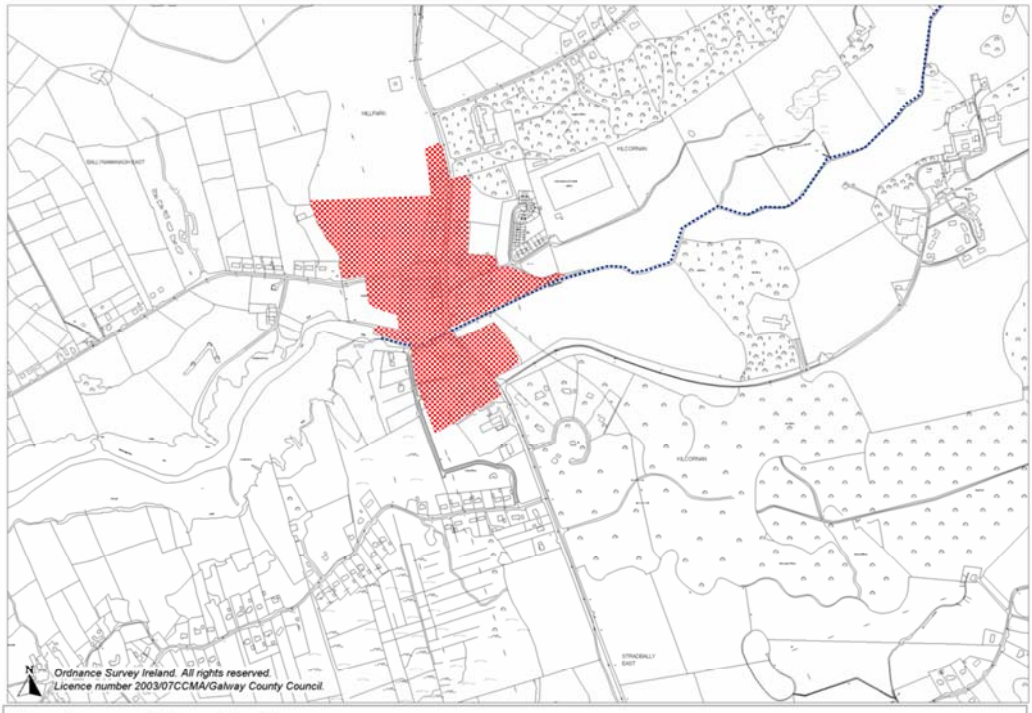
6.3 Village Centre (Mixed Use) Alternative Options

Two alternative options are evaluated with regard to Village centre (mixed use) development. These are: village centre (mixed use) development which includes an area of Hillpark for village expansion (see Map 5 Alternative 1a), and; village centre (mixed use) development which does not include the Hillpark area (see Map 6 Alternative 1b).



Map 5 **Alternative 1a**

Village Centre (Mixed Development)

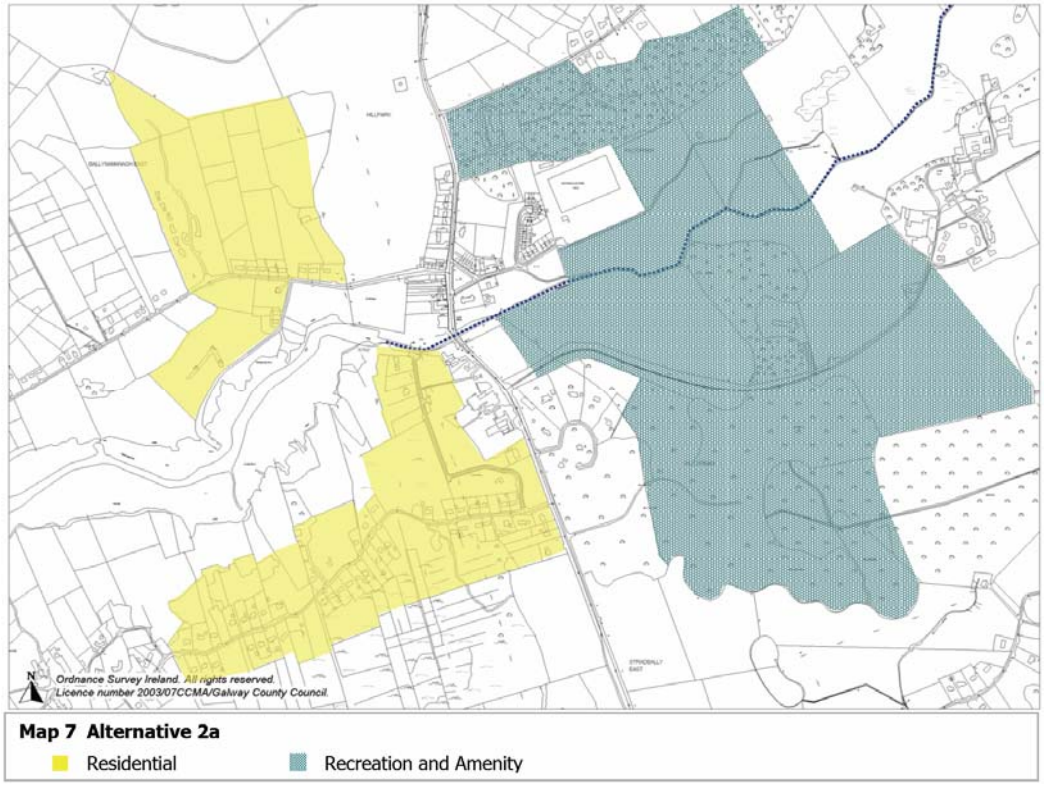


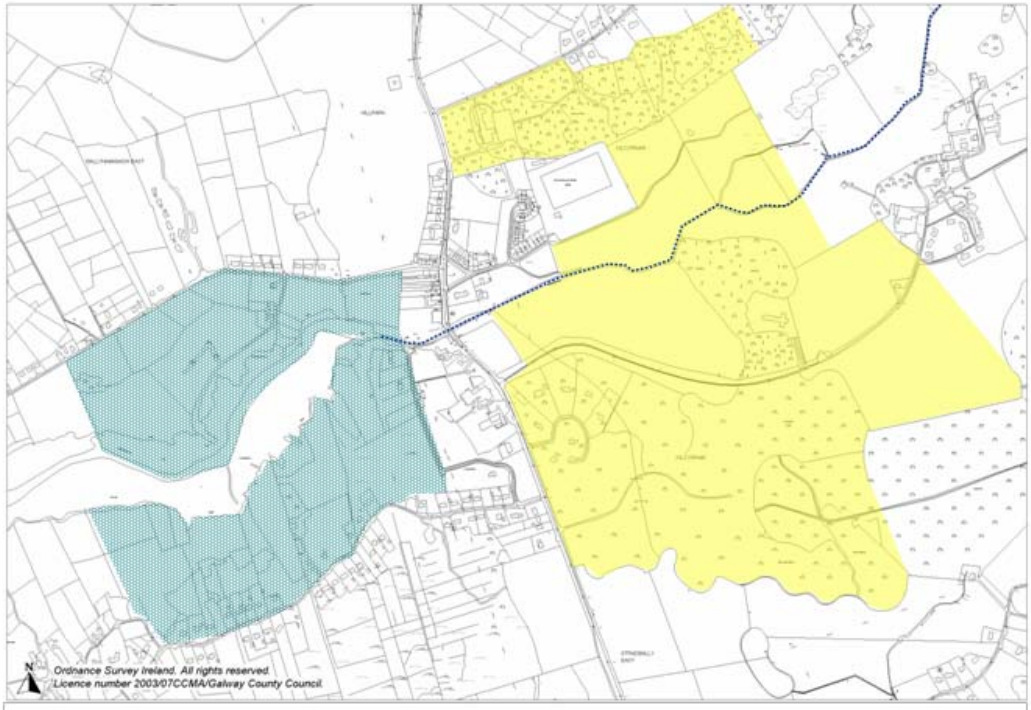
Map 6 **Alternative 1b**

Village Centre (Mixed Development)

6.4 Residential and Recreation and Amenity Alternative Options

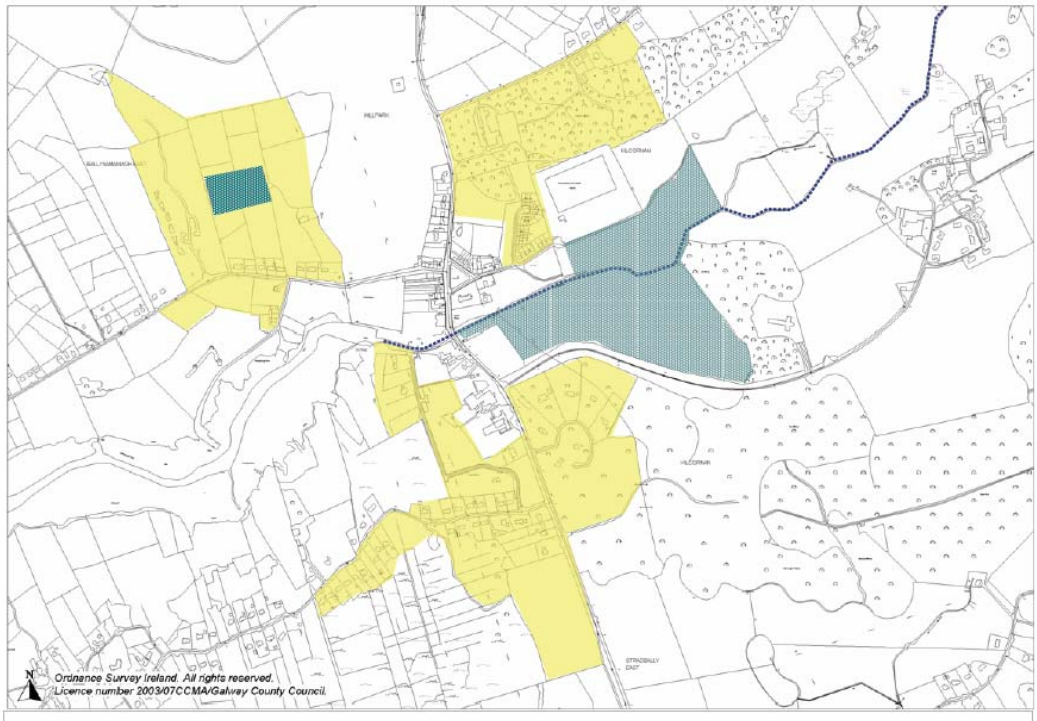
Three alternative options are evaluated with regard to residential and recreation and amenity development. These are: residential development based around the Clarin River estuary with recreation and amenity to the east of the village (see Map 7 Alternative 2a); residential development to the east of the N18 with recreation and amenity to the west of the village (see Map 8 Alternative 2b), and; residential development and recreation and amenity to both the east and west of the village (see Map 9 Alternative 2c).





Map 8 Alternative 2b

Residential Recreation and Amenity

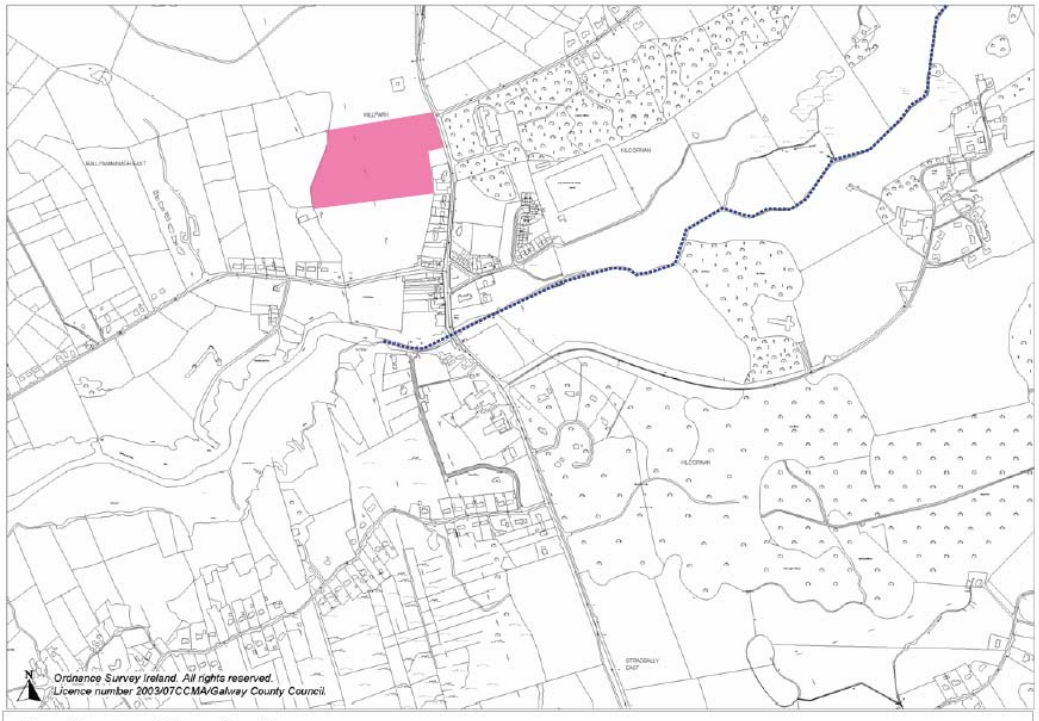


Map 9 Alternative 2c

Residential Recreation and Amenity

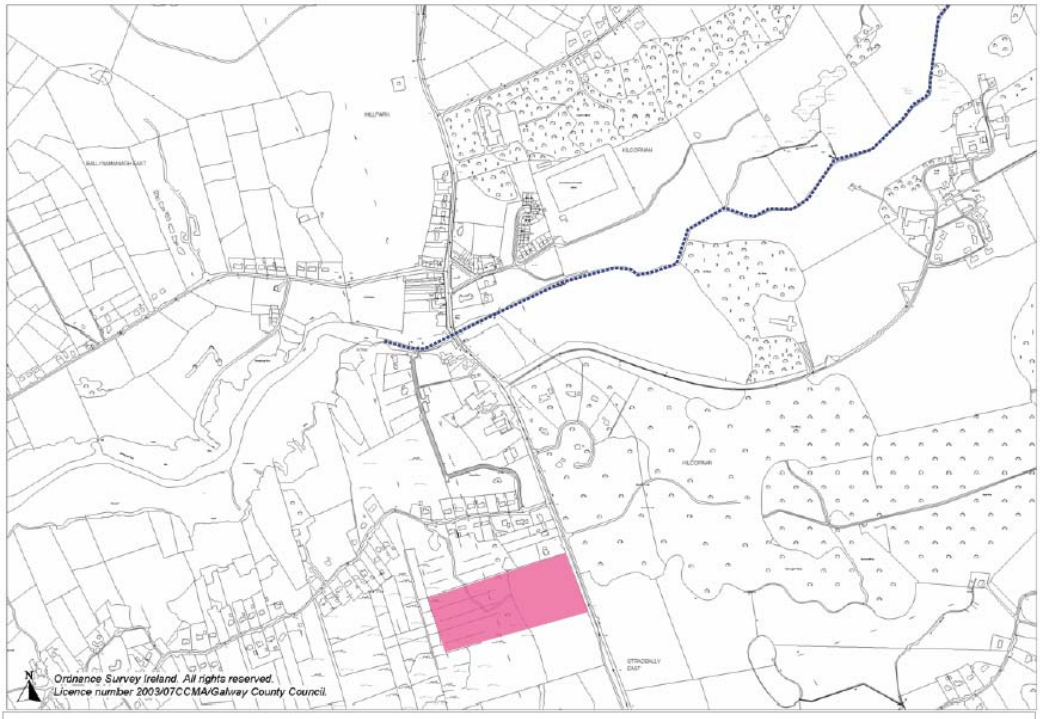
6.5 Enterprise and Industry Alternative Options

Two alternative options are evaluated with regard to enterprise and industrial development. These are: enterprise and industry located in Hillpark (see Map 10 Alternative 3a), and; enterprise and industry located in Stradbally North (see Map 11 Alternative 3b).



Map 10 **Alternative 3a**

Enterprise and Industry

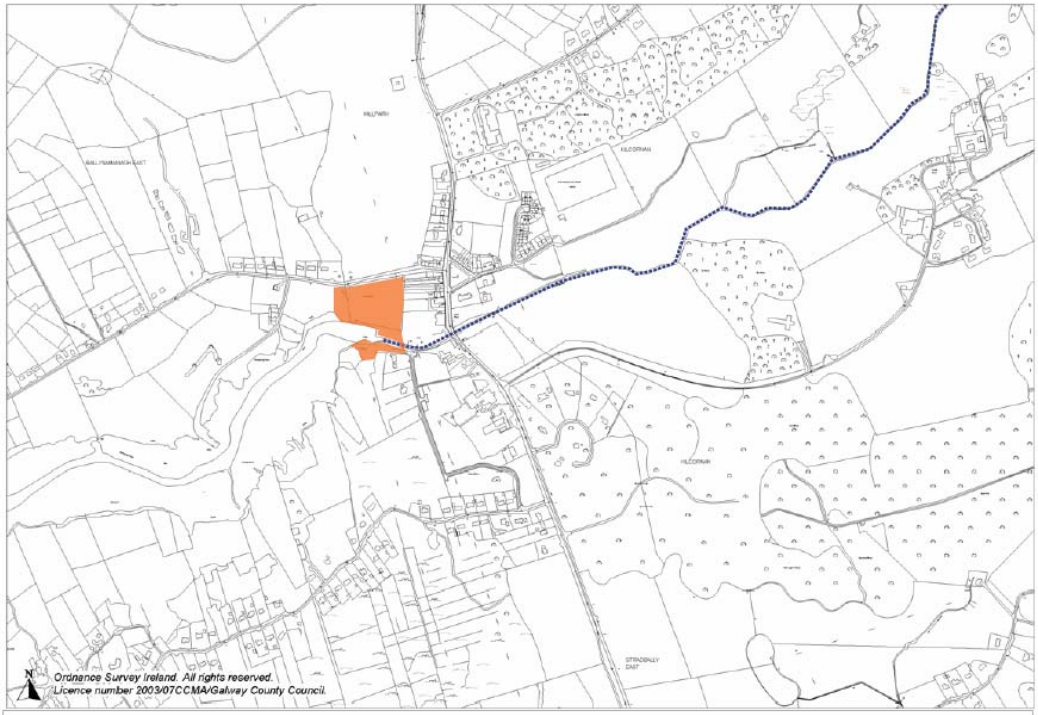


Map 11 **Alternative 3b**

Enterprise and Industry

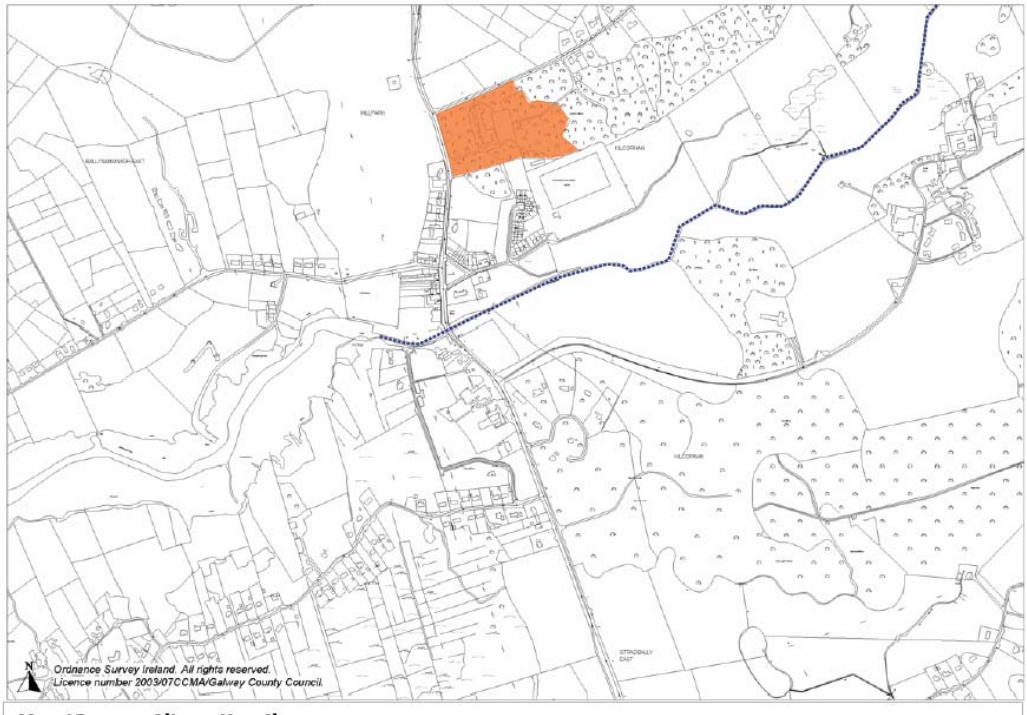
6.6 Tourism Alternative Options

Three alternative options are evaluated with regard to tourism development. These are: tourism based to the west of Clarinbridge around the mouth of the Clarin River (see Map 12 Alternative 4a); tourism based in the north east of the village including the grounds of an unused hotel (see Map 13 Alternative 4b), and; tourism based to the west of Clarinbridge to the north of the Clarin River estuary near Mooring Posts Quay (see Map 14 Alternative 4c).



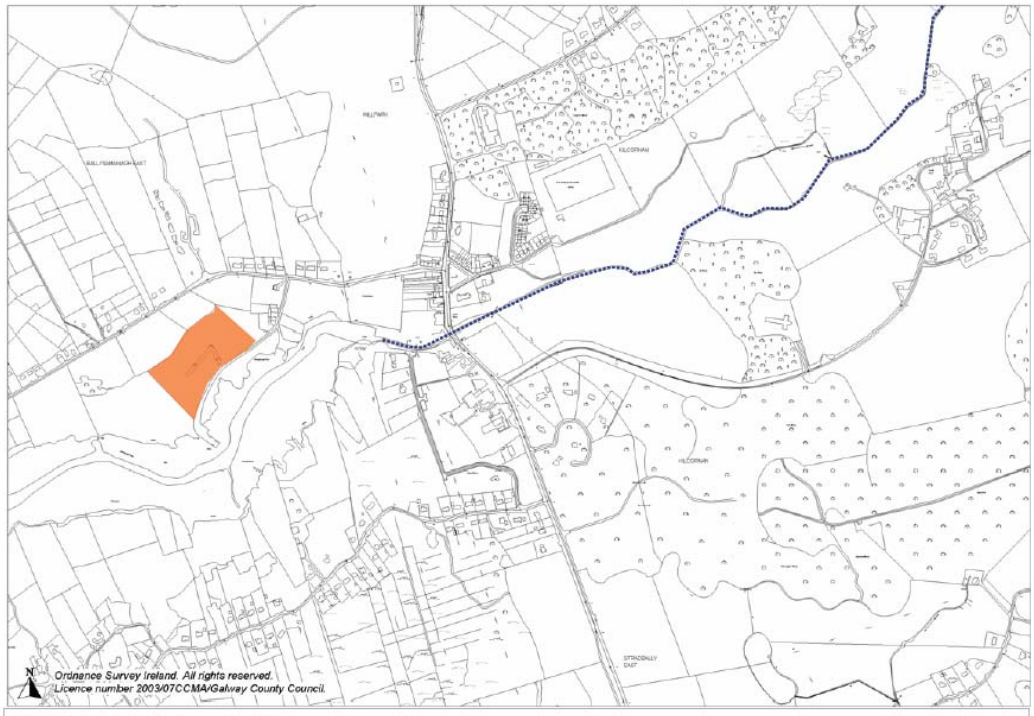
Map 12 **Alternative 4a**

Tourism



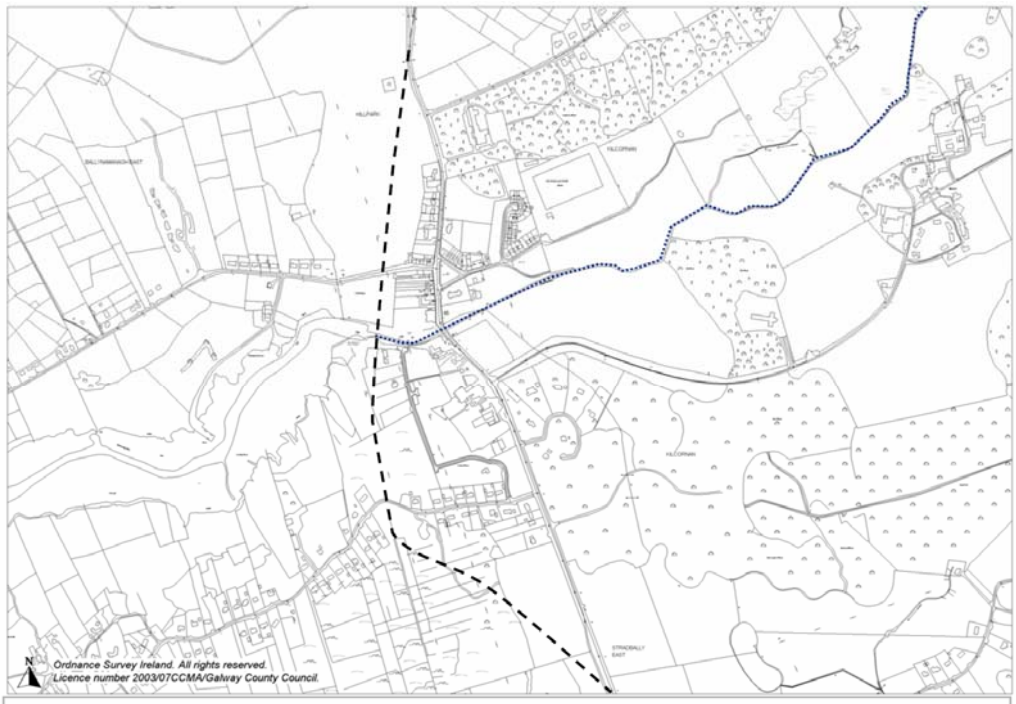
Map 13 **Alternative 4b**

Tourism



6.7 Transport Alternative Options

An objective, which was introduced during the preparation of the LAP, to provide a new local bypass road to the west of the village (see Map 15 Alternative 5a) was evaluated against a do-nothing alternative option (Alternative 5b) in relation to this objective.



Map 15 Alternative 5a

– – – Local Western Bypass Proposal

Section 7 Evaluation of Alternative Options

7.1 Methodology

Strategic Environmental Objectives are used in order to evaluate each of the alternative options described and mapped in Section 6. The table below brings together all those SEOs which have been developed from international, national and county policies which generally govern environmental protection objectives.

SEO Code	SEO Description
B1	To avoid loss of habitats and flora and fauna in designated wildlife sites
B2	To avoid adverse impacts, including direct, cumulative and indirect impacts, by development within and outside designated wildlife sites to habitats and flora and fauna, including oysters, within these sites
B3	To conserve natural habitats listed in Annex I and flora and fauna listed in Annex II which are at favourable conservation status taking into account economic, social and cultural requirements as well as regional and local characteristics
B4	To prevent the fragmentation of locally significant habitats and features such as trees and maintain ecological connectivity and ecological corridors within the plan area. Note that for connectivity, the habitats need not always be of particular value but the physical links should be present or, in other words, physical or other barriers should be absent.
P1	To prevent unsustainable piecemeal ribbon development and support higher density residential development and the economical and efficient use, provision and maintenance of infrastructure[33]
P2:	To allow for new economic developments in Clarinbridge, providing new job opportunities[34]
S1	To maintain the quality of soil
S2	To maximise the sustainable re-use of brownfield lands where possible
W1	To improve the quality of surface waters
W2	To prevent pollution and contamination of ground water
W3	To prevent pollution and contamination of estuarine water
W4	To mitigate the effects of floods including vulnerability to potential sea level rise as a result of global warming
M1	To protect the environment from the adverse effects of the waste water discharges by ensuring that waste water is appropriately treated before it is discharged to the environment
M2	To prevent contamination of drinking water
L1	To conserve and maintain the significant or characteristic features of landscapes of special sensitivity
L2	To protect views which have significant natural value or human values

Table 2: Strategic Environmental Objectives

Each set of alternative options are evaluated with the use compatibility criteria (see Table 3) in order to determine how the alternatives are likely to affect the status of these SEOs. Matrices are used for this evaluation and are accompanied by text explaining the evaluations. Use has been made of the description of the environmental baseline, including Maps 2 to 4

[33] SEO P1 was found to potentially conflict with other SEOs as development by its nature impacts upon the environment
[34] SEO P2 was found to potentially conflict with other SEOs as development by its nature impacts upon the environment

which spatially represent components of the environmental baseline, in order to determine whether or not the alternative options will affect the status of the SEOs.

Likely to **Improve** status of Strategic Environmental Objectives	Likely to **Conflict** with status of Strategic Environmental Objectives	**Uncertain** interaction with status of Strategic Environmental Objectives	**Neutral** interaction with status of Strategic Environmental Objectives	**No Likely** interaction with status of Strategic Environmental Objectives

Table 3: Criteria for appraising effect of Plan provisions on Strategic Environmental Objectives

Where the appraisal identifies, for example, a likely conflict with the status of an SEO the relevant SEO code is entered into the conflict column - e.g. B1 which stands for SEO likely to be affected - in this instance *to avoid loss of habitats and flora and fauna in designated wildlife sites.*

All potential conflicts and impacts identified below are those which will occur if unmitigated against. Where such potential conflicts or impacts occur then Section 8 provides a recommendation on how to mitigate this potential impact for the chosen preferred alternative.

7.2 Village Centre (Mixed Use) Development

Alternative Option No.	Likely to **Improve** status of SEOs	Likely to **Conflict** with status of SEOs	**Uncertain** interaction with status of SEOs	**Neutral** interaction with status of SEOs	**No Likely** interaction with status of SEOs
1a (Map 5)	P1, P2, S2	B2, S1, W1, W2, W3, W4, M1, M2			B1, B3, B4, L1
1b (Map 6)	P1, P2, S2	B2, B4, S1, W1, W2, W3, W4, M1, M2, L2		B3	B1, B3, L1

Table 4: Evaluation of Village Centre (Mixed Use) Alternative Options

7.2.1 Likely to Improve status of SEOs

Both alternative options would be likely to improve the status of: **SEO S2**, as they would facilitate the use of brownfield sites; **SEOs P1** and **P2** as they would facilitate the location of higher density mixed uses including residential near the centre of Clarinbridge and allow for economic development in Clarinbridge, however, Alternative Option 1b would provide a greater area for such development and would therefore cause a more significant beneficial impact.

7.2.2 Likely to Conflict with the status of SEOs

Both alternative options would be likely to cause to conflict with the status of: **SEOs S1, W1, W2, W3, M1** and **M2**, as a result of the cumulative significant adverse impacts of inappropriately treated wastewater from new developments; **SEO B2,** as a result of likely significant adverse impacts on the adjacent designated wildlife sites - the Inner Galway Bay SPA and the Galway Bay Complex SAC and NHA -, including those impacts caused by inappropriately treated wastewater, and; **SEO W4**, due likely adverse significant impacts relating to the location of a relatively small amount of zoned lands at the edge of the Clarin River's southern banks immediately before it enters into the estuary an area which has been

identified in the environmental baseline description, due to its low lying nature, as having the potential to be significantly impacted upon by rising sea levels as a result of global warming.

Alternative Option 1b would be likely to conflict to some extent with the status of **SEO B4** as it would entail the development of a large area of the south of Hillpark which connects the north of Hillpark to the village centre, however, it was noted in the environmental baseline description that the ecological connectivity of the southern part of Hillpark is somewhat reduced as it is set in a context of being bordered on two sides, to the south and east, by roads, and on one side, to the west, by an amount of residential development.

The status of **SEO L2** would also be likely to be conflicted by Alternative Option 1b as the view from of the village from the water tower is designated a 'focal point/ view' in Galway County Council's 2003 Landscape Character Assessment.

It is noted Alternative Option 1b would be likely to cause greater conflict with the status of, and, therefore, greater adverse impacts relating to **SEOs S1, W1, W2, W3, M1, M2** and **B2** because of the additional land included under this alternative option.

7.2.3 Neutral interaction with status of SEOs

Alternative Option 1b would be likely to neutrally interact with **SEO B3** as any impacts which would be likely with regard to certain habitats which correspond to Annex 1 habitats would be likely to be outweighed by significant beneficial impacts which are likely to improve the status of **SEOs P1** and **P2**.

Alternative Option 1b would be likely to have neutrally interact with **SEO B3**, 'To conserve natural habitats listed in Annex I and flora and fauna listed in Annex II which are at favourable conservation status taking into account economic, social and cultural requirements as well as regional and local characteristics', as any significant adverse impacts on certain habitats which correspond to Annex 1 habitats would be offset improvements in the status of **SEOs P1** and **P2** and the associated significant beneficial impacts.

7.2.4 The Preferred Alternative Option for Village Centre (Mixed Use) Development

The difference between Alternative Option 1a and Alternative Option 1b is the zoning of land to the northwest of the village centre as Village Centre (Mixed Use). **Alternative Option 1b** was evaluated to be the preferred alternative option for Village Centre (Mixed Use) Development as the improvements in the status of **SEO P1** and **P2** and the associated significant beneficial impacts were determined to outweigh both the greater conflicts relating to the status of **SEOs S1, W1, W2, W3, M1, M2** and **B2** together with the additional conflict with the status of **SEO L2.** All of these conflicts and associated impacts are mitigated against in Section 8.

7.3 Residential and Recreation and Amenity Development

Alternative Option No.	Likely to **Improve** status of SEOs	Likely to **Conflict** with status of SEOs	**Uncertain** interaction with status of SEOs	**Neutral** interaction with status of SEOs	**No Likely** interaction with status of SEOs
2a (Map 7)	P1, P2,	B2, B4, S1, W1, W2, W3, W4, M1, M2, L1, L2			B1, B3, S2,
2b (Map 8)	P1, P2	B3, B4, S1, W1, W2, W3, M1, M2			B1, B2, S2, W4, L1, L2
2c (Map 9)	P1, P2	B2, B4, S1, W1, W2, W3, W4, M1, M2			B1, B3, S2, L1, L2

Table 5: Evaluation of Residential and Recreation and Amenity Alternative Options

7.3.1 Likely to Improve status of SEOs

All alternative options would be likely to improve the status of **SEOs P1** and **P2** as they would allow for new economic developments and would facilitate the direction of development towards certain zoned areas, thus helping to prevent unsustainable piecemeal ribbon development. However, Alternative Option 2c improves the status of **SEO P1** the most as it consolidates existing development on both the eastern and western sides of the village thus reducing the ecological footprint which would be caused by new development.

7.3.2 Likely to Conflict with the status of SEOs

All three alternative options would be likely to cause to conflict with the status of: **SEOs S1, W1, W2, W3, M1** and **M2**, as a result of the significant cumulative adverse impacts of inappropriately treated wastewater from new developments, and: **SEO B4** due to the large areas of land being zoned in order to accommodate residential development.

Alternative Option 2a and Alternative Option 2c would be likely to conflict with the status of: **SEO W4**, causing likely adverse significant impacts relating to the location of a relatively small amount of zoned lands at the edge of the Clarin River's southern banks immediately before it enters into the estuary - an area which has been identified in the environmental baseline description, due to its low-lying nature, as having the potential to be significantly impacted upon by rising sea levels as a result of global warming, and; **SEO B2**, as a result of likely adverse significant impacts on the adjacent designated wildlife sites- the Inner Galway Bay SPA and the Galway Bay Complex SAC and NHA -, including those impacts caused by inappropriately treated wastewater.

Alternative Option 2a would be likely to conflict with the status of **SEOs L1** and **L2** as it entails the development of both sides of the Clarin Estuary's banks. This development would cause significant cumulative impacts on both the adjoining landscape of special sensitivity and the two views of value identified in the environmental baseline description: the view of both northern and southern banks of the estuary eastwards from the west of the Clarin Bridge, and; the views of Dunbulcan Bay and the surrounding banks from Mooring Posts Quay located on the northern banks of the estuary.

Alternative Option 2b would be likely to conflict with the status of **SEO B3** due to the likely significant impacts on biodiversity, flora and fauna of Cowpark and the vast Kilcornan Woodlands- these impacts outweigh the taking into account of economic and social requirements of Clarinbridge.

7.3.3 The Preferred Alternative Option for Residential and Recreation and Amenity Development

Alternative Option 2a was eliminated due to the large amount of conflicts which occurred on the banks of the Clarin River estuary with regard to the landscape while Alternative Option 2b was eliminated due to its potential impacts on biodiversity, flora and fauna. **Alternative Option 2c** was evaluated to be the preferred alternative as this alternative would provide the greatest improvement in the status of **SEO P1,** as it consolidates existing development on both the eastern and western sides of the village thus reducing the ecological footprint which would be caused by new development while not causing the aforementioned conflicts. Conflicts with the status of **SEOs B2, B4, S1, W1, W2, W3, W4, M1** and **M2** and the likely associated impacts are mitigated against in Section 8.

7.4 Enterprise and Industrial Development

Alternative Option No.	Likely to **Improve** status of SEOs	Likely to **Conflict** with status of SEOs	**Uncertain** interaction with status of SEOs	**Neutral** interaction with status of SEOs	**No Likely** interaction with status of SEOs
3a (Map10)	P1, P2	B4, S1, W1, W2, W3, M1, M2, L2		B3	B1, B2, S2, W4, L1
3b (Map11)	P2	B4, P1, S1, W1 W2, W3, M1, M2		B3	B1, B2, S2, W4, L1, L2

Table 6: Evaluation of Enterprise and Industry Alternative Options

7.4.1 Likely to Improve status of SEOs

Both alternative options would be likely to improve the status of **SEO P2** as they would allow for economic development and provide new job opportunities in Clarinbridge. Alternative Option 3a would be likely to improve the status of **SEO P1**, allowing for the economical and efficient use of Clarinbridge's transport infrastructure, as its location to the north of the village centre allows access to both the National Primary Route N18, which leads to the East Galway Strategic Corridor and Galway City, and the R348 regional road, which leads to Athenry, without the need for travel through the village centre which is under pressure as a result of increased N18 traffic between Limerick and Galway City.

7.4.2 Likely to Conflict with the status of SEOs

Both alternative options would be likely to cause to conflict with the status of **SEOs S1, W1, W2, W3, M1** and **M2**, as a result of the cumulative adverse significant impacts of inappropriately treated wastewater from new developments.

Both alternatives would be likely to conflict to some extent with the status of **SEO B4**. Alternative Option 3a would entail the development of a large area of Hillpark which connects the north of Hillpark to the village centre, however, it was noted in the environmental baseline description that the ecological connectivity of this part of Hillpark is somewhat reduced as it is set in a context of being bordered on two sides, to the south and east, by roads, and on one side, to the west, by an amount of residential development. Alternative Option 3b would be likely to significantly adversely impact on the environment by causing habitat fragmentation, reducing the ecological connectivity to the Galway Bay Complex SAC to the north of the site and the woodland and well-developed hedgerows to the south and east of the site.

The status of **SEO L2** would also be likely to be conflicted by Alternative Option 3a as the view from of the village from the water tower is designated a 'focal point/ view' in Galway County Council's 2003 Landscape Character Assessment.

7.4.3 Neutral interaction with status of SEOs

Both alternative options would be likely to have neutrally interact with **SEO B3** with any significant adverse impacts on certain habitats which correspond to Annex 1 habitats offset by the associated significant beneficial impacts of improvement in the status of **SEOs P2.**

7.4.4 The Preferred Alternative Option for Enterprise and Industry Development

Both alternatives affect the status of each SEO similarly however **Alternative Option 3a** would be likely to improve the status of **SEO P1** and therefore was evaluated as being the preferred alternative option for Enterprise and Industry Development over Alternative Option 3b. Conflicts with the status of **SEOs B4, S1, W1, W2, W3, M1, M2** and **L2** and the likely associated impacts are mitigated against in Section 8.

7.5 Tourism Development

Alternative Option No.	Likely to **Improve** status of SEOs	Likely to **Conflict** with status of SEOs	**Uncertain** interaction with status of SEOs	**Neutral** interaction with status of SEOs	**No Likely** interaction with status of SEOs
4a (Map12)	P2	B1, B2, B4 S1, W1, W2, W3, W4, M1, M2, L1, L2			B3, P1, S2
4b (Map13)	P2	B4, S1, W1, W2, W3, M1, M2			B1, B3, B2, S2, P1, W4, L1, L2,
4c (Map14)	P1, P2	B2, S1, W1, W2, W3, M1, M2, L1, L2			B1, B3, B4, S2, P1, W4

Table 7: Evaluation of Tourism Alternative Options

7.5.1 Likely to Improve status of SEOs

All alternative options would be likely to improve the status of **SEO P2** as they would allow for new economic developments in Clarinbridge, providing new job opportunities both directly in the tourism service sector and indirectly in the oyster production sector on which Clarinbridge's tourism is based. Alternative Option 4c was evaluated as being likely to improve the status of **SEO P1** as it would provide for the improvement and efficient use of the existing Mooring Posts Quay from which there is a notable view of Dunbulcan Bay and the surrounding banks of the Clarin Estuary, part of a landscape which of has social and economic importance as it includes the estuary which has facilitated the local oyster industry which is important to the economic and tourism sectors as well as to the annual Clarinbridge Oyster Festival.

7.5.2 Likely to Conflict with the status of SEOs

All three alternative options would be likely to cause to conflict with the status of: **SEOs S1, W1, W2, W3, M1** and **M2**, as a result of the cumulative significant adverse impacts of inappropriately treated wastewater from new developments.

Alternative Options 4a and 4c would be likely to cause conflict with the status of: **SEO B2** as a result of likely significant adverse impacts on the adjacent designated wildlife sites- the Inner Galway Bay SPA and the Galway Bay Complex SAC and NHA -, including those impacts caused by inappropriately treated wastewater, and; **SEOs L1** and **L2** as both alternative options would involve the development of lands within a landscape of special sensitivity and would therefore have the potential to visually significantly adversely impact upon the landscape as well as the two views of value identified in the environmental baseline description: the view of both northern and southern banks of the estuary eastwards from the west of the Clarin Bridge, and; the views of Dunbulcan Bay and the surrounding banks from Mooring Posts Quay located on the northern banks of the estuary.

Alternative Option 4a would be likely to conflict with the status of: **SEO B1** as it includes lands within the three designated wildlife sites, and: **SEO W4**, causing likely significant adverse impacts as a result of the location of the lands on the northern and southern banks of the Clarin Estuary - an area which has been identified in the environmental baseline description, due to its low-lying nature, as having the potential to be significantly impacted upon by rising sea levels as a result of global warming.

Alternative Options 4a and 4b conflict with the status of **SEO B4,** both likely to cause habitat fragmentation thus significantly adversely impacting upon ecological connectivity – Alternative Option 4a would be likely to reduce the ecological connectivity between the Clarin Estuary and the village centre while Alternative Option 4b would be likely to reduce the ecological connectivity between within the edges of Kilcornan Woodland.

7.5.3 The Preferred Alternative Option for Tourism Development

Alternative Option 4a was eliminated as it would be likely to result in the loss of biodiversity, flora and fauna in designated wildlife sites- the Inner Galway Bay SPA and the Galway Bay Complex SAC and NHA. Alternative Option 4c was evaluated to be the preferred alternative option over Alternative Option 4b as it would provide for the improvement and efficient use of the existing Mooring Posts Quay and, together with a mitigation measure which aims to enhance the effects of the LAP by establishing a walkway along the northern estuarine banks, would result in increasing human interaction with the landscape in this part of Clarinbridge thus significantly beneficially impacting upon the tourism and local amenities.

Conflicts with the status of **SEOs B2, S1, W1, W2, W3, M1, M2, L1** and **L2** and the likely associated impacts are mitigated against in Section 8.

7.6 Transport Development

Alternative Option No.	Likely to **Improve** status of SEOs	Likely to **Conflict** with status of SEOs	**Uncertain** interaction with status of SEOs	**Neutral** interaction with status of SEOs	**No Likely** interaction with status of SEOs
5a (Map15)		B1, B2, B3, B4, L1, L2	S1, W1, W2, W3, W4		P1, S2, M1, M2
5b (Do-nothing)					B1, B2, B3, B4, P1, P2, S1, S2, W1, W2, W3, W4, M1, M2, L1, L2

Table 8: Evaluation of Transport Alternative Options

7.6.1 Likely to Improve status of SEOs

It was identified that there is no need for Alternative Option 5a - it is not necessary. Alternative Option 5a was evaluated as not likely to improve the status of any SEOs.

7.6.2 Likely to Conflict with the status of SEOs

Alternative Option 5a was evaluated as likely to conflict with **SEOs B1, B2, B3, B4, L1** and **L2** due to the designated wildlife sites, habitats and sensitive landscapes through which the road under Alternative Option 5a would traverse.

7.6.3 Uncertain interaction with status of SEOs

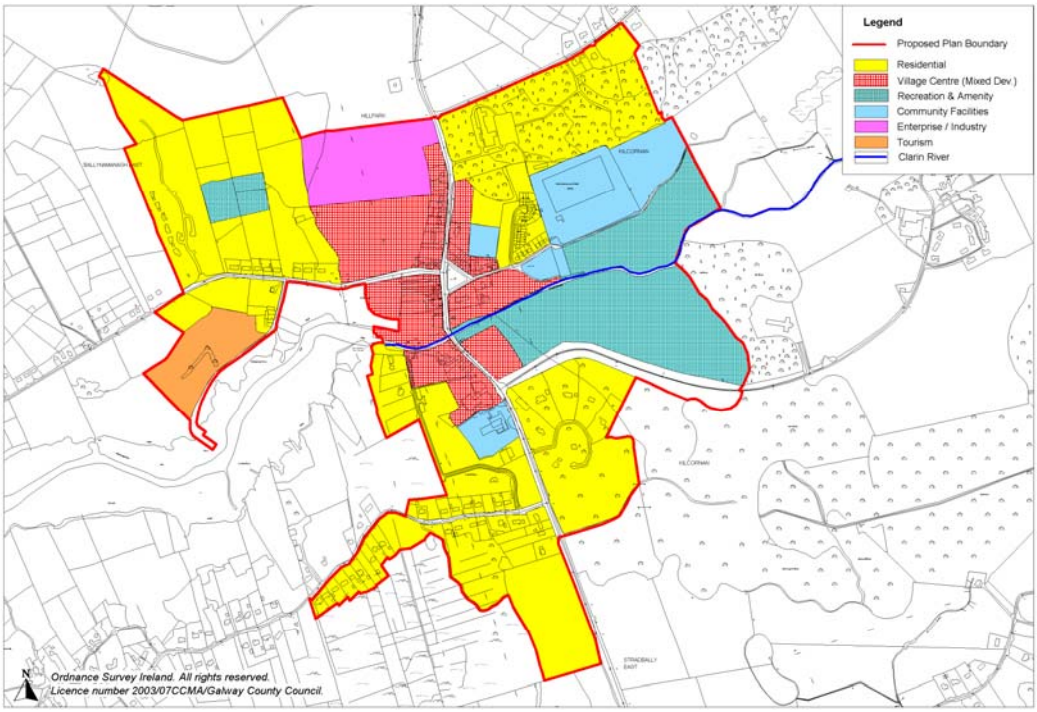
Alternative Option 5a would have an uncertain interaction with: **SEOs S1, W1, W2** and **W3**, as these SEOs would be likely to be impacted upon during the construction phase, and; **SEO W4**, causing likely significant adverse impacts as a result of the location of the road on lands which have been identified due to their low-lying nature, as having the potential to be significantly impacted upon by rising sea levels as a result of global warming (see Section 3.5).

7.6.4 The Preferred Alternative Option for Transport Development

Taking into account the likely and uncertain to conflicts with regard to the status of SEOs and the identification that there is no need for the development in question, it is evaluated that Alternative Option 5a is not the preferred alternative option - **Alternative Option 5b**, the do nothing alternative option, is the preferred alternative option.

7.7 The Preferred Draft Clarinbridge Local Area Plan

The preferred Draft Clarinbridge LAP at the end of the evaluation process was determined to be a collection of a number of preferred alternative options which shown on Map 16 overleaf.



Map 16 The Preferred Alternative Options- The Draft Clarinbridge LAP Zoning Map

Section 8 Mitigation Measures

8.1 Introduction

Mitigation measures are measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the LAP. Section 7 identified the LAP's significant positive and negative effects. Mitigation involves ameliorating significant negative effects and enhancing positive ones.

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.

8.2 Mitigation Measures

8.8.1 Biodiversity, Flora and Fauna

The following SEOs with regard to Biodiversity, Flora and Fauna have been evaluated as being likely to be significantly adversely impacted by the preferred alternative options:

SEO B2: To avoid significant adverse impacts, including direct, cumulative and indirect impacts, by development, within and outside designated wildlife sites to habitats and flora and fauna, including oysters, within these sites.

SEO B4: To prevent the fragmentation of locally significant habitats and features such as trees and maintain ecological connectivity and ecological corridors within the plan area. Note that for connectivity, the habitats need not always be of particular value but the physical links should be present or, in other words, physical or other barriers should be absent.

Significant adverse impacts on **SEO B2** will be mitigated against by inclusion of the following objective into the LAP:

Planning applications within 30 meters of the Inner Galway Bay SPA and/or the Galway Bay Complex SAC and NHA must be accompanied by: an ecological assessment which complies with Section 18 of the European Communities (Natural Habitats) Regulations 1997 and which takes direct and indirect effects of the development on the designated site into account, and; evidence of consultation between the applicant and the National Parks and Wildlife Service with regard to the findings of this assessment. The need for ecological assessments for planning applications further than the 30 meter distance shall be decided upon on a site by site basis.

Significant adverse impacts on **SEO B4** will be mitigated against by inclusion of the following objective into the LAP:

Planning applications must: identify all ecological corridors (including hedgerows and masonry stone walls), which are present on the relevant lands; identify how the retention of ecological corridors were maximised and how losses of ecological corridors were minimised, Identify *any losses to these corridors which would result if the application in question was granted, and; show that such losses would be fully offset if the application was to be granted through the*

replacement of the relevant corridors, with corridors composed of similar species or materials, before any losses to the existing corridors occur.

8.8.2 Soil

The following SEO with regard to Soil has been evaluated as being likely to be significantly adversely impacted by the preferred alternative options:

SEO S1: To maintain the quality of soil

Significant adverse impacts on **SEO S1** will be mitigated against by inclusion of the following objectives into the LAP:

Planning applications must demonstrate that wastewater resulting from the granting of the application will be treated so that any discharges to soil or water will comply with the following standards: less than or equal to 30µg of phosphorous per litre of wastewater discharge, and; less than or equal to 100 faecal coliforms per 100ml of wastewater discharge. Such a level of treatment must be guaranteed in writing by the waste water treatment system manufacturer. The applicant, if successful with the relevant application, must submit a copy of an installation certificate to Galway County Council stating that the aforementioned standards will be met as well as a copy of a maintenance contract for a minimum of 10 years of maintenance, including desludging, for the waste water treatment system by appropriately certified person(s).

Planning applications must demonstrate that a regular monitoring system will be set up for the relevant new wastewater treatment systems.

8.8.3 Water

The following SEOs with regard to Water have been evaluated as being likely to be significantly adversely impacted by the preferred alternative options:

SEO W1: To improve the quality of surface waters
SEO W2: To prevent pollution and contamination of ground water
SEO W3: To prevent pollution and contamination of estuarine water
SEO W4: To mitigate the effects of floods including potential vulnerability to sea level rise as a result of global warming

Significant adverse impacts on **SEOs W1**, **W2** and **W3** will be mitigated against by inclusion of the objective described under Section 8.8.2.

The preferred zoning map avoids the zoning of lands on the northern and southern banks of the Clarin River Estuary, in effect creating a buffer zone from the high water mark inland, free of residential development. Significant adverse impacts on **SEO W4** will be mitigated against by inclusion of the following objective into the LAP:

Planning applications must demonstrate that any development would not be subject to potential rising sea levels as a result of global warming and must address any issues with regard to rising sea levels with regard to the siting of any development.

8.8.4 Material Assets

The following SEOs with regard to Material Assets have been evaluated as being likely to be significantly adversely impacted by the preferred alternative options:

SEO M1: 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

SEO M2: To prevent contamination of drinking water

Significant adverse impacts on **SEOs M1** and **M2** will be mitigated against by inclusion of the objective described under Section 8.8.2.

Mitigation measures set to avoid and reduce the negative effects of implementing the relevant strategic action as well as enhancing any beneficial effects. The existing infrastructural feature of Mooring Posts Quay on the northern banks of the Clarin River Estuary as well as the estuary banks themselves are the subject of the following mitigation measure which aims to enhance the beneficial effects of implementing the Draft Clarinbridge LAP:

To develop a river and estuary bank walkway parallel to the northern banks of the Clarinbridge River, stretching west of Clarinbridge Bridge to Mooring Posts Quay in order to facilitate an increased human interaction with the landscape in this part of Clarinbridge thus significantly beneficially impacting upon the tourism and local amenities.

8.8.5 Landscape

The following SEOs with regard to Landscape have been evaluated as being likely to be significantly adversely impacted by the preferred alternative options:

SEO L1: To conserve and maintain the significant or characteristic features of landscapes of special sensitivity

SEO L2: To protect views which have significant natural value or human values

Significant adverse impacts on **SEOs L1 and L2** will be mitigated against by inclusion of the following objectives:

Ensure that the lane way leading down to the pier retains its existing character in terms of mature trees, stone walls and hedgerows.

All planning applications development should have regard to the character of an area including adjoining development, landscape features and contours

All planning applications development should have regard to the height of the proposed development relative to surrounding structures and important landmarks

Ensure that tourism schemes are appropriately sited, landscaped and screened.

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Section 9 Monitoring Measures

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 Draft Clarinbridge LAP which are adopted alongside the LAP.

Monitoring is based around the indicators which were chosen earlier in the process. These indicators allow quantitative measures of trends and progress over time relating to the SEOs used in the evaluation. Focus is given to indicators which are relevant to the likely significant environmental effects of implementing the LAP and existing monitoring arrangements are used in order to monitor the selected indicators where possible. Each indicator to be monitored is accompanied by the relevant target(s) which were identified with regard to the relevant legislation (see Section 4).

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 play an important role in assessing whether the LAP is achieving its environmental objectives and targets, whether these need to be re-examined, and, whether the proposed mitigation measures are being implemented.

9.2 Indicators to be Monitored and Targets to be Worked Towards

Environmental Component	Selected Indicator(s)	Selected Targets	Monitoring Source
Biodiversity, Flora and Fauna	Percentage of habitat or percentage of species lost in designated wildlife sites (**B1**)	No loss of Zero percent of habitat or species to be lost in designate wildlife sites during the lifespan of the LAP (**B1**)	Galway County Council/ Development Control Process (GCC/DCP)
	Number of significant impacts by development within and outside designated wildlife sites to habitats and flora and fauna, including oysters, within these sites (**B2**)	No significant impacts by development within and outside designated wildlife sites to habitats and flora and fauna, including oysters, within these sites during the lifespan of the LAP (**B2**)	GCC/DCP
	Area of locally significant habitat which is fragmented (**B4**)	No habitat fragmentation of locally significant habitats to occur during the lifespan of the LAP (**B4**)	GCC/DCP
Soil	Area of brownfield land available (**S2**)	No brownfield land to be available (subject to availability on the open Market and demand for such land) at the end of the LAP's lifespan (**S2**)	GCC/DCP
Material Assets	µg of Phosphorous per litre of wastewater discharge (**M1a**)	To achieve of a level of less than or equal to 30µg of phosphorous per litre of wastewater discharge from all new wastewater treatment systems (**M1a**)	GCC/DCP Yearly monitoring programme for all new waste water systems to be set up.
	Faecal Coliforms per 100ml of wastewater discharge (**M1b**)	To achieve of a level of less than or equal to 100 faecal coliforms per 100ml of wastewater discharge from all new wastewater treatment systems (**M1b**)	GCC/DCP Yearly monitoring programme for all new waste water systems to be set up.
	Total Coliforms per 100ml of drinking water (**M2**)	0 Total Coliforms per 100ml of drinking water (**M2**)	GCC/DCP; HSE

Environmental Component	**Selected Indicator(s)**	**Selected Targets**	**Monitoring Source**
Landscape	Number of developments located in landscapes of special sensitivity (**L1**)	No developments located conspicuously in landscapes of special sensitivity during the lifespan of the LAP (**L1**)	GCC/DCP GCC/DCP
	Number of views which have significant natural value or human values significantly impacted upon (**L2**)	No views to be significantly adversely impacted upon during the lifespan of the LAP (**L2**)	
Water	µg of Phosphorous per litre of surface water (**W**1a)	To reduce the amount of phosphorous in surface waters over the lifespan of the LAP (**W1a**i) ,and: To achieve of a level of less than 30µg of phosphorous per litre of surface water, in line with the requirements to achieve good water status under the Water Framework Directive, by 2015 (**W1**aii)	EPA GCC/DCP; EPA
	Biotic Quality Rating (Q Value) (W1b)	To achieve a biotic quality rating of Q4, in line with the requirement to achieve good water status under the Water Framework Directive by 2015 (W1b)	GCC/DCP; EPA DCMNR
	Total Coliform Counts per 100ml of groundwater (**W2a**)	0 Total Coliform Counts per 100ml of groundwater (**W2a**)	DCMNR
	Faecal Coliform Counts per 100ml of groundwater (**W2b**)	0 Faecal Coliform Counts per 100ml of groundwater (**W2b**)	GCC/DCP
	Total Coliform Counts per 100ml of estuarine water (**W3a**)	0 Total Coliform Counts per 100ml of estuarine water(**W3a**)	
	Faecal Coliform per 100ml	Less than 300 Faecal Coliform per 100ml of shellfish flesh (**W3b**)	
		No Zero development to	

	of shellfish flesh (**W3b**) Number of developments granted permission in areas liable to floods or rising sea levels (**W4**)	be granted permission in areas liable to floods or rising sea levels during the duration of the LAP (**W4**)	

Table 9: Indicators to be Monitored and Targets to be Worked Towards[35]

[35] Codes e.g. "W4" correspond to codes attributed to each indicator and target in correspondence to the relevant SEOs (see Section 4)

Appendix I Non Technical Summary

1. Introduction

This is the Non- Technical Summary to the Environmental Report on the Draft Clarinbridge Local Area Plan (LAP). The purpose of the Environmental report is to provide the Elected Members of Galway County Council with a clear understanding of the likely environmental consequences of decisions regarding the future accommodation of growth in Clarinbridge. CAAS (Environmental Services) Limited were commissioned by Galway County Council to carry out the SEA in June 2006.

The Environmental Report is part of the Strategic Environmental Assessment (SEA) of the Draft Clarinbridge LAP which is being carried out in order to comply with the provisions of the SEA Regulations.

SEA is a systematic process of predicting and evaluating the likely environmental effects of implementing a proposed plan, or other strategic action, in order to insure that these effects are appropriately addressed at the earliest appropriate stage of decision-making on a par with economic and social considerations.

What kind of development occurs in Clarinbridge and where it occurs will be significantly determined by the implementation of a LAP. By anticipating the effects and avoiding areas in which growth cannot be accommodated and by directing development towards compatible land uses and robust receiving environments real improvements in environmental management and planning can occur in Clarinbridge- planning applications are more likely to be granted permission and the scope of any EIAs which may be required are likely to be reduced.

Directive 2001/42/EC of the European Parliament and of the Council, of 27 June 2001, on the assessment of the effects of certain plans and programmes on the environment, referred to hereafter as the SEA Directive, introduced the requirement that SEA be carried out on plans and programmes which are prepared for a number of sectors, including land use planning. The SEA Directive came into force in all European Union (EU) member states, including Ireland, from 21 July 2004 requiring that an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment.

The SEA Directive was transposed into Irish Law through the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 [Statutory Instrument Number (SI No.) 435 of 2004], and, the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (SI No. 436 of 2004). Both sets of regulations became operational on 21 July 2004.

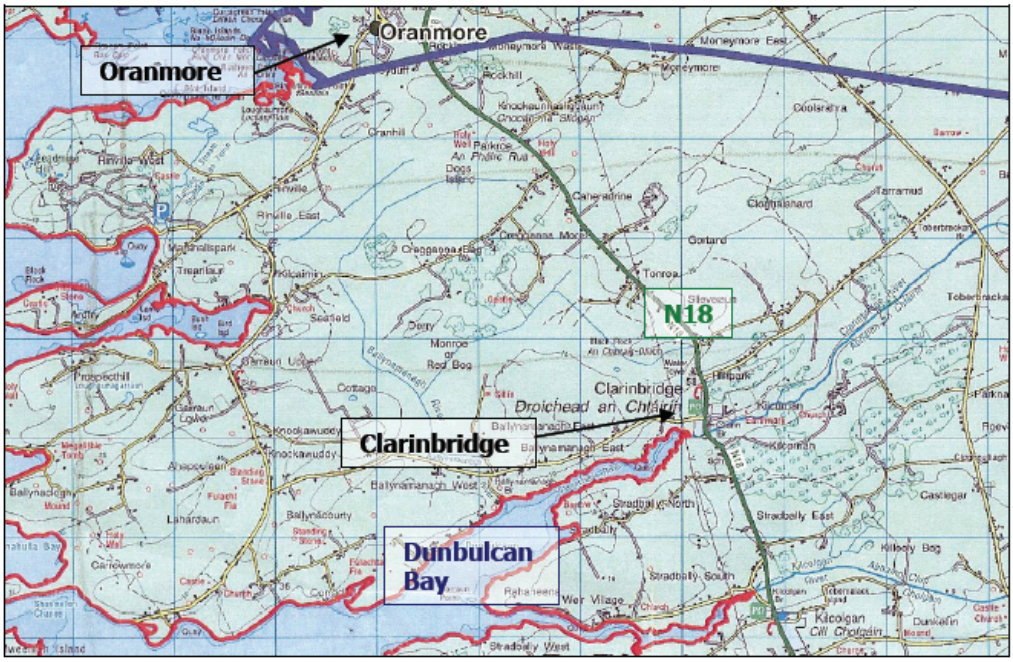
As a result of the above legislation, certain plans and programmes which are prepared by Galway County Council are required to undergo SEA. The findings of SEA are expressed in an Environmental Report which is submitted to the Elected Members alongside the relevant plan or programme. The Elected Members must take account of the Environmental Report before the adoption of the plan or programme.

When the plan or programme is adopted a statement must be made public, summarising, inter alia: how environmental considerations have been integrated into the plan or programme, and; the reasons for choosing the plan or programme as adopted over other alternatives detailed in the Environmental Report.

2. The Environmental Baseline

2.1 Introduction

The environmental baseline in and around Clarinbridge is described in this section. The environmental baseline and Strategic Environmental Objectives, which are outlined in Section 3, are used in order to identify, describe and evaluate the likely significant environmental effects of implementing the Draft Clarinbridge LAP and in order to determine the required monitoring measures. The environmental baseline is described in line with the legislative requirements and encompasses the following components: biodiversity, flora and fauna; population; human health; soil; water; air and climatic factors; material assets; cultural heritage; landscape, and; the interrelationship between these components. Map 1 sows the location of Clarinbridge in the context of the surrounding area in County Galway.



Map 1 Village Location Map

2.2 Biodiversity, Flora and Fauna

Certain areas in and around the village of Clarinbridge are subject to a number of conservation designations. These designated areas include The Inner Galway Bay Special Protection Area (SPA) (Site Code 004031) and The Galway Bay Complex Special Area of Conservation (SAC) (Site Code 000268) and Natural Heritage Area (NHA). There is a rich terrestrial biodiversity, flora and fauna in Clarinbridge in the areas of Cow Park, Kilcornan Woodland and Hillpark. Clarinbridge/ Kinvarra Bay Shellfish Waters is one of fourteen shellfish waters which are designated and afforded protection under the European Communities (Quality of Shellfish Waters) Regulations 2006 and supports the growth of oysters, mussels and clams grow naturally and artificially in the Clarin Estuary, Dunbulcan Bay. The oysters are significantly important to the local economy and local tourism. The Clarin River is a salmonid river supporting populations of Atlantic salmon as well as sea trout, brown trout, sticklebacks and eels.

The moderately polluted status of the Clarin River may be adversely impacting upon the biodiversity, flora and fauna of the areas of the identified designated wildlife sites to the

immediate east of Clarinbridge. This pollution is attributed to imposed loads of inappropriately treated sewage.

As a result of a higher concentration of faecal coliforms in the estuary and bay waters, the amount of faecal coliforms in monitored oysters increased in May 2005 thus reducing their quality grade. Although the amount of faecal coliforms was subsequently reduced, the presence of increased faecal coliforms in the oysters in 2005 provides evidence of an emerging water quality problem. The high level of faecal coliforms has been attributed to imposed loads of inappropriately treated sewage in the Clarin River and from developments within Clarinbridge village.

Fish populations in the Clarin River are currently being adversely impacted upon by the moderately polluted status of the Clarin River which is attributed to imposed loads of inappropriately treated sewage.

2.3 Population and Human Health

Survey work carried out by Galway County Council in April 2005 estimated the population within a radius of approximately 1km from the centre of the village to be 363 persons. The population of the wider Clarinbridge District Electoral Division was 2,092 in 2002, a 24.5% increase in population from 1,680 in 1996. Most recent new development in Clarinbridge has taken place on the approach roads to the village and along the two local roads north and south of the Clarin River estuary in the form of one-off ribbon development. This type of development makes the provision of services uneconomical and is socially, physically and environmentally unsustainable. The current development of a Strategic Economic Corridor at Oranmore, less than 5km north of Clarinbridge, together with Clarinbridge's proximity to Galway City together make Clarinbridge an attractive commuter settlement moving into the future.

Human health has the potential to be adversely impacted upon by the contamination of drinking water. Clarinbridge's drinking water at the spring has exceeded E. coli levels on a number of occasions – a likely result of imposed loads of inappropriately treated sewage from residential development in Clarinbridge caused by incorrectly installed percolation areas and failure to desludge septic tanks.

2.4 Air and Climatic Factors

Air quality issues have been determined to be more appropriately assessed at higher levels in the land use and environmental protection hierarchies, at a regional level by the EPA, as well as at relevant individual project levels. However, it is noted that the effects of global warming on sea levels should be considered while directing development towards certain areas in Clarinbridge. Areas which may be susceptible to flooding as a result of this rise in sea levels are dealt with by Section 2.5.

2.5 Water

The Clarin River flows through Clarinbridge Village and into Galway Bay via Dunbulcan Bay with its estuary stretching for approximately 2km east of the village. The Clarin River has been identified as being moderately polluted in the three most recent EPA monitoring surveys- in 1997, 2000 and 2003[36]. The most recent triennial report (EPA, 2005)[37] identifies that the Clarin River has high phosphorus levels which are attributed to imposed loads of

[36] Environmental Protection Agency (Various) *Results of the 1997, 2000 and 2003 Investigations* Wexford: Environmental Protection Agency
[37] Environmental Protection Agency (2005) *Water Quality in Ireland 2001 – 2003* Wexford: Environmental Protection Agency

inappropriately treated sewage. The Clarin River's capacity for assimilating phosphorous has been exceeded; the Clarin River has no more capacity to assimilate phosphorous.

Groundwater is stored in the void spaces in underground layers of rock, or aquifers. The Geological Survey of Ireland rates the aquifers of Ireland according to their productivity and their vulnerability to pollution. The limestone aquifer over which Clarinbridge and its surrounding areas are located has been the highest production rating available and the highest vulnerability to pollution rating- it is a 'Major Aquifer of Extreme Vulnerability' (GSI, 2001)[38].

The water quality of the Clarin River Estuary is influenced by the inflow of water from Clarin River together with the yielding of water from the surrounding aquifer. The pollution of both of these water bodies as a result of inappropriately treated sewage has implications for water quality in the estuary: water from the Clarin River has been identified as being moderately polluted[39], and; elevated levels of E. coli in Clarinbridge's water supply which originates from groundwater have been identified[40]. Also, in May 2005 the Department of Marine and Natural Resources (2005)[41] measured an increase in the faecal coliforms in oysters in the estuary attributing the results to inappropriately treated sewage.

2.6 Cultural Heritage

Implementation of a Local Area Plan for Clarinbridge has the potential to impact upon cultural heritage, both archaeological and architectural, however such potential impacts have been determined to be more appropriately assessed at project level.

There are three entries in the Record of Monuments and Places in and around Clarinbridge providing evidence of early settlement, namely: a hilltop enclosure (Monument No. Ga-095-058), in the grounds of Kilcornan Woodlands; a church (Monument No. Ga-095-069), also in the grounds of Kilcornan Woodlands, and; a Chapel (Monument No. Ga-095-144) in Stradbally North.

There are eight entries in the Record of Protected Structures (RPS) in and around Clarinbridge, namely: St Mary's Catholic Church/ Church of the Annunci (RPS No. 235), near the centre of the village; Clarinbridge Green (RPS No. 236), near the centre of the village; Clarinbridge School House/Parish Hall (RPS No. 237), near the centre of the village; Clarinbridge Antiques (RPS No. 494), near the centre of the village; Clarinbridge Bridge (RPS No. 238) where the Clarin River passes under the N18; Kilcornan House (RPS No. 232), in Kilcornan Woodland; St. Cornan's Church (RPS No. 233), in Kilcornan Woodland, and; the Oyster Manor Hotel (RPS No. 234), in Stradbally North.

2.7 Soil

Clarinbridge is underlain by Carboniferous limestone geology which is overlain by glacial deposit subsoil and shallow brown earth soils (An Foras Talúntais, 1977)[42]. This brown earth is well drained and supports agriculture, with grazing practiced on a number of fields surrounding the village, and forestry, consisting of the Kilcornan Woodland. The brown earth in the north west of Hillpark is less well drained and borders an area of basin peat which

[38] Geological Survey of Ireland (2001) *Aquifer Vulnerability Ratings for County Galway* Dublin: Geological Survey of Ireland
[39] Environmental Protection Agency (Various) *Results of the 1997, 2000 and 2003 Investigations* Wexford: Environmental Protection Agency
[40] Galway County Council (Various) *Clarinbridge Kilcolgan [GY010] Drinking Water Monitoring Results* Galway: Galway County Council
[41] Department of Communications, Marine and Natural Resources (2005) *Irish Quality Oysters Scheme Report 2005* Dublin: Department of Communications, Marine and Natural Resources
[42] An Foras Talúntais (1977) *National Soil Survey of Ireland* Wexford: An Foras Talúntais

makes up Monroe or Red Bog. In areas where the soil is thin, such as at Stradbally North and to the north east of Hillpark, there are a number of limestone rock outcrops.

Existing environmental problems relating to soil include the building upon, and thereby sealing off of, soil together with pollution and contamination of soil as a result of surface and ground water pollution and contamination (see Section 2.5 Water).

2.8 Material Assets

- **Waste Water**

There is no public sewerage system in Clarinbridge at present. Existing wastewater treatment in Clarinbridge is provided by septic tanks or private wastewater treatment plants. Most of these schemes discharge to groundwater after initial treatment and subsequent drainage through a designed percolation area. Continuous monitoring is carried out under licence, at six of the larger wastewater treatment plants in the village which serve commercial properties however there is no continuous monitoring of individual septic tanks serving houses. It is likely that these septic tanks are the major source of pollutants and contaminants in Clarinbridge's groundwater and drinking water supply as well as being a major contributing source of pollutants and contaminants in the Clarin River and the Clarin Estuary. The Clarinbridge Sewerage Scheme which is to provide public wastewater treatment for Clarinbridge is to start construction in 2009 at the earliest while the provision of the scheme will not be in action until 2010 at the earliest.

- **Drinking Water Infrastructure**

Drinking water is currently supplied in Clarinbridge from a spring in Kilcornan Woodlands which is yielded from groundwater. The water is piped from the spring and is stored in the water tower in Hillpark from which it is piped through a public water supply network to developments in the area. As part of Galway County Council's 2004 to 2006 Water Services Investment Programme the Tuam Regional Water Supply Scheme is to be extended to Clarinbridge, providing an increased supply for new developments.

The drinking water at the spring is monitored by Galway County Council and has exceeded E. coli parameters, as well as a number of other biological and chemical components, on a number of occasions[43] – a likely result of imposed loads of inappropriately treated sewage from residential development in Clarinbridge caused by incorrectly installed percolation areas and failure to desludge septic tanks.

- **Oyster Production**

At the mouth of the Clarinbridge River the Clarinbridge Oyster Co-Operative Society Ltd. operates two Oyster Fisheries - the Clarinbridge Oyster Co-Op Fisheries and the St. George Oyster Fishery. Fishermen from the Society also operate a third fishery in the area, the Clarinbridge Public Oyster Beds. These fisheries provide both full time and part time work and income for up to sixty families. The income generated by these fisheries provides spin off effects and agglomeration opportunities for local businesses and the local economy.

In May 2005 the Department of Marine and Natural Resources downgraded the classification of oysters from Dunbulcan Bay from 'Grade A' to 'Grade B' but has since reinstated the oysters with 'Grade A' (DCMNR, 2005)[44]. Grade B oysters are less valuable than Grade A

[43] Galway County Council (Various) *Clarinbridge Kilcolgan [GY010] Drinking Water Monitoring Results* Galway: Galway County Council
[44] Department of Communications, Marine and Natural Resources (2005) *Irish Quality Oysters Scheme Report 2005* Dublin: Department of Communications, Marine and Natural Resources

oysters which are subject to the highest consumer demand and do not require purification and the associated costs of installing purification systems.

3. Strategic Environmental Objectives & Relevant Strategic Actions

3.1 A Local Area Plan for Clarinbridge

This report should be read in conjunction with the Draft Clarinbridge LAP. The vision for the Draft Clarinbridge LAP is to create a framework for the sustainable development of Clarinbridge, identifying sufficient suitable land for future housing, community facilities, economic development and open space whilst protecting and preserving the villages distinctive character, heritage, amenity and local identity.

3.2 The Galway County Development Plan 2003 to 2009

The Draft Clarinbridge LAP is nested in a hierarchy of strategic actions which formulate policy and planning for County Galway. The Draft Clarinbridge LAP must comply with the national and regional policy framework in which it is situated, translating key strategic decisions made at national and regional level to the local level. The National Spatial Strategy 2002-2020 and the West Regional Authority Regional Planning Guidelines 2004-2016 are being implemented at county level by the Galway County Development Plan 2003 to 2009 (as varied by Variations No. 1 to 7, 2006). The County Development Plan is to be implemented at the local village level in Clarinbridge through the LAP.

The County Development Plan contains a number of environmental protection policies. The LAP must be consistent with the County Development Plan and implement these policies at the local village level in Clarinbridge.

3.3 Strategic Environmental Objectives

Strategic Environmental Objectives (SEOs) are methodological measures against which the environmental effects of the LAP can be tested. If complied with in full, SEOs would result in an environmentally neutral impact from implementation the plan. The SEOs are set out under a range of topics and are used as standards against which the zoning objectives of the LAP can be evaluated in order to help identify areas in which significant adverse impacts are likely to occur, if unmitigated against.

SEOs are distinct from the objectives of the LAP - although they will often overlap - and are developed from international, national and county policies which generally govern environmental protection objectives. Such policy includes that of various European Directives which have been transposed into Irish law together with the Galway County Development Plan 2003 to 2009 which contains a number of environmental protection policies which should be implemented by at the local village level in Clarinbridge.

The SEA Directive requires that the evaluation of plans be focused upon the relevant aspects of the environmental characteristics of areas likely to be significantly affected and, in compliance with this requirement, SEOs have been developed for the relevant environmental components of this SEA. Focus has been developed throughout the SEA from the scoping stage to the compilation of the existing environmental baseline with most attention given to environmental components which are likely to be impacted as a result of implementation of a LAP and environmental components for which existing environmental problems exist.

A number of SEOs are linked to indicators, in order to facilitate the monitoring of the LAP, and targets, in order to provide a measure which the LAP can help work towards.

The primary source used in formulating the SEOs was Table 4B of the SEA Guidelines (DEHLG, 2004)[45]. This list has been amended to take affect of objectives that are considered relevant to the LAP. The use of SEOs, although not a statutory requirement, does fulfil obligations set out in Schedule 2B of the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (SI No. 436 of 2004).

Strategic Environmental Objectives are used in order to evaluate each of the alternative options described and mapped in Section 4 below. The table below brings together all those SEOs which have been developed from international, national and county policies which generally govern environmental protection objectives.

[45] Department of the Environment, Heritage and Local Government (2004) *Implementation of SEA Directive (2001/42/EC): Guidelines for Regional Authorities and Planning Authorities* Dublin: Government of Ireland.

SEO Code	SEO Description
B1 (Biodiversity)	To avoid loss of habitats and flora and fauna in designated wildlife sites
B2 (Biodiversity)	To avoid adverse impacts, including direct, cumulative and indirect impacts, by development within and outside designated wildlife sites to habitats and flora and fauna, including oysters, within these sites
B3 (Biodiversity)	To conserve natural habitats listed in Annex I and flora and fauna listed in Annex II which are at favourable conservation status taking into account economic, social and cultural requirements as well as regional and local characteristics
B4 (Biodiversity)	To prevent the fragmentation of locally significant habitats and features such as trees and maintain ecological connectivity and ecological corridors within the plan area. Note that for connectivity, the habitats need not always be of particular value but the physical links should be present or, in other words, physical or other barriers should be absent.
P1 (Population and Human Health)	To prevent unsustainable piecemeal ribbon development and support higher density residential development and the economical and efficient use, provision and maintenance of infrastructure[46]
P2 (Population and Human Health)	To allow for new economic developments in Clarinbridge, providing new job opportunities[47]
S1 (Soil)	To maintain the quality of soil
S2 (Soil)	To maximise the sustainable re-use of brownfield lands where possible
W1 (Water)	To improve the quality of surface waters
W2 (Water)	To prevent pollution and contamination of ground water
W3 (Water)	To prevent pollution and contamination of estuarine water
W4 (Water)	To mitigate the effects of floods including vulnerability to potential sea level rise as a result of global warming
M1 (Material Assets)	To protect the environment from the adverse effects of the waste water discharges by ensuring that waste water is appropriately treated before it is discharged to the environment
M2 (Material Assets)	To prevent contamination of drinking water
L1 (Landscape)	To conserve and maintain the significant or characteristic features of landscapes of special sensitivity
L2 (Landscape)	To protect views which have significant natural value or human values

Table I: Strategic Environmental Objectives

Each set of alternative options are evaluated with the use compatibility criteria in order to determine how the alternatives are likely to affect the status of these SEOs.

[46] SEO P1 was found to potentially conflict with other SEOs as development by its nature impacts upon the environment

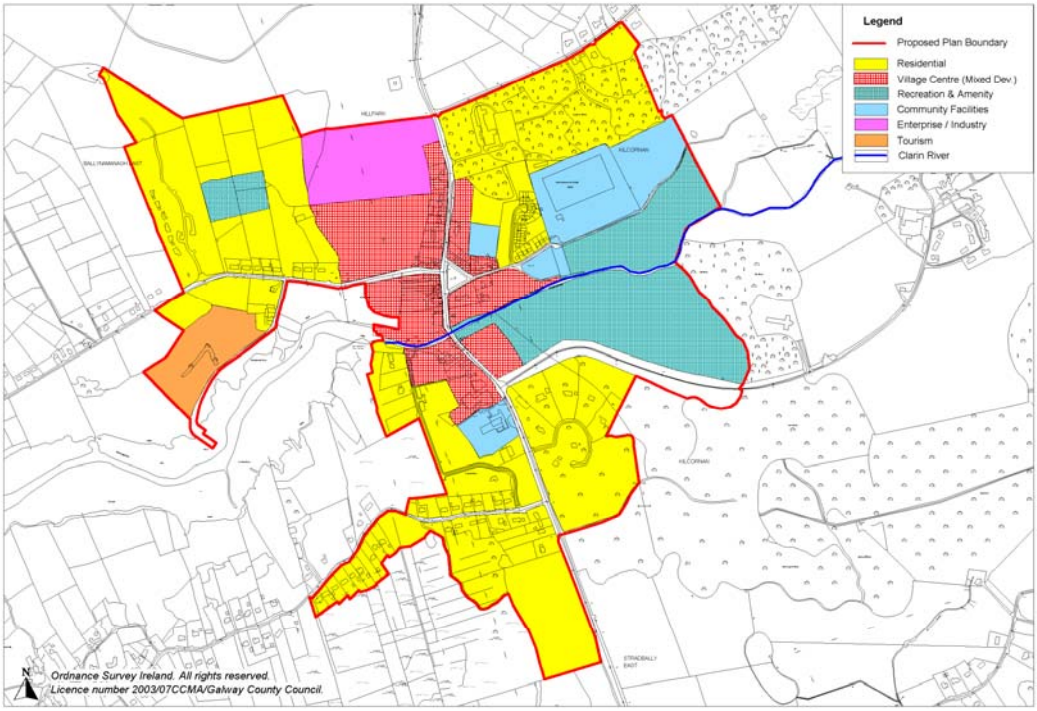
[47] SEO P2 was found to potentially conflict with other SEOs as development by its nature impacts upon the environment

4. Alternative Options and Evaluation

The SEA evaluated a number of alternatives location options relating to each land use that is needed in order to achieve the vision for the Draft Clarinbridge LAP. The preferred alternative options for each land use are briefly described below and SEOs with which the alternative options conflicted with and approved. The preferred Draft Clarinbridge LAP at the end of the evaluation process was determined to be a collection of a number of preferred alternative options which shown on Map I.

Land Use	**Preferred Alternative**	**Description**	**Mitigation Measures**
Village Centre (Mixed Use) Development	Alternative 1a	Village centre (Mixed Use) development which includes an area of Hillpark for village expansion	*Improve SEOs:* P1, P2, S2 *Conflict with SEOs:* B2, S1, W1, W2, W3, W4, M1, M2
Residential and Recreation and Amenity	Alternative 2c	Residential Development and Recreation and Amenity to both the east and west of the village	*Improve SEOs:* P1, P2 *Conflict with SEOs:* B2, B4, S1, W1, W2, W3, W4, M1, M2
Enterprise and Industry	Alternative 3a	Enterprise and Industry located in Hillpark	*Improve SEOs:* P1, P2 *Conflict with SEOs:* B4, S1, W1, W2, W3, M1, M2, L2
Tourism	Alternative 4c	Tourism based to the west of Clarinbridge to the north of the Clarin River estuary near Mooring Posts Quay	*Improve SEOs:* P1, P2 *Conflict with SEOs:* B2, S1, W1, W2, W3, M1, M2, L1, L2
Transport	Alternative 5b	The do-nothing alternative option	*Improve SEOs:* None *Conflict with SEOs:* None

Table II: Summary of Preferred Alternative Options and Evaluation



Map I The Preferred Alternative Options- The Draft Clarinbridge LAP Zoning Map

5. Mitigation Measures

Mitigation measures are measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the LAP. Table II identifies SEOs which would conflict with, thereby causing significant adverse effects, and be improved by, thereby causing significant beneficial effects, the various alternative options. Mitigation involves ameliorating significant negative effects and enhancing positive ones.

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.

5.1 Biodiversity, Flora and Fauna

SEOs B2 and **B4** have been evaluated as being likely to be significantly adversely impacted by the preferred alternative options. Significant adverse impacts on **SEO B2** will be mitigated against by inclusion of the following objective into the LAP:

Planning applications within 30 meters of the Inner Galway Bay SPA and/or the Galway Bay Complex SAC and NHA must be accompanied by: an ecological assessment which complies with Section 18 of the European Communities (Natural Habitats) Regulations 1997 and which takes direct and indirect effects of the development on the designated site into account, and; evidence of consultation between the applicant and the National Parks and Wildlife Service with regard to the findings of this assessment. The need for ecological assessments for planning applications further than the 30 meter distance shall be decided upon on a site by site basis.

Significant adverse impacts on **SEO B4** will be mitigated against by inclusion of the following objective into the LAP:

Planning applications must: identify all ecological corridors (including hedgerows and masonry stone walls), likely to be significantly affected, which are present on the relevant lands; identify any losses to these corridors which would result if the application in question was granted, and; show that such losses would be fully offset if the application was to be granted through the replacement of the relevant corridors, with corridors composed of similar species or materials, before any losses to the existing corridors occur.

5.2 Soil

SEO S1 has been evaluated as being likely to be significantly adversely impacted by the preferred alternative options. Significant adverse impacts on **SEO S1** will be mitigated against by inclusion of the following objectives into the LAP:

Planning applications must demonstrate that wastewater resulting from the granting of the application will be treated so that any discharges to soil or water will comply with the following standards: less than or equal to 30µg of phosphorous per litre of wastewater discharge, and; less than or equal to 100 faecal coliforms per 100ml of wastewater discharge. Such a level of treatment must be guaranteed in writing by the waste water treatment system manufacturer. The applicant, if successful with the relevant application, must submit a copy of an installation certificate to Galway County Council stating that the aforementioned standards will be met as well as a copy of a maintenance contract for a minimum of 10 years of maintenance, including desludging, for the waste water treatment system by appropriately certified person(s).

Planning applications must demonstrate that a regular monitoring system will be set up for the relevant new wastewater treatment systems.

5.3 Water

SEO W1, **W2**, **W3** and **W4** have been evaluated as being likely to be significantly adversely impacted by the preferred alternative options:

Significant adverse impacts on **SEOs W1**, **W2** and **W3** will be mitigated against by inclusion of the objective described under Section 5.2.

The preferred zoning map avoids the zoning of lands on the northern and southern banks of the Clarin River Estuary, in effect creating a buffer zone from the high water mark inland, free of residential development. Significant adverse impacts on **SEO W4** will be mitigated against by inclusion of the following objective into the LAP:

Planning applications must demonstrate that any development would not be subject to potential rising sea levels as a result of global warming and must address any issues with regard to rising sea levels with regard to the siting of any development.

5.4 Material Assets

SEOs M1 and **M2** with regard to Material Assets have been evaluated as being likely to be significantly adversely impacted by the preferred alternative options. Significant adverse impacts on **SEOs M1** and **M2** will be mitigated against by inclusion of the objective described under Section 5.1.

Mitigation measures set to avoid and reduce the negative effects of implementing the relevant strategic action as well as enhancing any beneficial effects. The existing

infrastructural feature of Mooring Posts Quay on the northern banks of the Clarin River Estuary as well as the estuary banks themselves are the subject of the following mitigation measure which aims to enhance the beneficial effects of implementing the Draft Clarinbridge LAP:

To develop a river and estuary bank walkway parallel to the northern banks of the Clarinbridge River, stretching west of Clarinbridge Bridge to Mooring Posts Quay in order to facilitate an increased human interaction with the landscape in this part of Clarinbridge thus significantly beneficially impacting upon the tourism and local amenities.

5.5 Landscape

SEOs L1 and **L2** have been evaluated as being likely to be significantly adversely impacted by the preferred alternative options: Significant adverse impacts on **SEOs L1 and L2** will be mitigated against by inclusion of the following objectives:

Ensure that the lane way leading down to the pier retains its existing character in terms of mature trees, stone walls and hedgerows.

All planning applications development should have regard to the character of an area including adjoining development, landscape features and contours

All planning applications development should have regard to the height of the proposed development relative to surrounding structures and important landmarks

Ensure that tourism schemes are appropriately sited, landscaped and screened.

6. Monitoring Measures

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 Draft Clarinbridge LAP which are adopted alongside the LAP.

Monitoring is based around the indicators which were chosen earlier in the process. These indicators allow quantitative measures of trends and progress over time relating to the SEOs used in the evaluation. Focus is given to indicators which are relevant to the likely significant environmental effects of implementing the LAP and existing monitoring arrangements are used in order to monitor the selected indicators where possible. Each indicator to be monitored is accompanied by the relevant target(s) which are identified in the full text of the environmental report with regard to the relevant legislation.

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 play an important role in assessing whether the LAP is achieving its environmental objectives and targets, whether these need to be re-examined, and, whether the proposed mitigation measures are being implemented.

Environmental Component	Selected Indicator(s)	Selected Targets	Monitoring Source
Biodiversity, Flora and Fauna	Percentage of habitat or percentage of species lost in designated wildlife sites (**B1**)	No loss of Zero percent of habitat or species to be lost in designate wildlife sites during the lifespan of the LAP (**B1**)	Galway County Council/ Development Control Process (GCC/DCP)
	Number of significant impacts by development within and outside designated wildlife sites to habitats and flora and fauna, including oysters, within these sites (**B2**)	No significant impacts by development within and outside designated wildlife sites to habitats and flora and fauna, including oysters, within these sites during the lifespan of the LAP (**B2**)	GCC/DCP
	Area of locally significant habitat which is fragmented (**B4**)	No habitat fragmentation of locally significant habitats to occur during the lifespan of the LAP (**B4**)	GCC/DCP
Soil	Area of brownfield land available (**S2**)	No brownfield land to be available (subject to availability on the open Market and demand for such land) at the end of the LAP's lifespan (**S2**)	GCC/DCP
Material Assets	µg of Phosphorous per litre of wastewater discharge (**M1a**)	To achieve of a level of less than or equal to 30µg of phosphorous per litre of wastewater discharge from all new wastewater treatment systems (**M1a**)	GCC/DCP Yearly monitoring programme for all new waste water systems to be set up.
	Faecal Coliforms per 100ml of wastewater discharge (**M1b**)	To achieve of a level of less than or equal to 100 faecal coliforms per 100ml of wastewater discharge from all new wastewater treatment systems (**M1b**)	GCC/DCP Yearly monitoring programme for all new waste water systems to be set up.
	Total Coliforms per 100ml of drinking water (**M2**)	0 Total Coliforms per 100ml of drinking water (**M2**)	GCC/DCP; HSE

Environmental Component	Selected Indicator(s)	Selected Targets	Monitoring Source
Landscape	Number of developments located in landscapes of special sensitivity (**L1**)	No developments located conspicuously in landscapes of special sensitivity during the lifespan of the LAP (**L1**)	GCC/DCP
	Number of views which have significant natural value or human values significantly impacted upon (**L2**)	No views to be significantly adversely impacted upon during the lifespan of the LAP (**L2**)	GCC/DCP
Water	µg of Phosphorous per litre of surface water (**W1 W1**a)	To reduce the amount of phosphorous in surface waters over the lifespan of the LAP (**W1a**i) ,and: To achieve of a level of less than 30µg of phosphorous per litre of surface water, in line with the requirements to achieve good water status under the Water Framework Directive, by 2015 (**W1**aii)	EPA
	Biotic Quality Rating (Q Value) (W1b)	To achieve a biotic quality rating of Q4, in line with the requirement to achieve good water status under the Water Framework Directive by 2015 (W1b)	GCC/DCP; EPA
	Total Coliform Counts per 100ml of groundwater (**W2a**)	0 Total Coliform Counts per 100ml of groundwater (**W2a**)	GCC/DCP; EPA
	Faecal Coliform Counts per 100ml of groundwater (**W2b**)	0 Faecal Coliform Counts per 100ml of groundwater (**W2b**)	DCMNR
	Total Coliform per 100ml of shellfish flesh (**W3a**)	Less than 300 Total Coliform per 100ml of shellfish flesh (**W3a**)	DCMNR
	Faecal Coliform Counts per 100ml of estuarine water (**W3b**)	0 Faecal Coliform Counts per 100ml of groundwater (**W3b**)	GCC/DCP

	Number of developments granted permission in areas liable to floods or rising sea levels (**W4**)	No Zero development to be granted permission in areas liable to floods or rising sea levels during the duration of the LAP (**W4**)	

Table III: Indicators to be Monitored and Targets to be Worked Towards[48]

[48] Codes e.g. "W4" correspond to codes attributed to each indicator and target in correspondence to the relevant SEOs (see Section 4)

Appendix II Designated Wildlife Sites Synopses

Galway Bay Complex (000268)

SITE NAME: Galway Bay Complex SAC and NHA

SITE CODE: 000268

Situated on the west coast of Ireland, this site comprises the inner, shallow part of a large bay which is partially sheltered by the Aran Islands. The Burren karstic limestone fringes the southern sides and extends into the sublittoral. West of Galway city the bedrock geology is granite. There are numerous shallow and intertidal inlets on the eastern and southern sides, notably Muckinish, Aughinish and Kinvarra Bays. A number of small islands composed of glacial deposits are located along the eastern side. These include Eddy Island, Deer Island and Tawin Island. A diverse range of marine, coastal and terrestrial habitats, including several listed on Annex I of the EU Habitats Directive, occur within the site, making the area of high scientific importance.

Galway Bay South holds a very high number of littoral communities (12). They range from rocky terraces, to sandy beaches with rock or sand dunes behind. The intertidal sediments of Galway Bay support good examples of communities that are moderately exposed to wave action. A well-defined talitrid zone in the upper shore gives way to an intertidal, mid-shore zone with sparse epifauna or infauna. On the lower, flat part of the shore, the tubes of the deposit-feeding terebellid worm, Lanice conchilega, are common on the surface. Nereid and cirratulid polychaete worms (Hediste diversicolor, Arenicola marina), small crustaceans and bivalves (Angulus tenuis, Cerastoderma edule and Macoma balthica) are present. The area has the country's only recorded example of the littoral community characterized by Fucus serratus with sponges, ascidians and red seaweeds on tide-swept lower eulittoral mixed substrata. This community has very high species richness (85 species), as do the sublittoral fringe communities on the Finavarra reef (88 species). The rare sea urchin Paracentrotus lividus and the foliose red alga Phyllophora sicula are present at Finavarra, whereas the red alga Rhodymenia delicatula and the rare brown alga, Ascophyllum nodosum var. mackii, occur in Kinvara and Muckinish Bays. Sublittorally, the area has a number of distinctive and important communities. Of particular note is that Ireland's only reported piddock bed thrives in the shallows of Aughinish Bay. The rare sponge, Mycale contarenii, is also found here. There is further interest in an extensive maerl bed of Phymatolithon calcareum which occurs in the strong tidal currents of Muckinish Bay. There is also maerl off Finavarra Point and in Kinvara Bay (Lithothamnion corallioides, Lithophyllum dentatum and Lithophyllum fasciculatum). An oyster bed in Kinvara Bay and seagrass (Zostera spp.) beds off Finavarra Point are also important features. Other significant habitats which occur include secondary maerl beds and communities strongly influenced by tidal streams.

Salt marshes are frequent within this extensive coastal site, with both Atlantic and Mediterranean marshes well represented. Most of the salt marshes are classified as the bay type, with the substrate being mud or mud/sand. There is one lagoon type and one estuary type. Lagoon salt marshes are the rarest type found in Ireland. The best examples of salt marsh are located in inner Galway bay, east of a line running between Galway city and Kinvara. In this area the coastline is highly indented, thus providing the sheltered conditions necessary for extensive salt marsh development. Common salt marsh species include Thrift (Armeria maritima), Red Fescue (Festuca rubra), Common Scurvygrass (Cochlearia officinalis), Sea Lavender (Limonium humile), Common Saltmarsh-grass (Puccinellia maritima), Saltmarsh Rush (Juncus gerardii) and Sea Rush (Juncus maritimus). On the lower levels of the salt marshes and within pans there occurs Glasswort (Salicornia europaea agg.). A noteworthy feature of the salt-marsh habitat within this site is the presence of dwarfed brown seaweeds in the vegetation. These are also known as "turf fucoids" and typical species

include Fucus spp., Ascophyllum nodosum and Pelvetia canaliculata. A number of locally rare vascular plant species also grow in salt-marsh areas within the site. These include Puccinellia distans and Sea Purslane (Halimione portulacoides), which are both relatively rare in the western half of the country.

Shingle and stony beaches can be found throughout the site, with the best examples along the more exposed shores to the south and west of Galway city and to the north and east of Finnavara, Co. Clare. In general, these shingle shorelines are sparsely vegetated and frequently occur interspersed with areas of sandy beach and/or bedrock shore. The associated flora is dominated by plant species of frequently disturbed maritime habitats. To the south and west of Galway city, typical plants include Curled Dock (Rumex crispus), Common Couch (Elymus repens), Sea Sandwort (Honkenya peploides), Sea Beet (Beta vulgaris), Scentless Mayweed (Matricaria maritima), Silverweed (Potentilla anserina) and Atriplex spp.. Two rare plant species are associated with the habitat: Fat Hen (Hyoscyamus niger), a threatened species listed in the Irish Red Data Book, grows on shingle beach to the south of Lough Atalia; there are also old records for the threatened plant species Sea Kale (Crambe maritima).

An excellent range of lagoons of different types, sizes and salinities occurs within the site. This habitat is given priority status on Annex I of the Habitat Directive. One unusual type of lagoon, karstic rock lagoon, is particularly well represented. This type of lagoon is common on the Aran Islands, but on mainland Ireland, all but one are confined to this one site including the best example of all karstic lagoons in the country (Lough Murree). The flora of the habitat is rich and diverse, reflecting the range of salinities in the different lagoons, and typically brackish with two species of Tasselweed (Ruppia spp.), two Red Data charophytes Chara canescens and Lamprothamnion papulosum, and Chaetomorpha linum (all lagoonal specialists). The fauna of the lagoon is also rich, diverse and lagoonal. At least 10 lagoonal specialist species were recorded in 1996 and 1998 from the combined habitat of all the lagoons which is one of the highest number for any lagoonal habitat in the country. Many of the species appear to be rare. The lagoons within this site are an excellent representative of the habitat type and of high conservation importance.

Other terrestrial habitats within this site which are of conservation importance include Saw Sedge (Cladium mariscus)-dominated fen and Black Bog-rush (Schoenus nigricans)-dominated alkaline fen at Oranmore, a turlough of moderate size at Ballinacourty, limestone pavement mainly along the southern shore, dry calcareous grassland with orchids (best examples occurring east of Salthill), wet grassland and an area of deciduous woodland at Barna.

Inner Galway Bay provides extensive good quality habitat for Common Seals, a species listed on Annex II of the EU Habitats Directive. In 1984, this seal colony was one of the top three sites in the country, with over 140 animals recorded. The seals use a range of haul-out sites distributed through the bay - these include inner Oranmore Bay, Rabbit Island, St.Brendan's Island, Tawin Island, Kinvarra Bay, Aughinish Bay and Ballyvaughan. The site provides optimum habitat for Otter.

Galway Bay is a very important ornithological site. The shallow waters provide excellent habitat for Great Northern Divers (35), Black-throated Divers (28), Scaup (39), Long-tailed Duck (27) and Red-breasted Merganser (232). All of these populations are of national importance. The intertidal areas and shoreline provides feeding and roosting habitat for wintering waterfowl, with Brent Goose (517) having a population of international importance and a further 11 species having populations of national importance. Four of the regular wintering species are listed on Annex I of the EU Birds Directive - Golden Plover, Bar-tailed Godwit and the two diver species. Breeding birds are also of importance, with significant populations of Sandwich Terns (81 pairs in 1995) and Common Terns (99 pairs in 1995), both also being listed on Annex I of the EU Directive. A large Cormorant colony (c.300 pairs in 1989) occurs on Deer Island.

Fishing and aquaculture are the main commercial activities within the site. A concern is that sewage effluent and detritus of the aquaculture industry could be deleterious to benthic communities. Reef and sediment communities are vulnerable to disturbance or compaction from tractors accessing oyster trestles. The Paracentrotus lividus populations have been shown to be vulnerable to over-fishing. Extraction of maerl in Galway Bay is a threat. Owing to the proximity of Galway city, shoreline and terrestrial habitats are under pressure from urban expansion and recreational activities. Eutrophication is probably affecting some of the lagoons and is a continued threat. Drainage is a general threat to the turlough and fen habitats. Bird populations may be disturbed by aquaculture activities.

This large coastal site is of immense conservation importance, with many habitats listed on Annex I of the EU Habitats Directive, four of which have priority status (lagoon, Cladium fen, turlough and orchid-rich calcareous grassland). The examples of shallow bays, reefs, lagoons and salt marshes are amongst the best in the country. The site supports an important Common Seal colony and a breeding Otter population, both species that are listed on Annex II of the EU Habitats Directive, and six regular Annex I EU Birds Directive species. The site also has four Red Data Book plant species, plus a host of rare or scarce marine and lagoonal animal and plant species.

Inner Galway Bay SPA (004031)

SITE NAME: Inner Galway Bay SPA

SITE CODE: 004031

Galway Bay SPA is a very large, marine-dominated, site situated on the west coast of Ireland. The inner bay is protected from exposure to Atlantic swells by the Aran Islands and Black Head. Subsidiary bays and inlets (e.g. Poulnaclough, Aughinish and Kinvarra Bays) add texture to the patterns of water movement and sediment deposition, which lends variety to the marine habitats and communities. The terraced Carboniferous (Viséan) limestone platform of the Burren sweeps down to the shore and into the sublittoral. The long shoreline is noted for its diversity, with complex mixtures of bedrock shore, shingle beach, sandy beach and fringing salt marshes. Intertidal sand and mud flats occur around much of the shoreline, with the largest areas being found on the sheltered eastern coast between Oranmore Bay and Kinvarra Bay. A number of small islands composed of glacial deposits are included, such as Deer Island, along with some rocky islets.

The southern part of Galway Bay holds a very high number of littoral communities. They range from rocky terraces to sandy beaches with rock or sand dunes behind. The intertidal sediments of Galway Bay support good examples of communities that are moderately exposed to wave action. A well-defined talitrid zone in the upper shore gives way to an intertidal, mid-shore zone with sparse epifauna or infauna. On the lower, flat part of the shore, the tubes of the deposit-feeding terebellid worm, *Lanice conchilega*, are common on the surface. Nereid and cirratulid polychaete worms (*Hediste diversicolor*, *Arenicola marina*), small crustaceans and bivalves (*Angulus tenuis*, *Cerastoderma edule* and *Macoma balthica*) are present. Sublittorally, the area has a number of distinctive and important communities. Of particular note is that Ireland's only reported piddock bed thrives in the shallows of Aughinish Bay. The rare sponge, *Mycale contarenii*, is also found here. Of additional interest is the presence of an extensive maerl bed of *Phymatolithon calcareum* which occurs in the strong tidal currents of Muckinish Bay. There is also maerl off Finavarra Point and in Kinvarra Bay (*Lithothamnion corallioides*, *Lithophyllum dentatum* and *Lithophyllum fasciculatum*). An oyster bed in Kinvarra Bay and seagrass (*Zostera* spp.) beds off Finavarra Point are also important features.

Salt marshes are frequent within this extensive coastal site, with the best examples located east of a line running between Galway City and Kinvarra. In this area the coastline is highly indented, thus providing the sheltered conditions necessary for extensive salt marsh

development. Common salt marsh species present include Thrift (*Armeria maritima*), Red Fescue (*Festuca rubra*), Common Scurvygrass (*Cochlearia officinalis*), Lax-flowered Sea-lavender (*Limonium humile*), Common Saltmarsh-grass (*Puccinellia maritima*), Saltmarsh Rush (*Juncus gerardi*) and Sea Rush (*Juncus maritimus*). On the lower levels of the salt marshes and within pans is found Glasswort (*Salicornia europaea* agg.). Shingle and stony beaches occur throughout the site, with the best examples found along the more exposed shores to the south and west of Galway City and to the north and east of Finnavara. In general, these shingle shorelines are sparsely vegetated, with such species as Curled Dock (*Rumex crispus*), Common Couch (*Elymus repens*), Sea Sandwort (*Honkenya peploides*) and Sea Beet (*Beta vulgaris*).

Galway Bay is one of the most important ornithological sites in the western region. It supports an excellent diversity of wintering wetland birds, with divers, grebes, cormorants, dabbling duck, sea duck and waders all well represented. There are internationally important wintering populations of Great Northern Diver (83) and Brent Goose (676), and nationally important populations of an additional sixteen species, i.e. Black-throated Diver (25), Cormorant (266), Mute Swan (150), Wigeon (1,157), Teal (690), Shoveler (88), Red-breasted Merganser (249), Ringed Plover (335), Golden Plover (2,030), Lapwing (3,969), Dunlin (2,149), Bar-tailed Godwit (447), Curlew (697), Redshank (505), Greenshank (20) and Turnstone (182) ? all figures are average peaks for the 5 seasons 1995/96-1999/00. Of note is that the populations of Red-breasted Merganser and Ringed Plover represent 6.7% and 3.3% of the respective national totals. Black-throated Diver is a scarce species in Ireland and the Galway Bay population is the most regular in the country. Other species which occur in notable numbers include Little Grebe (35), Grey Heron (102), Long-tailed Duck (19) and Scaup (40). The bay is an important wintering site for gulls, especially Black-headed Gull (1,815), Common Gull (1,011) and Herring Gull (216). In addition, the following species also use the site: Red-throated Diver (13), Great Crested Grebe (16), Mallard (200), Shelduck (139), Common Scoter (79), Oystercatcher (575), Grey Plover (60), Black-tailed Godwit (45) and Great Black-backed Gull (124). The site provides both feeding and roost sites for most of the species, though some birds also commute to areas outside of the site. The wintering birds of Galway Bay have been monitored annually since 1980/81.

The site has several important populations of breeding birds, most notably colonies of Sandwich Tern (81 pairs in 1995) and Common Tern (99 pairs in 1995). A large Cormorant colony occurs on Deer Island which has had 205 pairs in 1985 and 300 pairs in 1989.

Inner Galway Bay provides good quality habitat for Common Seal, a species that is listed on Annex II of the E.U. Habitats Directive. In 1984, this seal colony was one of the top three sites in the country, with over 140 animals recorded. The seals use a range of haul-out sites distributed through the bay. The site provides optimum habitat for Otter.

While there are no imminent threats to the birds, a concern is that sewage effluent and detritus of the aquaculture industry could be deleterious to benthic communities and could affect food stocks of divers, seaduck and other birds. Bird populations may also be disturbed by aquaculture activities. Owing to the proximity of Galway City, shoreline habitats are under pressure from urban expansion and recreational activities.

This large coastal site is of immense ornithological importance, with two wintering species having populations of international importance and a further sixteen species having populations of national importance. The breeding colonies of Sandwich Tern, Common Tern and Cormorant are also of national importance. Also of note is that seven of the regularly occurring species are listed on Annex I of the E.U. Birds Directive, i.e. Red-throated Diver, Black-throated Diver, Great Northern Diver, Golden Plover, Bar-tailed Godwit, Sandwich Tern and Common Tern.