

# APPENDIX II: NON-TECHNICAL SUMMARY

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## OF THE ENVIRONMENTAL REPORT

## OF THE BRAY ENVIRONS LOCAL AREA PLAN 2009-2015

## STRATEGIC ENVIRONMENTAL ASSESSMENT



**For: Wicklow County Council**

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## Section 1 Introduction and Terms of Reference

This is the Non-Technical Summary of the Environmental Report of the Bray Environs Local Area Plan 2009-2015 Strategic Environmental Assessment (SEA). The purpose of the report is to provide a clear understanding of the likely environmental consequences of decisions regarding the future accommodation of growth in certain areas of Bray Environs.

### **What is an SEA?**

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 ensure that these effects are appropriately addressed at the earliest appropriate stage of decision-making on a par with economic and social considerations.

### **Why is it needed?**

The SEA is being carried out in order to comply with the provisions of the SEA Regulations and in order to improve planning and environmental management within Bray Environs. This report should be read in conjunction with the Local Area Plan.

### **How does it work?**

All of the main environmental issues in Bray Environs are assembled and presented to the team who are preparing the new Plan. This helps them to devise a plan that protects whatever is sensitive in the environment. It also helps to identify wherever there are environmental problems in the Plan area - so that these won't get any worse - and ideally the Plan tries to improve these.

To decide how best to make a plan that protects the environment as much as possible the planners examine alternative versions of the Plan. This helps to highlight the type of plans that are least likely to harm the environment.

### **What is included in the Environmental Report which accompanies the Plan?**

The Environmental Report contains the following information:

- A description of the environment and the key environmental issues;
- A description and assessment of alternatives for the Plan;
- An assessment of Plan policies and objectives; and,
- Mitigation measures which will aid compliance with important environmental protection legislation - e.g. the Water Framework Directive, the Habitats Directive - and which will avoid/reduce the environmental effects of implementing the Plan.

### **What happens at the end of the process?**

When the Plan was adopted a document was prepared and made available to the public, referred to as the SEA Statement.

The SEA Statement includes information on how environmental considerations have been integrated into the Plan and why the preferred alternative was chosen for the Plan in light of the other alternatives - this introduces accountability, credibility and transparency into the Plan-making process.

## Section 2 The Bray Environs Local Area Plan

### 2.1 Structure and Content

The LAP consists of a written statement - including a settlement strategy - and maps which give a graphic representation of the proposals of the Plan, indicating land use zoning objectives for the two parts of the Plan area, at Fassaroe and Kilruddery (see map below).



Figure 2.1 Context of the Plan area in relation to Bray and surrounding region

Policies and objectives included in the Plan include those which relate to: Residential Development; Employment and Enterprise; Retail; Social and Community Infrastructure; Traffic and Transportation; Public Services Infrastructure; Built and Cultural Heritage; Landscape and Natural and Visual Amenity, and; Urban Design.

### 2.2 What the LAP will seek to do

The LAP will seek to:

- Provide a coherent and robust framework for the extension of Bray;
- Enhance the economic, social and environmental offer of Bray and its environs;
- Provide the framework to enhance the employment opportunities of the greater Bray area and north Wicklow;
- Provide direction and guidance for the integration of a range of new uses;
- Address the deficiency in open space and recreation provision in the town;
- Strengthen the spatial linkages between Bray and its environs;
- Provide an integrated approach to land use and transportation;
- Provide guidance for the integration of the natural and built environment; and,
- Provide an implementation strategy.



## 2.3 Land Use Zoning

Below are the Land Use Zoning maps for the Fassaroe and Kilruddery area which are included in the LAP.

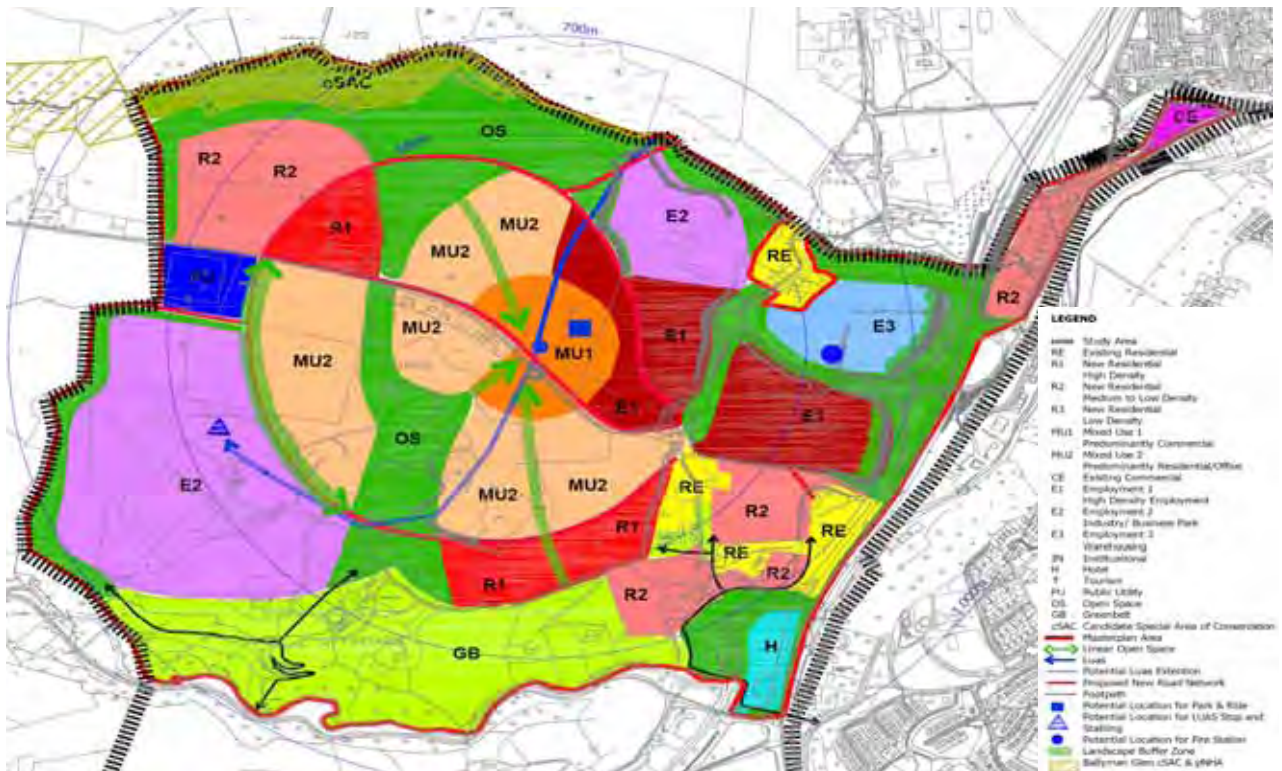


Figure 2.2 Fassaroe Land Use Zoning Map from the LAP

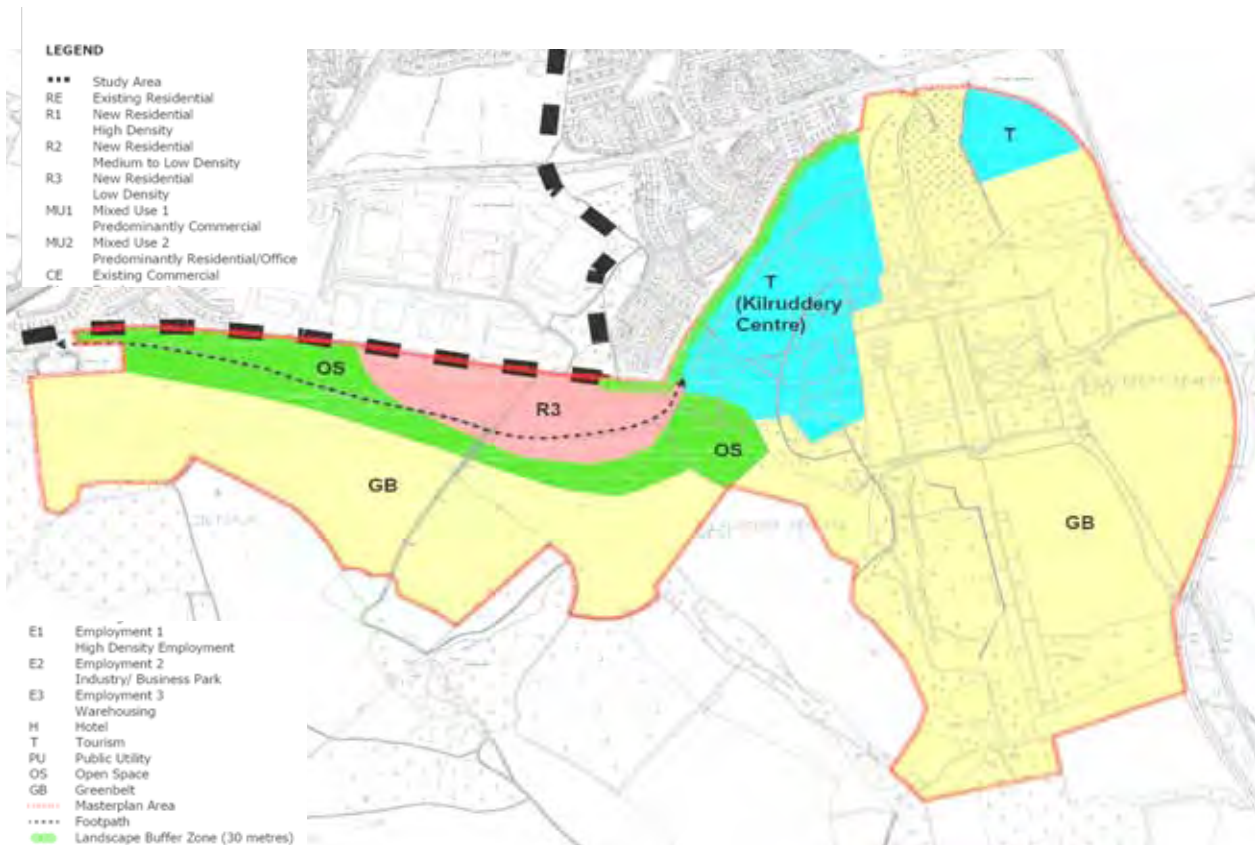


Figure 2.3 Kilruddery Land Use Zoning Map from the LAP

## **Section 3 Existing Environment**

### **3.1 Introduction**

The environmental baseline of Bray Environs with specific reference to the Plan area of Fassaroe and Kilruddery is described in this section. This baseline is used in order to identify, describe and evaluate the likely effects of implementing the Local Area Plan and it includes sections on the following components – biodiversity, flora and fauna, population, human health, soil, water, air and climatic factors, material assets, cultural heritage, landscape.

The Plan area is located in County Wicklow on Irelands east coast. It consists of two parcels of land, one at Fassaroe to the west of Bray Town and the N11 and one at Kilruddery to the south of Bray Town.

The boundary of the Fassaroe site is guided by the Cookstown River to the south, a stream to the north and the N11 to the east of the Plan area. There are a number of land uses at the Fassaroe site including residential, the Greenstar recycling facility and the sand and gravel pit. Residential use is generally low in density. The remainder of the Plan Area generally consists of agricultural lands.

Lands at Kilruddery are dominated by the presence of Kilruddery House and Gardens. Land uses at this site include mainly agricultural use and woodlands. The lands are situated in a visually sensitive area at the foot of the Little Sugar Loaf, south of a housing estate and an industrial park along the R768.

## 3.2 Biodiversity and Flora and Fauna

### 3.2.1 Overview

Green space, which makes up the vast majority of both sites, consists of habitats and corridors for movement for a wide range of wildlife including various bird species, invertebrates such as bees and butterflies and mammals such as hedgehogs, mice, rats and foxes.

Broad leaved, coniferous and mixed forests as well as pastures at the Kilruddery site provide habitats for a number of species such as those mentioned above.

The River Dargle and the Cookstown River run adjacent to the Fassaroe site interacting with both the natural and built heritage to give a unique and distinct character as well as providing habitats for flora and fauna.

CORINE land cover mapping<sup>1</sup> for the Bray Environs area, which classifies land cover for the year 2000, is shown on the map below. The map indicates that *agricultural land* is the main type of land cover. This comprises semi-natural lands such as *pastures*, *non-irrigated arable lands* and *agricultural lands with natural vegetation*, *mixed forest* and *complex cultivation patterns*. There is a large area on the Fassaroe site which is classified as *dump* – this reflects its past use as a waste disposal site in the past.

A large portion of the Kilruddery site is made up of *non-irrigated arable land* with the remainder comprising *pasture*, *mixed forest* and *broad-leaved forest*.

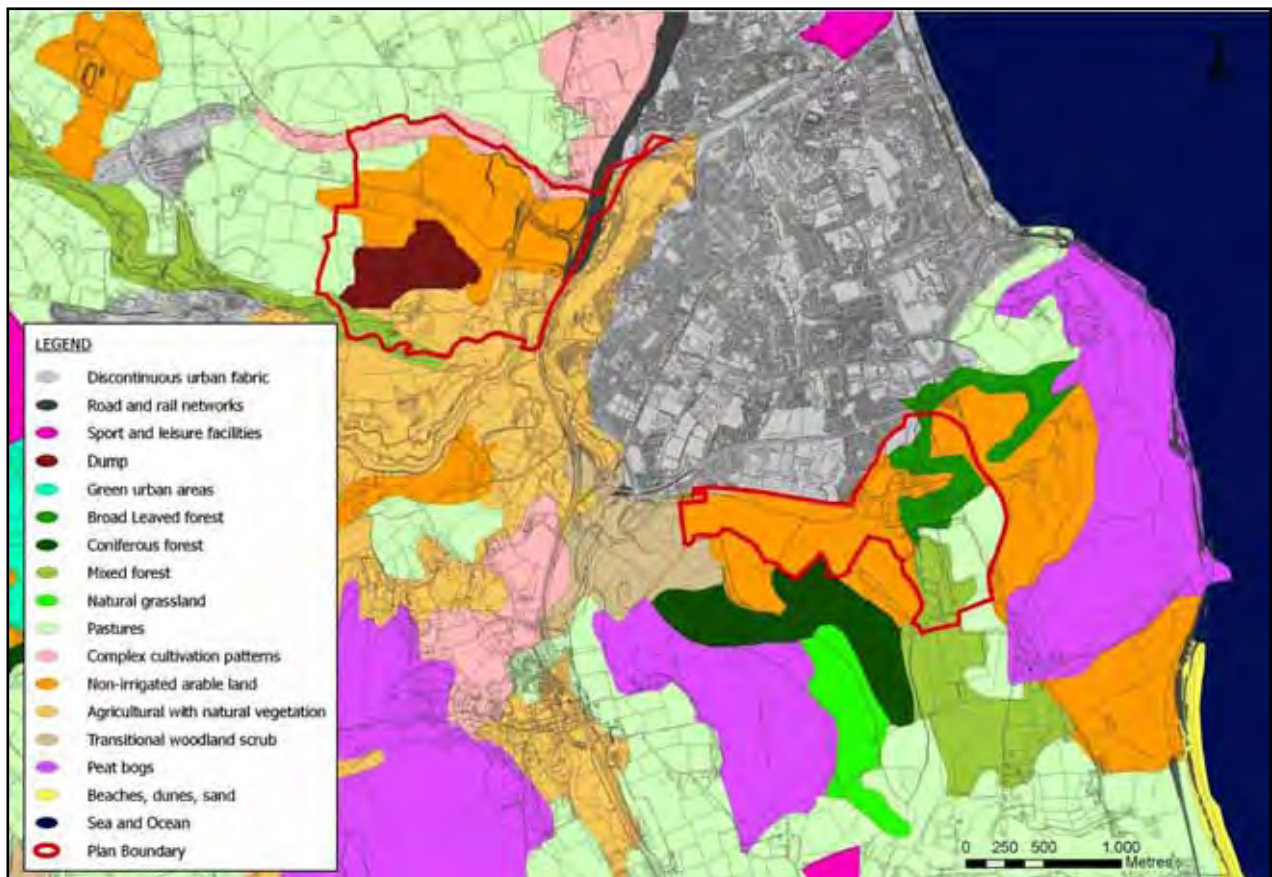


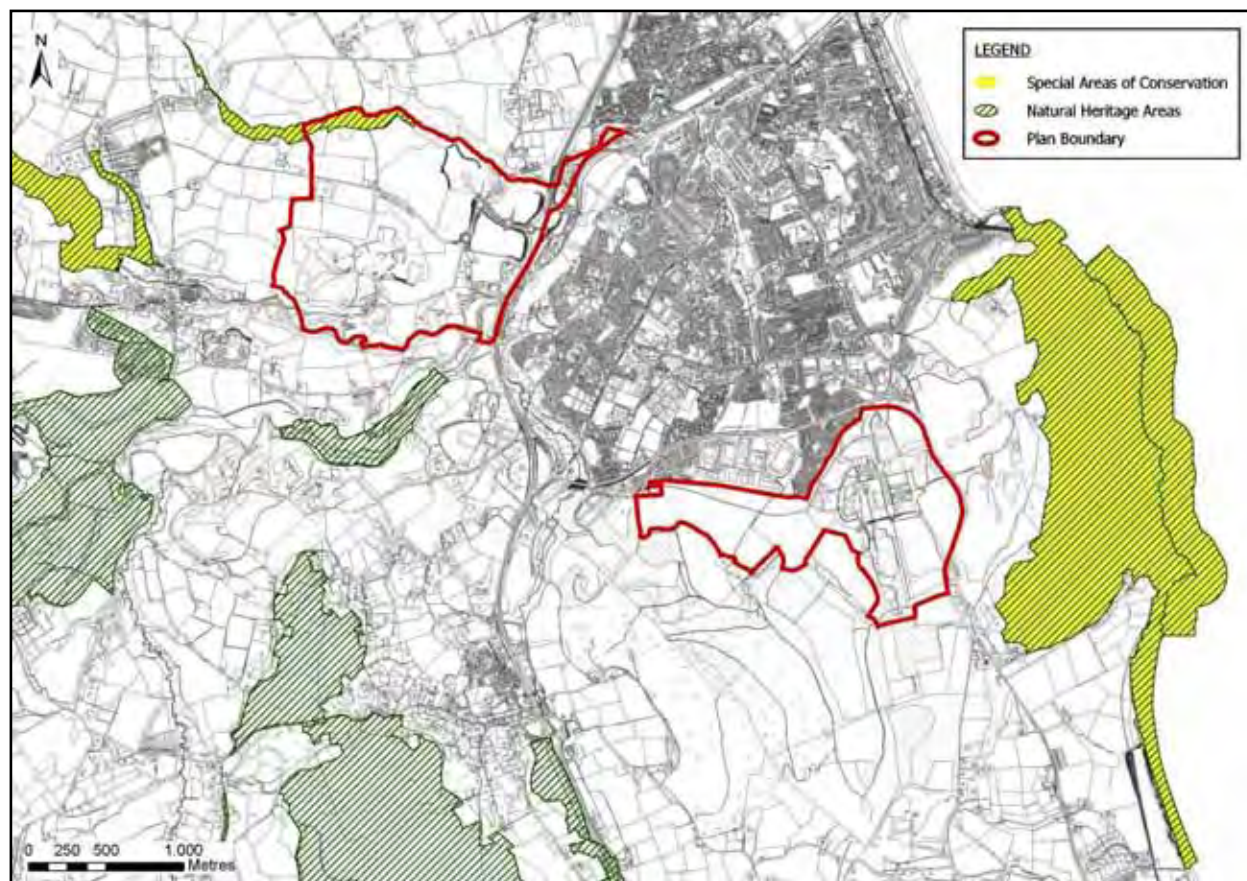
Figure 3.1 CORINE Land Cover Map (2000)

<sup>1</sup> European Environment Agency Coordination of Information on the Environment (2004) *Ireland's CORINE Land Cover 2000 (CLC2000)* Copenhagen: EEA



### 3.2.2 Designations

There is one ecologically designated site within the Bray Environs Plan boundary. Ballyman Glen candidate Special Area of Conservation (cSAC) and proposed National Heritage Area (pNHA) (Site Code: 000713) lies along the northern Fassaroe site boundary and continues westwards outside the Plan area. Bray Environs has a number of designated sites in its vicinity. The Great Sugar Loaf pNHA (Site Code: 001769) and Kilmacanogue Marsh pNHA (Site Code: 000724) lie to the south of the Plan area. Bray Head pNHA and cSAC (Site Code: 000714) is situated to the east. The Dargle River Valley pNHA (Site Code: 001745) lies south of the Fassaroe site. Powerscourt Woodland pNHA (Site Code: 001768) and Knocksink Wood pNHA and cSAC (Site Code: 000725) are located to the west and southwest of the Fassaroe Plan



area.

**Figure 3.2 Designations within and surrounding the Plan area**

### 3.2.3 Important Issues to Consider

Land cover differences between the CORINE 1990 data and the data for the year 2000 indicate a cumulative loss of agricultural areas which have natural vegetation and their associated habitats - including their flora and fauna. The change of land cover north of the Kilruddery site to discontinuous urban fabric indicates what could be the beginning of a cumulative encroachment onto the Little Sugar Loaf.

At the Kilruddery site, an old oak forest mixed with non-native species lies to the south of the housing estate. Habitats may be threatened by the invasion of non-native species. These are species that have been introduced, generally by human intervention, outside their natural range and whose establishment and spread can threaten native ecosystems.

With regard to terrestrial flora and fauna, all greenfield development in the area will cause an impact - the replacement of natural and semi natural habitats with artificial surfaces results in loss of flora and fauna and therefore adversely impacts upon this environmental component.



## 3.3 Population and Human Health

### 3.3.1 Human Health

With regard to human health, impacts relevant to the SEA are those which arise as a result of interactions with environmental vectors (i.e. environmental components such as air, water or soil through which contaminants or pollutants, which have the potential to cause harm, can be transported so that they come into contact with human beings).

Human health has the potential to be impacted upon by environmental vectors including water, soil and air. Hazards or nuisances to human health can arise as a result of exposure to these vectors arising from incompatible adjacent landuses.

### 3.3.2 Population

Bray is the third largest town in Ireland with a population of almost 32,000 persons. The Plan area falls under the DED of Kilmacanogue. This DED covers an area of 2,564 hectares to the south and west of Bray town. The 2006 Census figures show that the population of the Kilmacanogue DED stood at 3,724<sup>2</sup>. This figure is up from 3,582 in 2002, a 4% increase.

Housing densities in the Plan area are comparatively low. Spatial spread of the population in the Plan area is generally one-off housing, linear in parts.

### 3.3.3 Important Issues to Consider

Certain environmental vectors within the Plan area - such as air, water or soil - have the potential to transport and deposit contaminants or pollutants, which have the potential to cause harm and adversely impact upon the health of the Plan areas population. Issues relevant to this potential in Bray Environs include landfills (see Section 3.4.1) and noise - noise emanating from the N11 could be seen as a potential problem.

## 3.4 Soil

Soil is the top layer of the earth's crust. It is formed by mineral particles, organic matter, water, air and living organisms. Soil can be considered as a non-renewable natural resource because it develops over very long timescales. It performs many vital functions including: food and other biomass production, storage, filtration and transformation of many substances including water, carbon, and nitrogen. Soil has a role as a habitat and gene pool, serves as a platform for human activities, landscape and heritage and acts as a provider of raw materials. Such functions of soil are worthy of protection because of their socio-economic as well as environmental importance<sup>3</sup>.

### 3.4.1 Important Issues to Consider

Greenfield development involves the building upon and thereby sealing off of soil thus representing an environmental problem.

There is potential that soil may be polluted and contaminated as a result of pollution from development which is not serviced by appropriate waste water infrastructure and from agricultural sources.

Soil erosion due mainly to surface erosion resulting from construction works and agricultural / forestry operations has major potential to impact on water quality and fishery resources.

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<sup>2</sup> CSO (various) *Census 2002 Volume 1 - Population Classified by Area; Census 2006 Volume 1 - Population Classified by Area* Cork: CSO

<sup>3</sup> Teagasc, GSI, Forest Service & EPA (2006) *Soils and Subsoils Class* Dublin: DEHLG

In addition to water quality and fishery impacts, these can impact on infrastructure and can have health and safety implication.

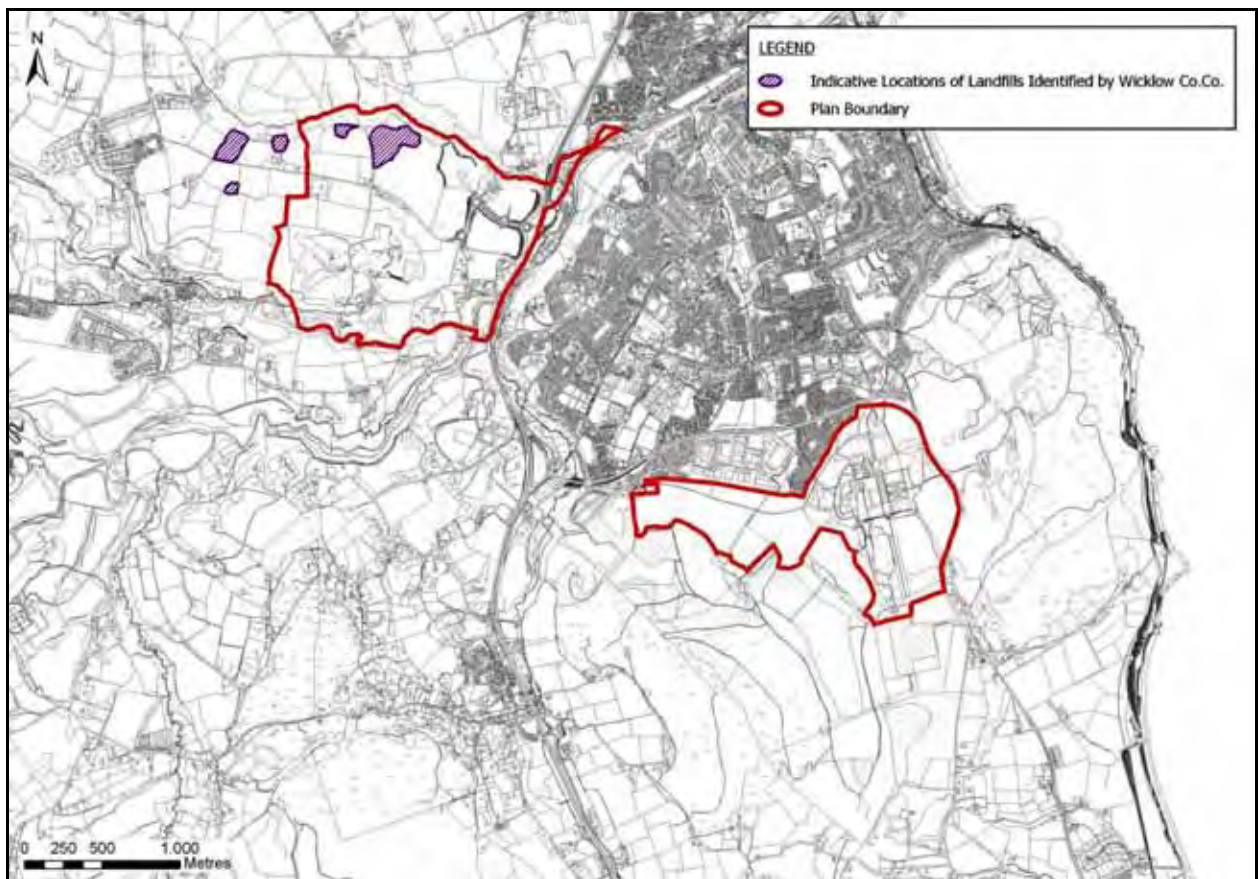
Figure 3.3 provided to CAAS by Wicklow County Council indicates a number of areas where known landfilling activity was carried out in the past. These areas lie in close proximity to one another at the northern boundary of the Fassaroe study area.

Activity at these landfills began in the 1970's. They are unlined and capped and were used to dispose of municipal waste. The sites are kept under observation, and gas testing is carried out on a regular basis they are walked to check for settlement or breaks in the capping.

There is uncertainty as to where the landfill sites lie relative to zoning boundaries. The area lies east of a proposed residential zone where there are some existing dwellings.

Decomposition of materials in the landfill sites may pollute and contaminate soils.

The removal and disposal of landfilled material from the areas mentioned above could, if unmitigated, cause problems for water quality, ecology and human health.



**Figure 3.3 Indicative locations of landfills as identified by Wicklow County Council**

## 3.5 Water and Waste Water

### 3.5.1 Introduction

Human activities, if not properly managed, can cause deterioration in water quality. Pressures exerted by human activities include the following:

- sewage and other effluents discharged to waters from point sources, e.g. pipes from treatment plants;
- discharges arising from diffuse or dispersed activities on land;
- abstractions from waters; and,
- structural alterations to water bodies.

### 3.5.2 The Water Framework Directive

The Water Framework Directive (WFD) requires that all member states implement the necessary measures to prevent deterioration of the status of all waters - surface, ground, estuarine and coastal - and protect, enhance and restore all waters with the aim of achieving good status by 2015. All public bodies, including Wicklow 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 improve polluted water bodies to good status by 2015.

For the purpose of implementing the WFD, Ireland has been divided into eight river basin districts or areas of land that are drained by a large river or number of rivers and the adjacent estuarine/coastal areas. Bray Environs is located within the Eastern RBD.

For the purposes of assessment, reporting and management, water in the RBDs has been divided into groundwater, rivers, lakes, estuarine waters and coastal waters which are in turn divided into specific, clearly defined water bodies. Each water body has been assessed, on the basis of human activity, whether it is *at risk* or *not at risk* of failing to achieve the WFD's objectives by 2015.

In order to facilitate this assessment, a four-class risk classification scheme was applied using the following terminology:

- Not at Significant Risk
- Probably Not at Significant Risk
- Probably at Significant Risk (these are likely to need improvement in order to achieve the required status)
- At Significant Risk (these will need improvement to achieve the required status)

In addition to these assessments, the WFD requires that Registers of Protected Areas (RPAs) are compiled for a number of water bodies or part of water bodies which must have extra controls on their quality by virtue of how their waters are used by people and by wildlife.

Local Authorities located in the ERBD, including Wicklow County Council, have prepared a draft River Basin Management Plan which will be implemented in order to help protect and improve waters in the RBD. This draft Plan was published in December 2009 and a period of public consultation is taking place until 22 June 2010. Public comment will be taken into consideration in preparing the final River Basin Management Plan, which is due for publication by 22 December 2010. The Management Plan will provide specific policies for individual river basins in order to implement the requirements of the WFD.



### 3.5.3 Risk Assessments

#### 3.5.3.1 River Catchments

Figure 3.4 shows the current risk assessment for the River Dargle and the Cookstown River. In terms of achieving the WFD's objectives by 2015, both rivers are currently classified as being *(1a) at significant risk* of failing to achieve the WFD's objectives by 2015. Diffuse source pressures can be attributed to this classification.

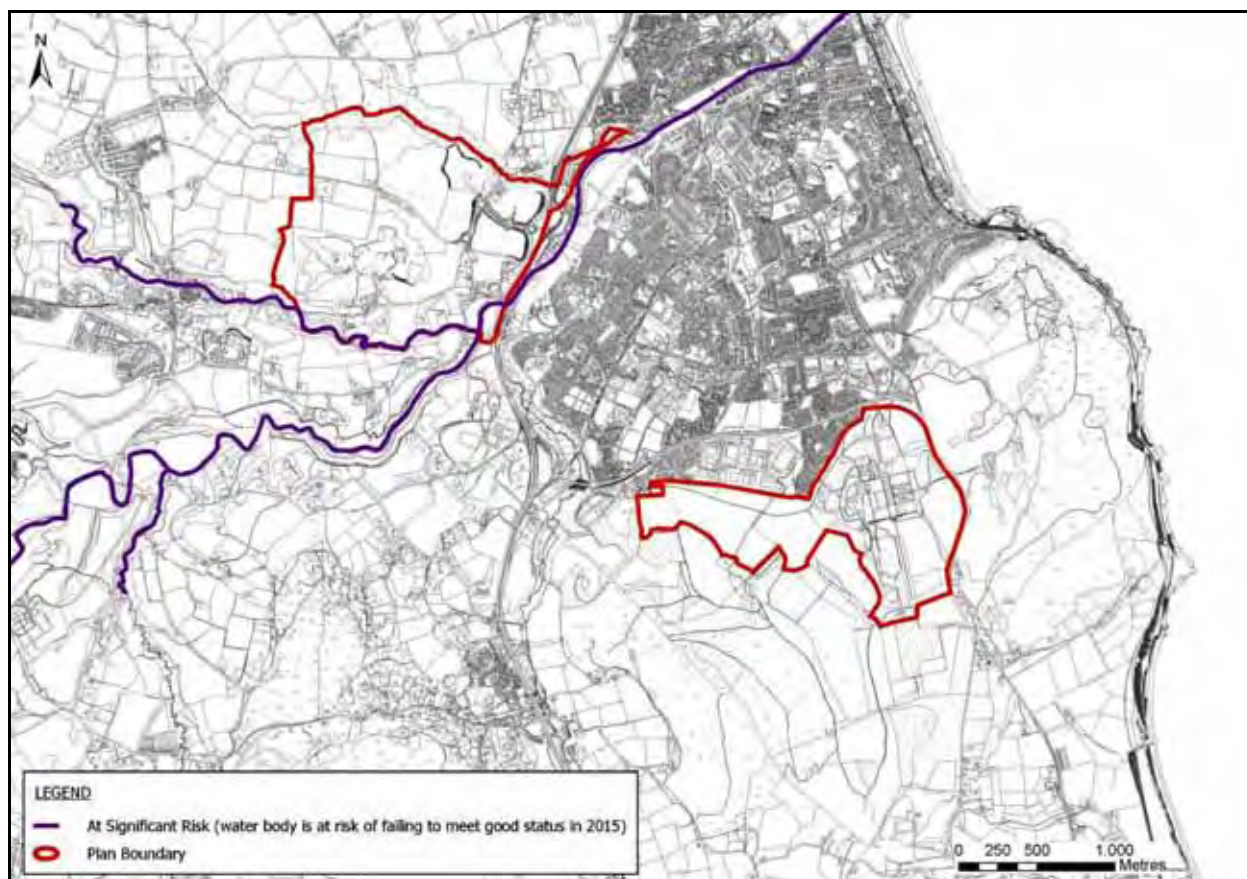


Figure 3.4 River Water Bodies Risk Assessment

### 3.5.3.2 Coastal Waters

Coastal water is surface water on the landward side of a line, every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters.

Figure 3.5 shows the WFD risk assessment for the coastal waters located off Bray. The coastal waters of the South-Western Irish Sea - Killiney Bay are classified as being (1a) *at significant risk of not achieving good status*.

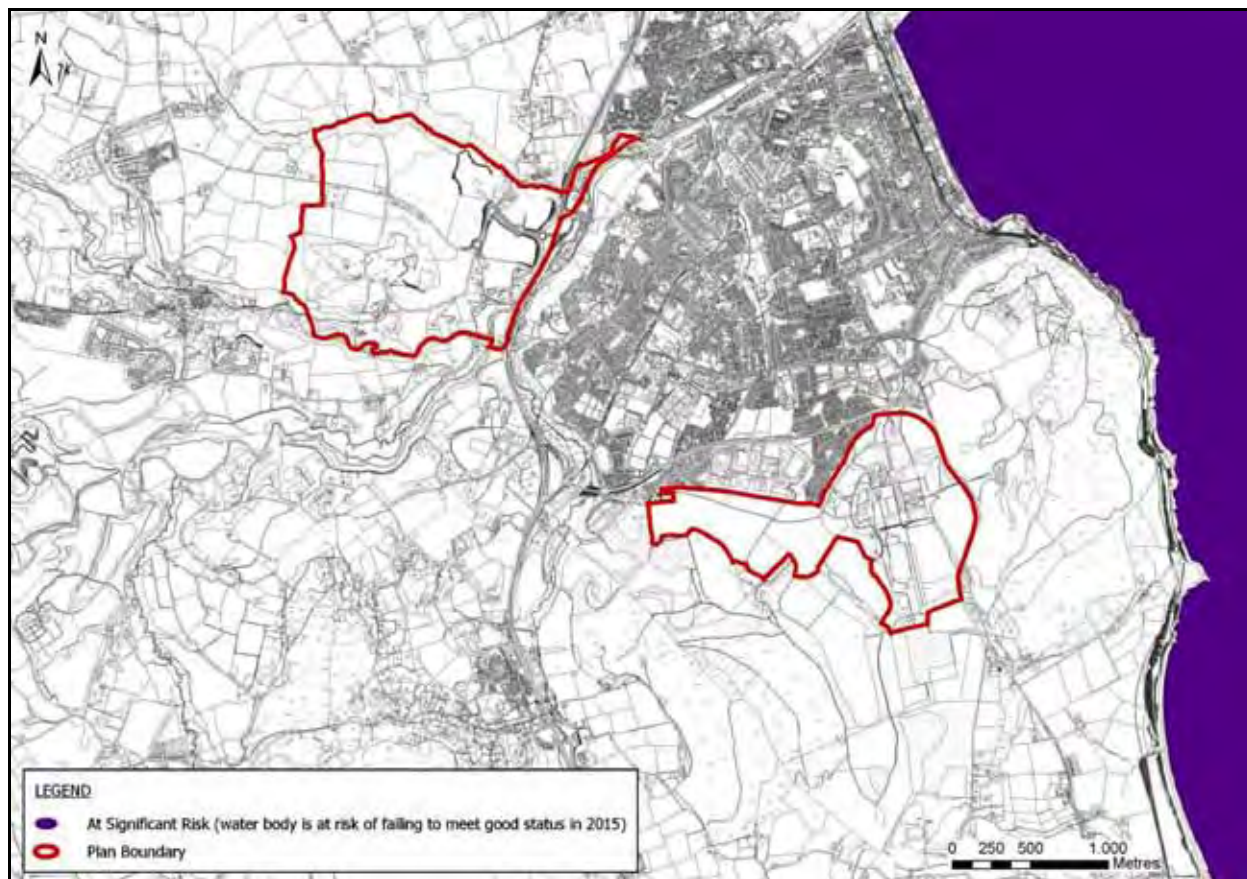


Figure 3.5 Coastal Waters Risk Assessment

### 3.5.3.3 Transitional Waters

Transitional waters are bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their proximity to coastal waters but which are substantially influenced by freshwater flows. These areas are important for the shell fish industry for which unpolluted water is essential.

The WFD risk assessment of transitional waters for the Bray area shows that waters at Bray Harbour are classified as being (1a) *at significant risk of not achieving good status*.

### 3.5.3.4 Ground Waters

Figure 3.6 maps the current risk assessment for groundwater in the Bray Environs area. Groundwater at the Kilruddery site and in the western part of the Fassaroe site is classified as being (1b) *probably at significant risk of not achieving good status*. Reasons for this include landfills and mobile chemicals. The groundwater bodies underlying the remainder of Bray Environs are currently classified as being (2a) *expected to achieve good status by 2015*.

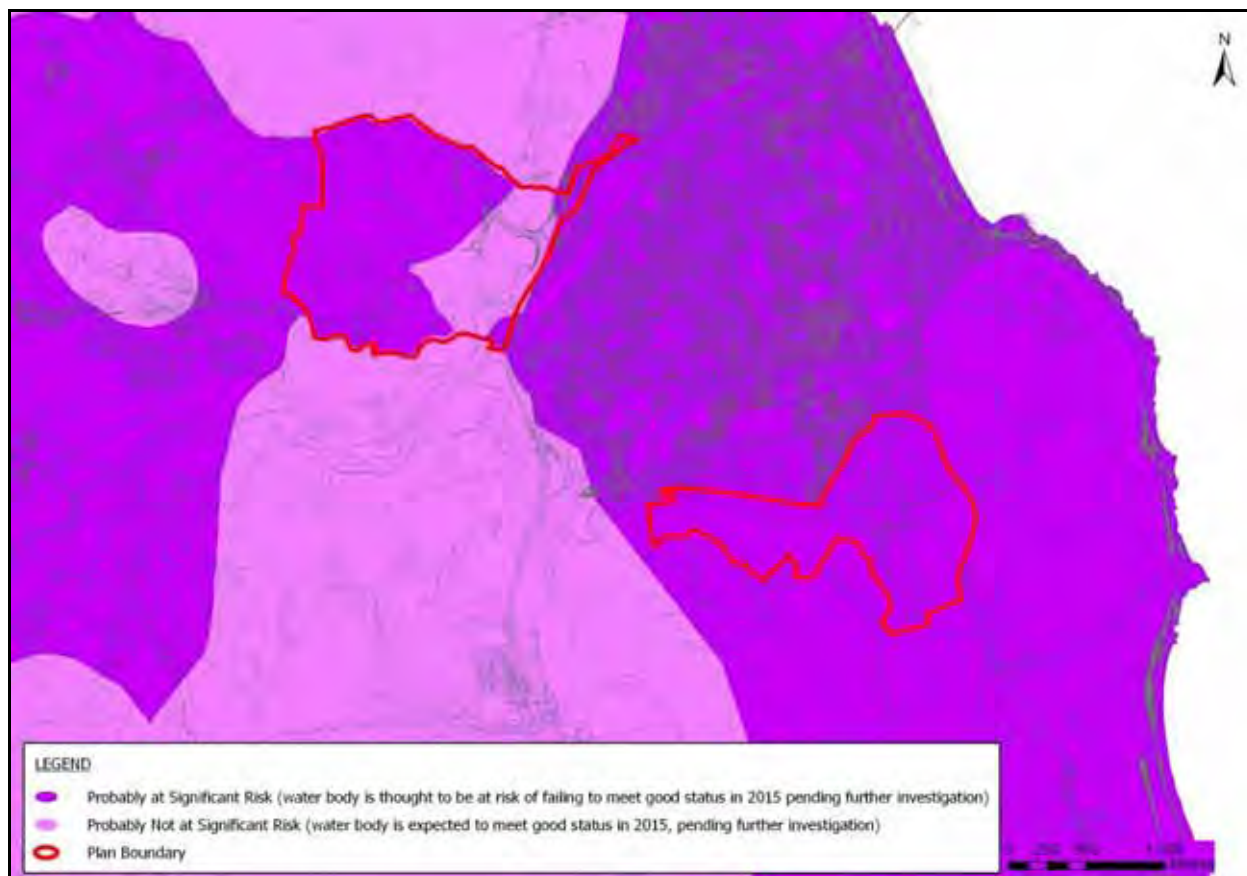


Figure 3.6 Ground Water Risk Assessment



### 3.5.4 WFD Register of Protected Areas

In addition to the assessments mentioned above, the WFD requires that Registers of Protected Areas (RPAs) are compiled for a number water bodies or part of water bodies which must have extra controls on their quality by virtue of how their waters are used by people and by wildlife.

The WFD requires that these RPAs contain: areas from which waters are taken for public or private water supply schemes; designated shellfish production areas; bathing waters; areas which are affected by high levels of substances most commonly found in fertilizers, animal and human wastes - these areas are considered nutrient sensitive; areas designated for the protection of habitats or species e.g. salmonid areas; Special Areas of Conservation (SACs); and, Special Protection Areas (SPAs).

In Ireland, waters intended for human consumption are protected under the Drinking Water Regulations (S.I. 439/2000). The Cookstown River has been listed on the RPA for Drinking Water. Groundwater underlying the Plan area is listed on the RPA for Drinking Water (Ground Water).

The Dargle River has been listed on the RPA for Habitat Rivers. Wildlife habitats (as identified by the National Parks and Wildlife Service) that are dependent on water are included in the Register.

The waters in the Plan area which are listed on the RPA are mapped on Figure 3.7.

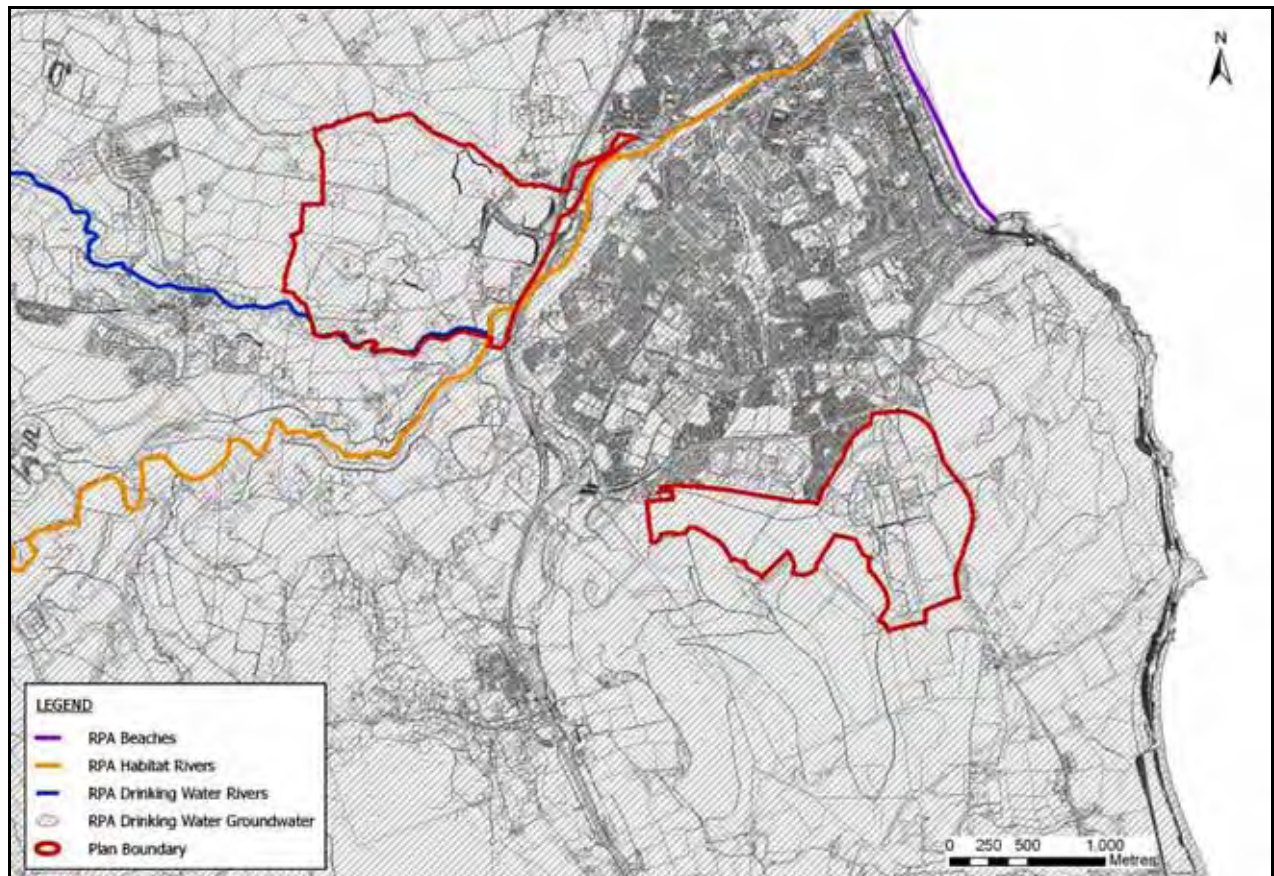


Figure 3.7 WFD Register of Protected Areas

### 3.5.5 Ground Water Vulnerability

The Geological Survey of Ireland (GSI) rates aquifers according to their vulnerability to pollution. Aquifer vulnerability refers to the ease with which pollutants of various kinds can enter underground water.

Figure 3.8 maps this rating for the Plan area. It indicates that aquifers underlying the Fassaroe area are generally rated as being as *High Vulnerability* with the south and east of that area rated as being of *Extreme Vulnerability*. There is a small area along the eastern Fassaroe site rated as being of *Extreme Vulnerability (rock near surface or Karst)*. The vulnerability varies from *Moderate* to *High* to *Extreme* moving from east to west through the Kilruddery site.

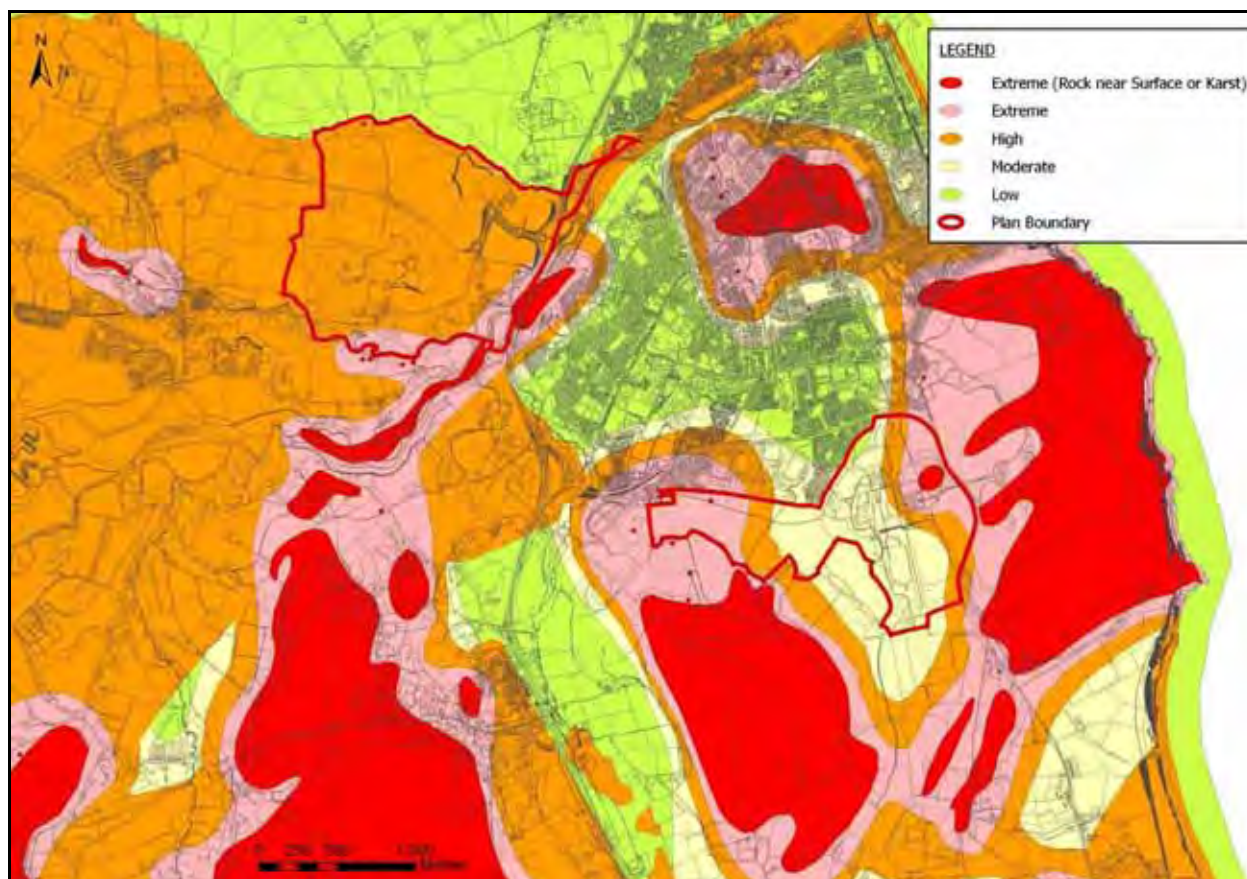


Figure 3.8 Ground Water Vulnerability

### 3.5.6 Waste Water

Waste water from the Bray area is currently subject to screening at the facility near Bray Harbour. It is then pumped into the Irish Sea through a long sea outfall. A Design, Build and Operate contract to upgrade the Shanganagh Waste Water Treatment Plant to provide full secondary treatment for wastewater from Shanganagh and Bray has been signed. The project will include laying a pipeline from Shanganagh wastewater treatment works to Bray. It is hoped that works will be complete by 2011/2012.

The existing Waste Water Treatment Plant at Bray will be kept a new stormwater tank will be built and the plant will be used as a fallback system.

The upgrading of the Shanganagh Wastewater Treatment Works plant will improve coastal water quality and will meet the requirements of the EU Urban Wastewater Treatment Directive as mentioned above. It will also contribute to fulfilling Wicklow County Council's obligations under the Water Framework Directive.

### **3.5.7 Important Issues to Consider**

The main channel of the River Dargle is designated and protected as Salmonid Waters under the European Communities (Quality of Salmonid Waters) Regulations 1988 (SI No. 293 of 1988). Designated Salmonid Waters are capable of supporting salmon (*Salmo salar*), trout (*Salmo trutta*), char (*Salvelinus*) and whitefish (*Coregonus*). The Cookstown River is a tributary of the Dargle which could indicate that salmonid species may be present.

By virtue of how they are used by people and by wildlife, the Cookstown River, the River Dargle and the groundwater underlying the Plan area are all listed on the Registers of Protected Areas under the Water Framework Directive.

A number of waterbodies as identified above are classified as being either at significant risk of failing to achieve the WFD's objectives of good status by 2015 or possibly at risk of failing to meet the objective.

Leachate from the landfills at the north of the Fassaroe site could pose a threat to water bodies, especially as they are unlined.

There is inadequate wastewater treatment capacity for existing development and no capacity for further development with the existing plant overloaded. This represents a significant existing environmental problem which is likely to be adversely impacting upon Wicklow County Council's ability to meet its commitments under the Water Framework Directive. The upgrading of the waste water treatment plant at Shanganagh will help to solve this problem and enable future population growth.

## **3.6 Air and Climatic Factors**

### **3.6.1 Air Quality**

For the purposes of air quality monitoring in Ireland by the EPA, four zones are defined in the Air Quality Standards Regulations 2002 (SI No. 271 of 2002). The main areas defined in each zone are:

- Zone A: Dublin Conurbation.
- Zone B: Cork Conurbation.
- Zone C: Other cities and large towns comprising Galway, Limerick, Waterford, Clonmel, Kilkenny, Sligo, Drogheda, Wexford, Athlone, Ennis, Bray, Naas, Carlow, Tralee and Dundalk.
- Zone D: Rural Ireland, i.e. the remainder of the State - small towns and rural areas of the country - excluding Zones A, B and C.

Bray falls into zone C. Current air quality in Zone C is "good". The index is calculated based on the latest available measurements of PM10, sulphur dioxide, nitrogen dioxide and ozone in Zone C.

### **3.6.2 Greenhouse Gases**

Ireland's current emissions are exceeding targets agreed in the peer review of Ireland's 2006 submission to the United Nations Framework Convention on Climate Change. It is unlikely that Ireland will meet these targets and it is likely therefore that financial penalties will be incurred. Transport related emissions continue to be the dominant growth sector.

Changes in sea level and/or changes in the occurrence of severe rainfall events as a result of climate change could adversely impact upon the Plan area's human beings, its biodiversity and its economy.



### 3.6.3 Flooding

Changes in the rates of surface water run-off and groundwater recharge associated with the replacement of semi natural surfaces with artificial surfaces could - if unmitigated - increase flood risk in the Plan area.

## 3.7 Cultural Heritage

Heritage, by definition, means inherited properties, inherited characteristics and anything transmitted by past ages and ancestors. It covers everything, from objects and buildings to the environment. Cultural heritage includes physical buildings, structures and objects complete or in part, which have been left on the landscape by previous and indeed current generations.

The heritage of Bray Environs is a unique resource which is fundamental to the cultural identity of the area and the quality of life of its citizens - it is central to how we see ourselves and to our identity as individuals and communities. Historic buildings can define localities and communities within the area and can become a focus of community identity and pride. An historic church or park, for example, can help define a neighbourhood and create a sense of local cohesion.

### 3.7.1 Archaeological Heritage

Archaeology is the study of past societies through the material remains left by those societies and the evidence of their environment. Archaeological heritage consists of such material remains (whether in the form of sites and monuments or artefacts in the sense of moveable objects) and environmental evidence. As archaeological heritage can be used to gain knowledge and understanding of the past it is of great cultural and scientific importance. Archaeological sites and monuments vary greatly in form and date; examples include earthworks of different types and periods, (e.g. early historic ringforts and prehistoric burial mounds), megalithic tombs from the Prehistoric period, medieval buildings, urban archaeological deposits and underwater features such as wrecks.

The term 'monument' includes all man-made structures of whatever form or date except buildings habitually used for ecclesiastical purposes.

A recorded monument is a monument included in the list and marked on the map which comprises the Record of Monuments and Places (RMP) set out county by county under Section 12 of the National Monuments (Amendment) Act, 1994 by the Archaeological Survey of Ireland.

St. Valery's Cross is in the Fassaroe area and is listed on the RMP. There is also a *font* at this location which is also listed on the RMP. Fassaroe Castle, built in 1536, is located to the south of the Fassaroe site about 25 meters to the south east of the road leading into Roadstone. This suggests there may be other archaeological sites which could possibly be uncovered in the development process, especially as the Fassaroe area is predominantly comprised of greenfield sites. There is also a *burial site* within the Fassaroe area at the Roadstone site. There is a "*redundant record*"<sup>4</sup> listed to the south of Fassaroe Castle.

Within Kilruddery Demesne, there are two *designated landscape features*, a *possible burial ground* as well as Kilruddery House itself. To the west of the House there are two *Fulacht Fiaś* listed on the RMP.

Figure 3.9 maps the location of entries to the Record of Monuments and Places within and surrounding the Plan area.

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<sup>4</sup> Records classed as "Redundant record" are those that fulfil one or more of the following criteria: (1) a record identifying a location where, according to literature or personal communication, a monument existed, but which, on inspection, was found not to be an archaeological monument (e.g. a natural feature); (2) a record classified using a term which is now obsolete (e.g. ecclesiastical remains); (3) a record created in the database for which there is no supporting evidence recorded on file or in the database; (4) an archaeological object (i.e. an artefact), e.g. a quernstone; (5) a record entered as a Shipwreck.

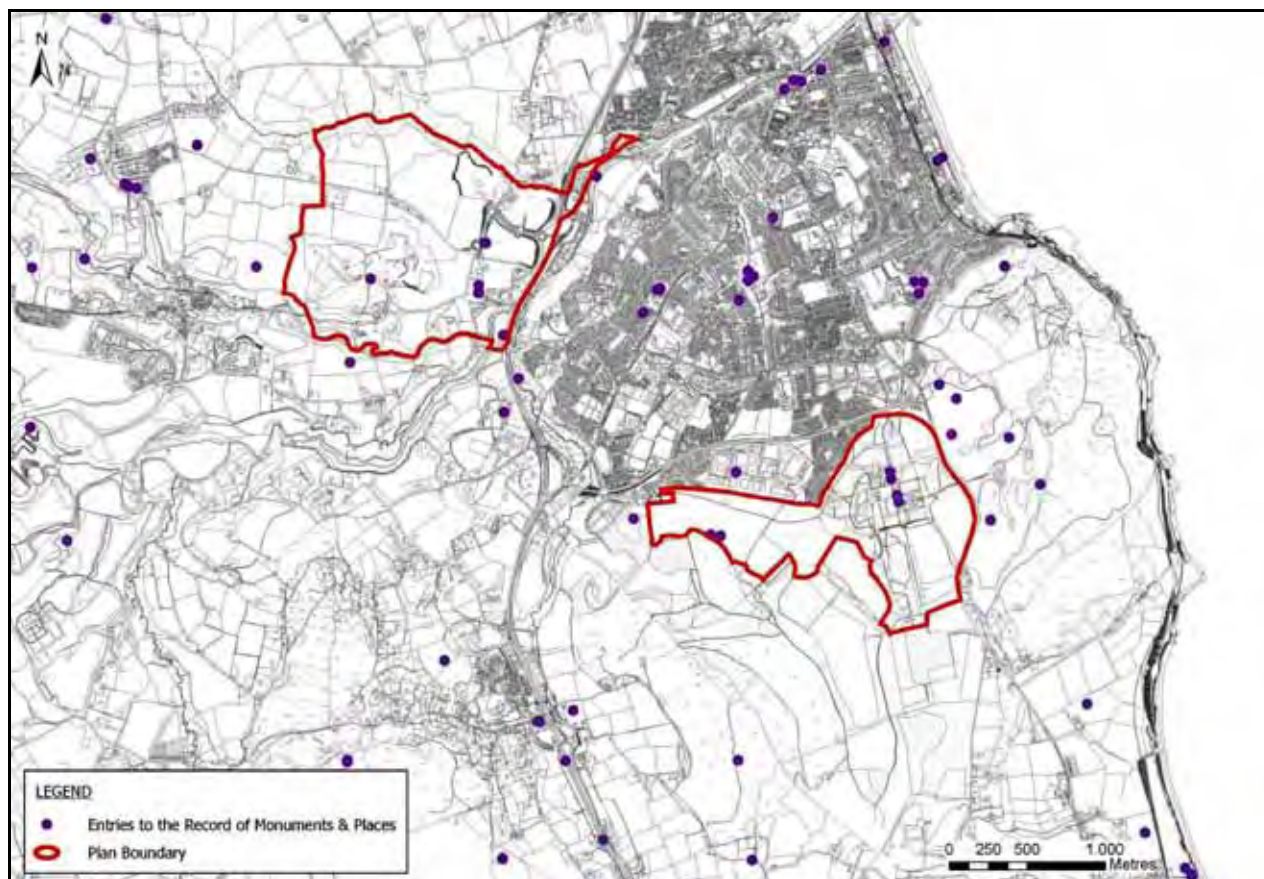


Figure 3.9 Archaeological Heritage: Entries to the Record of Monuments and Places

### 3.7.2 Architectural Heritage

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

The physical form of the individual structures in the countryside and in the towns and villages of Bray Environs has evolved through many periods. The built heritage which has developed has attained a character that contributes to varied, locally distinctive areas in the County.

There are four structures within the Plan area which are listed on the Record of Protected Structures. In the Fassaroe area, there are two country houses. Structure Number: 03-32 is a three-bay, two-storey villa with painted rendering, raised quoins, hipped roof with eaves, pedimented, ionic porch. A house of circa 1820, attributed to Sir Richard Morrison. Structure number 03-34 in the Dargle Valley is an early, gothic-revival house of circa 1810, with a crenellated tower at the south end and a large, pointed, mullioned window, also attributed to Sir Richard Morrison.

RPS number 08-33 *Kilruddery House* and RPS number 08-34 *Kilruddery House entrance Gates* lay within the Plan area at Kilruddery. Kilruddery House is an important early-19th Century house by William Vitruvius Morrison now partially truncated. The exterior is tudor-gothic revival and the interior a lush neo-classicism. The garden layout dates from the seventeenth Century. The entrance gates and piers were designed by William Morrison.

### 3.7.3 Important Issues to Consider

The integrity of the historic gardens and setting of Kilruddery Demesne may be compromised by encroaching development.

Archaeology can be previously unknown but can be damaged through development causing ground disturbance.

Development which involves material alteration or additions to protected structures can detract from the special character of the structure and its setting, and have the potential to result in the loss of features of architectural or historic interest and the historic form and structural integrity of the structure are retained. Development on sites adjoining protected monuments, places or structures can also impact upon the setting of these cultural heritage items.

The cumulative accommodation of large scale development in Bray Environs has the potential to cumulatively impact upon cultural heritage of the Plan area.

## 3.8 Landscape

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.

Wicklow County Council's Landscape Characterisation (2004) classifies landscapes in Wicklow according to their sensitivity – their ability to accommodate change or intervention without suffering unacceptable effects to character and values. The most sensitive landscapes are *Areas of Outstanding Natural Beauty* - which are of a very high sensitivity - and *Areas of Special Amenity* - which are of a high sensitivity. Landscapes of lesser sensitivity are *Rural Areas* and *Corridor Areas* which are both of medium sensitivity.

The areas of Fassaroe, Giltspur and Kilruddery Demesne East are Areas of Outstanding Natural Beauty. The Areas of Outstanding Natural Beauty zone encompasses those areas which are most vulnerable and sensitive, and which are considered to be of greatest scenic value.

The majority of the Kilruddery area lies within a corridor zone, this landscape zone covers main access corridors in County Wickow, with the remainder of the Kilruddery area falling into an Area of Outstanding Natural Beauty.

There are a number of views and prospects identified in the Wicklow County Development Plan. Protected views and prospects within and surrounding the Plan area are mapped on Figure 3.10.

### 3.8.1 Important Issues to Consider

A problem with regard to the environmental component of landscape is the cumulative visual impact which occurs as a result of developments such as one off houses. Such developments, which individually often do not have significant adverse impacts, have the potential to cumulatively and adversely significantly impact upon sensitive landscapes. This is especially problematic in the visually prominent, elevated parts of the Plan area including the foot of the Little Sugar Loaf at Kilruddery, where lands are threatened by encroaching development and lands at the centre of the Fassaroe area.

The landfills to the north of the Fassaroe site have been capped which lessens their visual impact on the landscape.

The area including Fassaroe is classified under the Wicklow County Development Plan 2004-2010 County Landscape Characterisation as being within an *Area of Outstanding Natural Beauty*. This classification indicates that the lands are of a high sensitivity and value on a County level however it is noted that the



validity of the designation in the Fassaroe area has largely been eroded in the past by the existing sand and gravel pit as well as more recent development close to the N11.

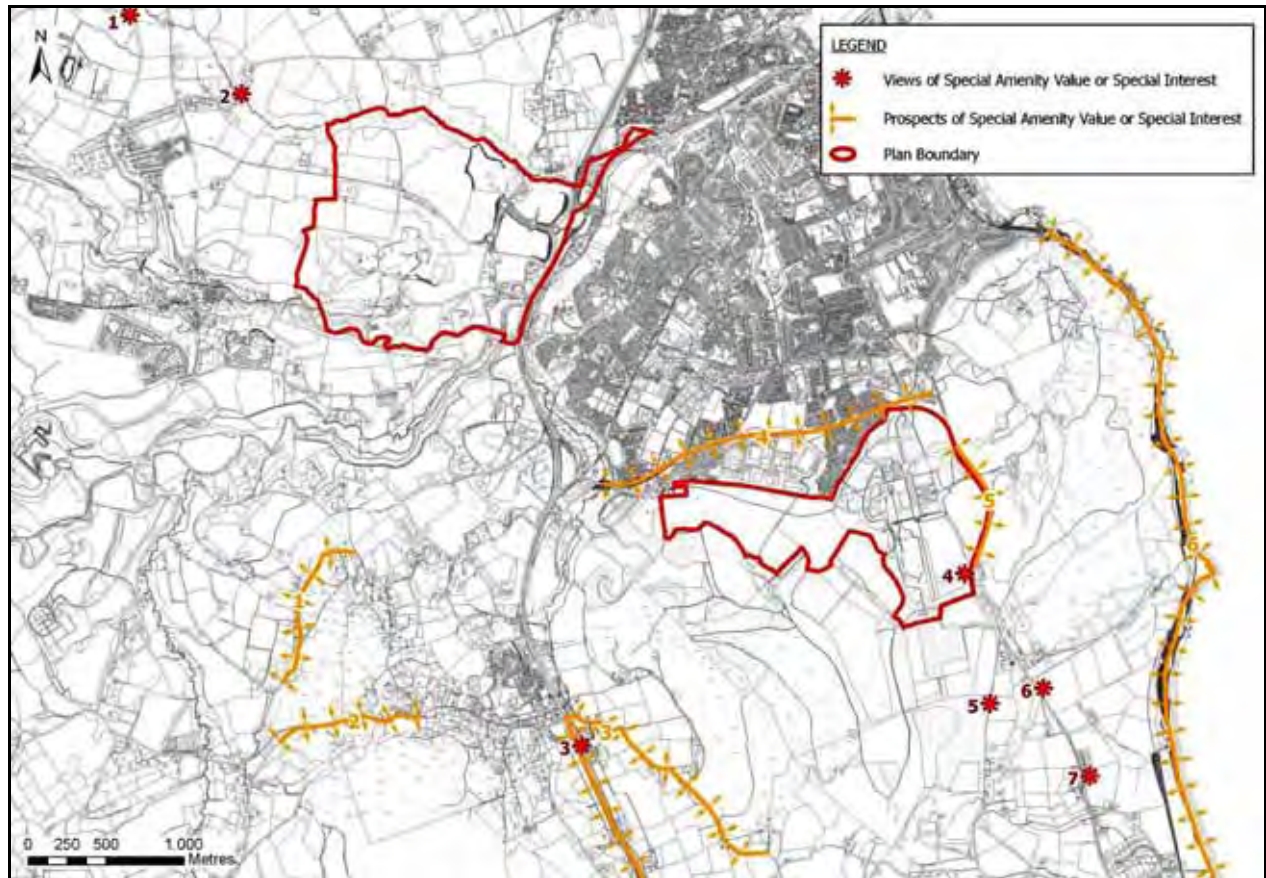


Figure 3.10 Views and Prospects of Special Amenity Value or Interest

## Section 4 Description of Alternative Plan Scenarios

### 4.1 Introduction

The planning process before the preparation of the LAP established the need for a Local Area Plan. Also established was the method by which the need for the LAP is to be provided for - greenfield development.

### 4.2 Alternative Locations which could be subject to an LAP

Once the method of meeting the need was determined, and prior to the scoping of the SEA, environmental constraints were identified and four alternatives relating locations where development could be provided for by the Plan were explored. These alternatives are evaluated for their likely environmental and planning effects in Section 4 and are as follows:

1. Lands at Kilmacanogue East, to the south of Bray located off the N11 National Primary Road (see Number 1 on Figure 4.1);
2. Lands to the South of Bray including those at Kilruddery (see Number 2 on Figure 4.1);
3. Lands to the north and south of the River Dargle, between Dargle Glen and the Cookstown River - to the west of Bray and the N11 road (see Numbers 3 and 4 on Figure 4.1); and,
4. Lands at Fassaroe, located to the west of Bray and the N11 road (see Number 5 on Figure 4.1).

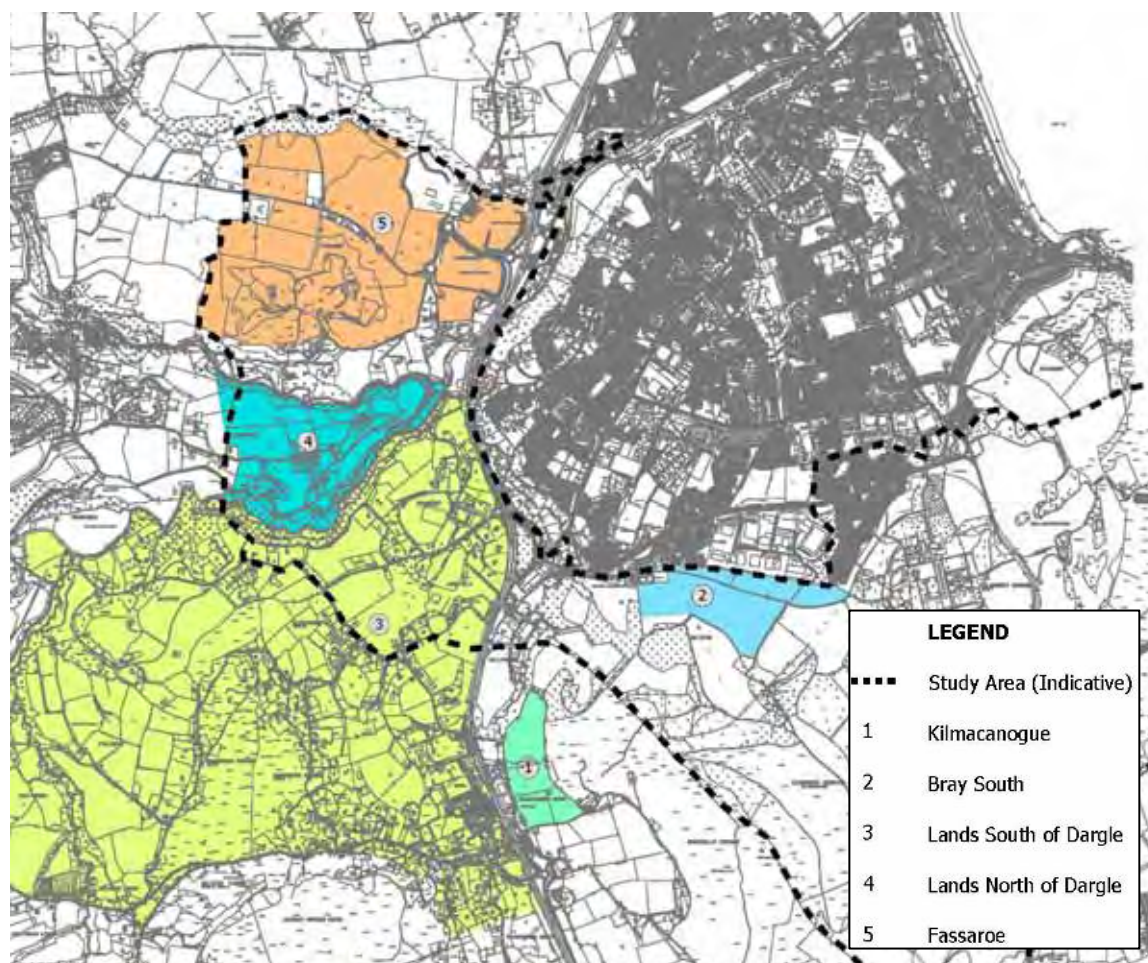


Figure 4.1 Alternative Locations for providing for the Local Area Plan



As lands at Fassaroe and Kilruddery were determined to be the locations at which development is to be provided for by the LAP, alternatives were explored for the land use zoning of each of these areas as follows.

### 4.3 Alternatives for Fassaroe



Figure 4.2 Fassaroe Land Use Alternative A

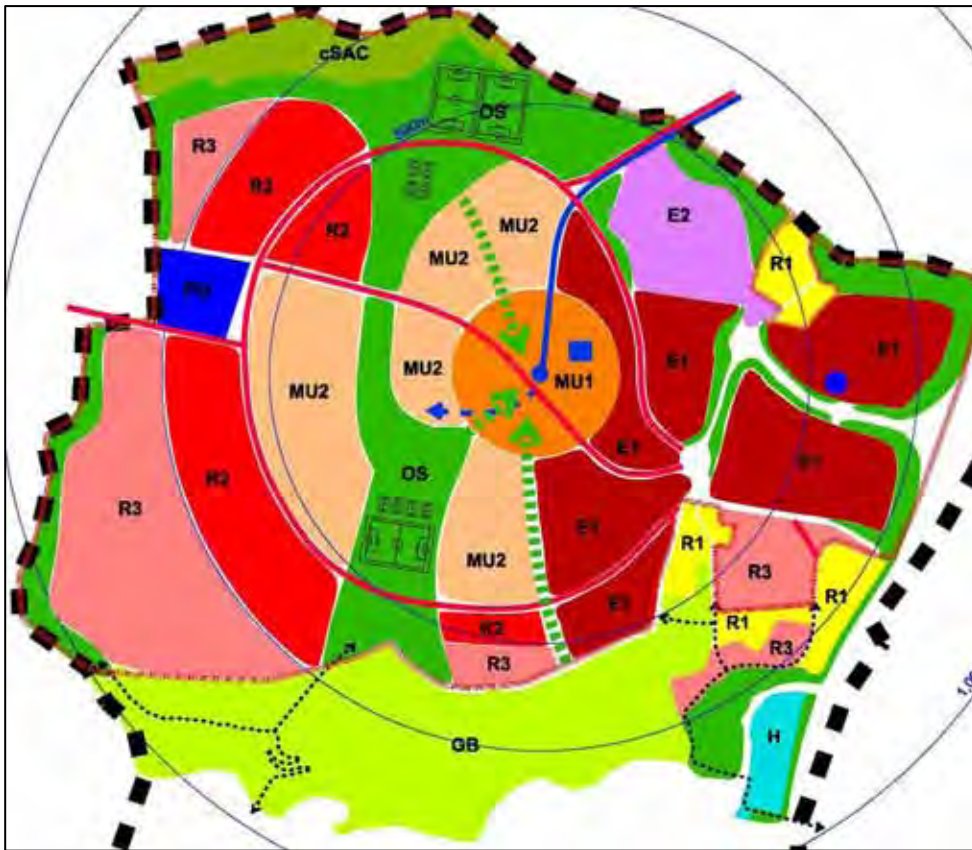


Figure 4.3 Fassaroe Land Use Alternative B

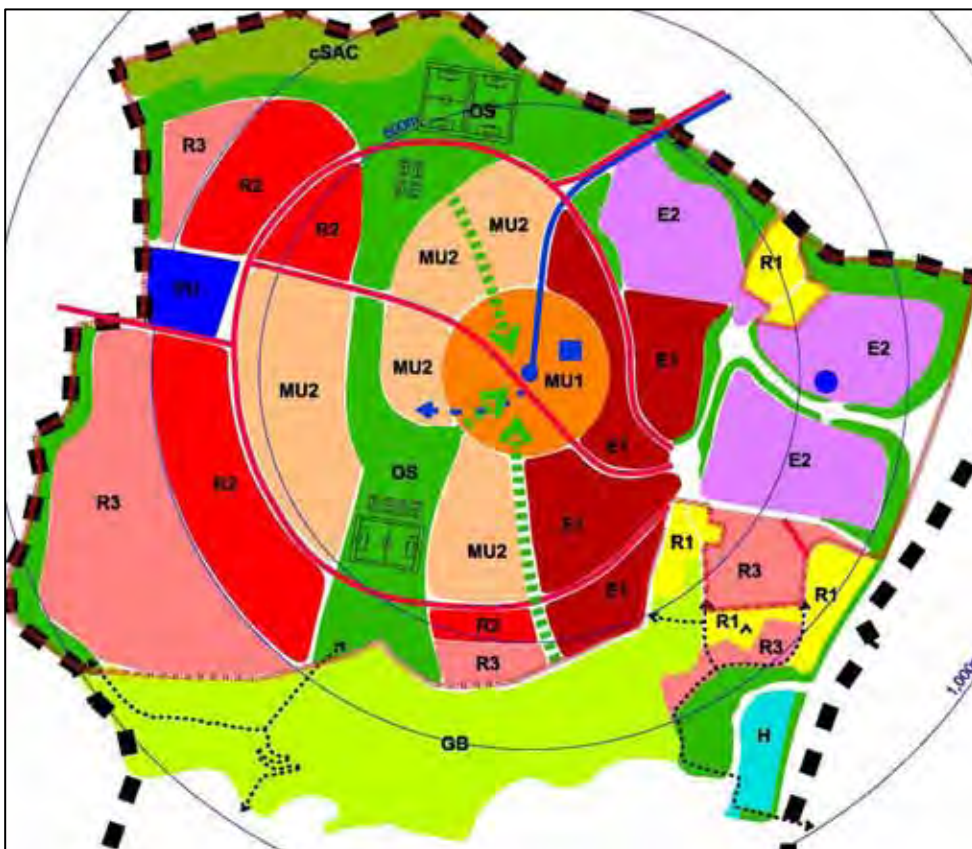


Figure 4.4 Fassaroe Land Use Alternative C



## 4.4 Alternatives for Kilruddery

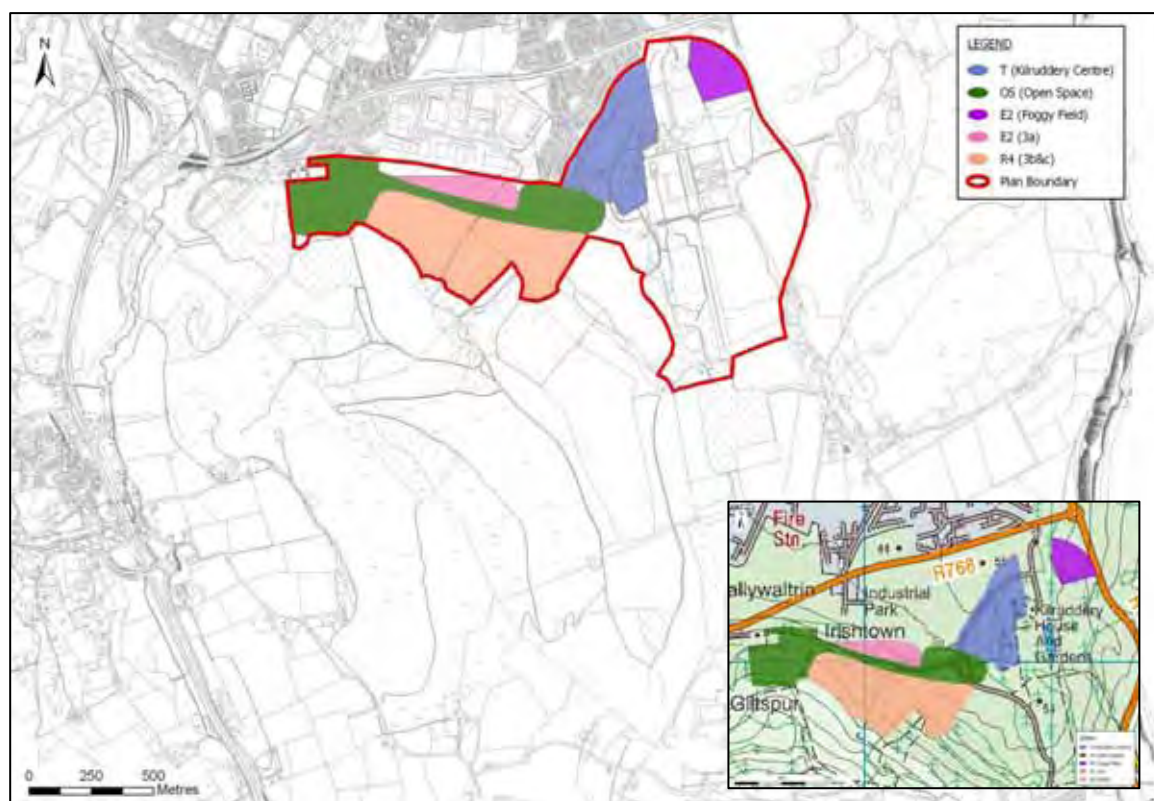


Figure 4.5 Kilruddery Land Use Alternative 1

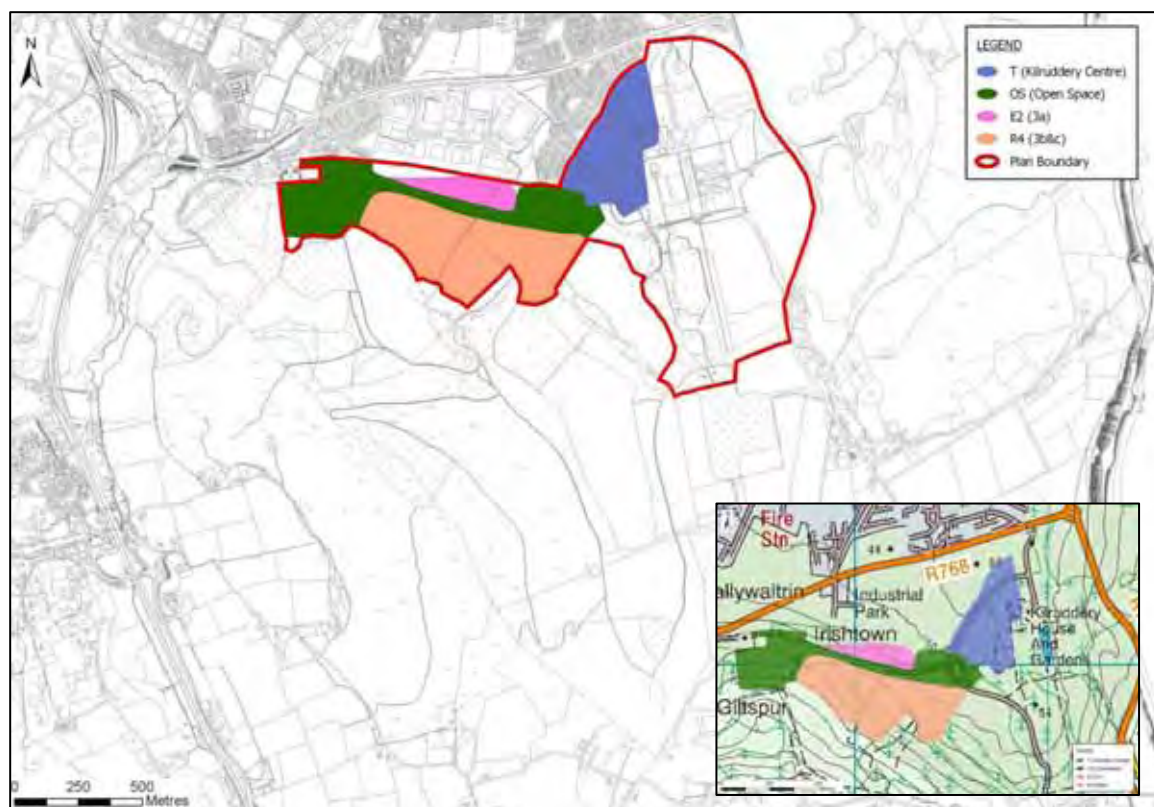


Figure 4.6 Kilruddery Land Use Alternative 2

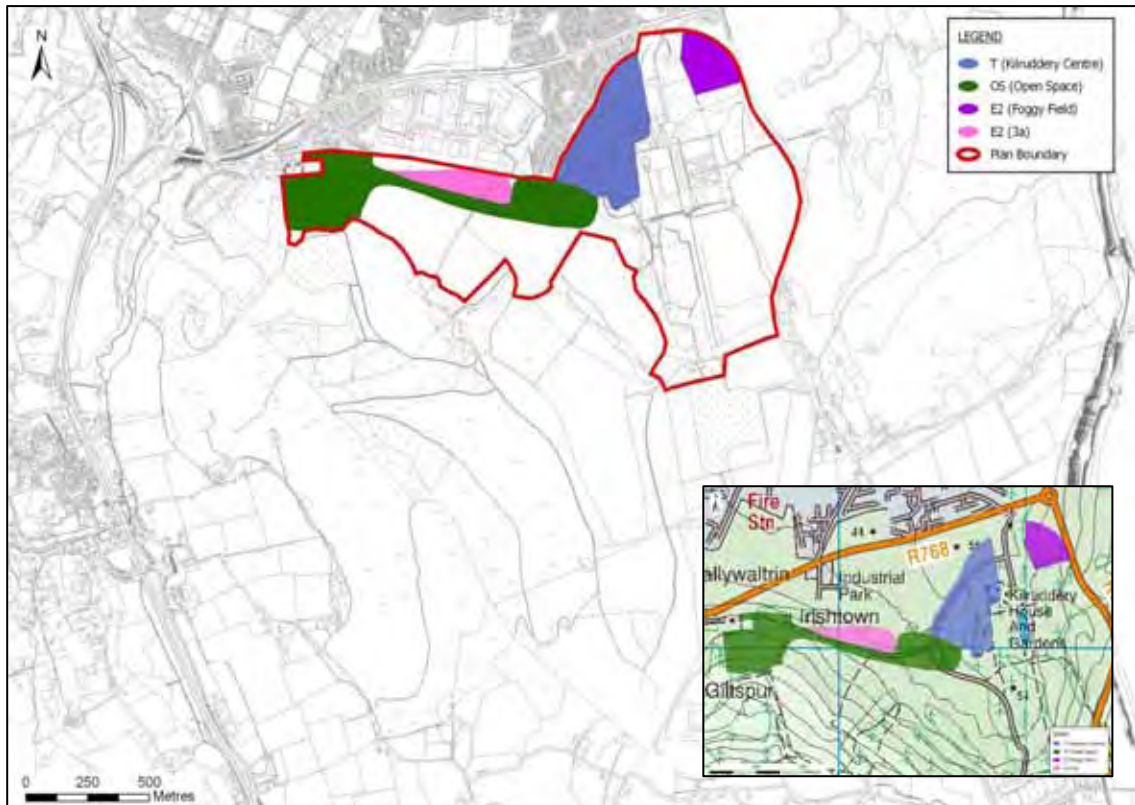


Figure 4.7 Kilruddery Land Use Alternative 3

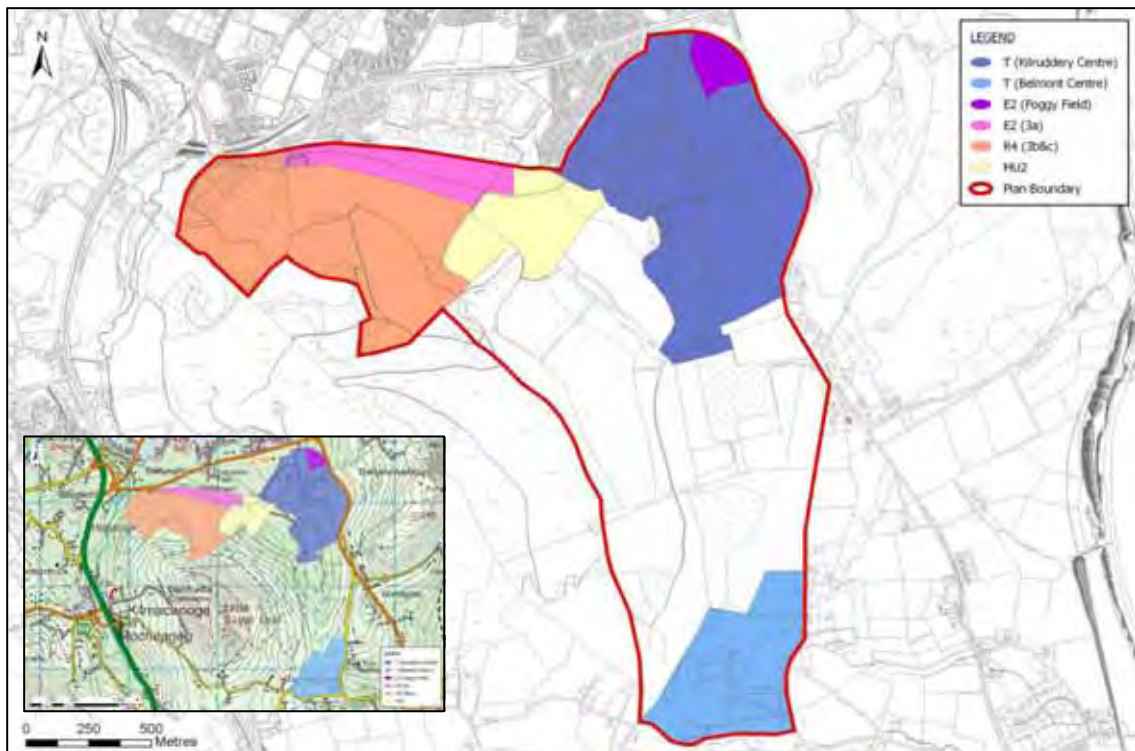


Figure 4.8 Kilruddery Land Use Alternative 4

## Section 5 Evaluation of Alternative Plan Scenarios

### 5.1 Alternative Locations which could be subject to an LAP

#### 5.1.1 Determination of Alternative Locations for the Local Area Plan

- All alternatives provide for greenfield development as it is not possible for brownfield development to cater for the population provided for by the Plan. Greenfield development would be likely to present a number of conflicts with environmental components.
- Impacts upon ecological connectivity could be mitigated by offsetting any losses in ecological corridors.
- All alternatives would be required to be accompanied by mitigation measures to avoid significantly increasing the risk of flooding.
- Waste water from the Bray area currently undergoes primary treatment before being pumped into the sea through a long sea outfall. Waste water arising from the Bray area will undergo secondary treatment at Shanganagh beginning from 2011-2012. Should new development be permitted before this upgrade is operational with sufficient capacity then it is likely that waste water would not be treated in compliance with the Urban Waste Water Treatment Directive (Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment) (amended by Directive 98/15/EEC). Increased volumes of primary treated waste water discharges into the sea which would arise from increases in population would be likely to reduce the ability of the coastal water body off the coast of Bray to meet the *high status* objective of the Water Framework Directive. Such increases in the volume of discharges could also impact upon the ability of bathing water at Bray to comply with EU Mandatory Values (Acceptable Quality) which could affect human health.
- The groundwater bodies underlying each of the Alternatives are classified as being either *at significant risk* of meeting the objectives of the Water Framework Directive or *probably at significant risk* of meeting the objectives of the Water Framework Directive. Diffuse sources of pollution are attributed to this classification. Groundwater beneath each of the Alternatives is listed on the Water Framework Directive Register of Protected Areas for Drinking Water (Ground Water). Changes in the characteristics of run-off and groundwater recharge associated with the replacement of semi natural surfaces with artificial surfaces could - if unmitigated - impact upon the ability of Wicklow County Council to achieve its requirements under the Water Framework Directive.

The area which would be developed under Alternative 1 - *Lands at Kilmacanogue East* - is located to east and outside of Kilmacanogue which is designated a Small Growth Town II settlement under higher level land use strategic actions. In accordance with the Wicklow County Development Plan, residential development here is required to be predominantly restricted to local need. Impacts upon protected Prospects and Views as a result of implementation of this alternative would be unavoidable.

With regard to Alternative 2 - *Lands to the South of Bray (including those at Kilruddery)* - only a limited extent of low density development would be considered viable on lands within the Kilruddery Demesne. Such development would have to be at a sufficient distance from the Estate House - in order to avoid impacts on the curtilage of the House - and in close proximity to existing employment and residential development. If accompanied by mitigation measures, tourism uses associated with the heritage of the Kilruddery Estate on Demesne lands located to the edge of the Demesne could also be viable.

The land south of the Dargle Glen and between the Dargle and Cookstown River included in Alternative 3 - *Lands to the North and South of the River Dargle* - is not recommended for future development owing



to the sensitivity of the landscape, inappropriate access to the N11 across the Dargle Bridge, inadequate access along small country lanes, and the lack of quality public transport infrastructure. The majority of the lands to the north of the Dargle Glen are not identified for substantial development owing to the sensitivity and high amenity of the landscape indicated by environmental designations, the rural character and remoteness from the built-up area and the lack of existing or proposed efficient public transport.

With regard to Alternative 4, lands at Fassaroe have been zoned for development purposes in both the 1999 and 2004 County Development Plans, in recognition that the lands are suitable to accommodate the necessary expansion of Bray Town; and, are located within the Metropolitan Area as designated by the RPGs. Moreover, the direct access to the N11 and the M11 motorway, the planned extension of the LUAS to Bray and Fassaroe, and its locational advantage within the Greater Dublin Area, afford the area a strategic advantage by ensuring the sustainability of a greater residential and working population.

### 5.1.2 Conclusion

In conclusion, both Alternative 4 - Lands at Fassaroe - and part of Alternative 2 - Lands to the South of Bray (specifically lands at Kilruddery) were selected, having regard to a broader consideration of available areas around the perimeter of Bray that was carried by Tiros Resources Ltd.

The selected locations were identified as the optimum balance between likely environmental effects, the potential to restore former landfill sites and the potential to connect with high-capacity public transportation routes.

**Lands at Fassaroe and Kilruddery were determined to be the locations at which development is to be provided for by the LAP.**

## 5.2 Alternatives for Fassaroe

### 5.2.1 Overview of Evaluation

- **Biodiversity and Flora and Fauna**

Although there is a potential conflict between the implementation of a Plan for Fassaroe and the protection of the Ballyman Glen cSAC and pNHA ecologically designated site, the application of buffers to development by Alternatives A, B and C together with the integration of measures detailed in the Environmental Report would mitigate this conflict. Adverse effects upon ecological connectivity would be likely as a result of the greenfield development provided by the alternatives however each of the alternatives would mitigate against these effects by integrating greenbelt zoning and a number of linear open spaces and parks into the Plan. Development at Fassaroe could have a potential conflicting interaction with the protection of human health due to presence of lands which were used as landfills in the past and which have not been fully defined or remediated.

- **Greenhouse Gas Emissions and Car Dependency**

Alternatives A, B and C would, by providing for significant increases in the residential and employment populations of Fassaroe close to the proposed high quality public transport link of the Luas and by accompanying new development with other improvements in public transport infrastructure and services before developments take place, would help to reduce the likely dependency on private transport which would otherwise occur as a result of alternative, uncoordinated greenfield development in the wider northern County Wicklow area. The new population provided by the alternatives would contribute to a critical mass which would make the provision of Luas public transport link and other public transport services more economically viable than would be the case if population increased in ad-hoc areas across the wider northern Wicklow area. As a result - and providing that development is preceded by public transport infrastructure and services - the extent of both future car generated traffic and future transport



related greenhouse gas emissions which would be caused by accommodating this population in the wider northern County Wicklow area would be significantly reduced.

It is likely that implementation of each Alternative would have effects upon traffic levels, air quality and noise levels within and emanating from the Plan area however it is noted that adherence to measures integrated into the Plan and measures for the construction and management of projects arising out of development management and EIA processes would mitigate such effects. Having regard to the population of residents and employees which would result from each of the scenarios, Alternative B would be likely to generate most traffic, followed by Alternative C with Alternative A likely to generate the least amount of traffic.

- **Architectural and Archaeological Heritage**

There are 5 entries to the Record of Monuments and Places (RMP) within the Fassaroe lands. Due to the presence of Fassaroe Castle (RMP Ref. WI 007-027) it is likely that there is subterranean archaeological heritage beneath the subject lands which has not been identified to date. In order to prevent unnecessary impacts on archaeological heritage it will be necessary to list and map the extent of all monuments in the area and carry out pre-development archaeological testing surveying, monitoring and recording.

By providing for development in the vicinity of Protected Structures and other structures of architectural interest within the Fassaroe lands, potential conflicts could arise between new development and the protection of these structures, including their curtilage (the parcel of ground immediately associated with the structure or in use for the purposes of the structure).

- **Landscape**

The area including Fassaroe is classified under the Wicklow County Development Plan 2004-2010 County Landscape Characterisation as being within an *Area of Outstanding Natural Beauty*. This classification indicates that the lands are of a high sensitivity and value on a County level however it is noted that the validity of the designation in the Fassaroe area has largely been eroded in the past by the existing sand and gravel pit as well as more recent development close to the N11. Notwithstanding this, implementation of Alternatives A, B or C would be likely to significantly change the landscape which is found at Fassaroe by replacing greenfield areas with development thereby eroding further the *Area of Outstanding Natural Beauty* designation.

Lands in Fassaroe which rise up to the south towards the central MU2 (Mixed Use 2 - Predominantly Residential) zones are visually sensitive. This has been addressed by the designation of open space for much of the area visible from below. Development on these lands zoned for mixed use will be likely to be visible from below, however, one of the measures recommended within the Environmental Report would mitigate against effects arising from this; *development proposals shall be accompanied by a visual impact assessment demonstrating that landscape impacts have been anticipated and avoided to a level consistent with the sensitivity of the landscape.*

## 5.2.2 Summary

The implementation of each of the land use alternatives for the part of the LAP which is concerned with Fassaroe would be likely to have similar environmental effects. There would be potential conflicts and associated potential adverse effects with most of the environmental components.

The adverse effects would be likely to be avoided or reduced by complying with various aspects of the land use zoning objectives of the LAP and mitigation measures including those which are recommended to be integrated into the Plan (provided in Section 9 of the Environmental Report).

### 5.2.3 The Fassaroe Component of the LAP

The Fassaroe component of the LAP that emerged from the Plan preparation process has a close correlation to Alternative A. The evaluation summarised above for Alternative A is generally applicable for the Fassaroe component of the LAP.

The Alternatives that were examined were produced and evaluated at an earlier - more embryonic - stage to facilitate evaluation and selection of a plan. Consequently there are a number of differences between Alternative A and the Fassaroe component of the LAP. These differences are indicated on Figure 5.1 and Figure 5.2. The differences are identified and discussed below.

#### Difference 1

The residential area to the south of the mixed use area which surrounds the core is of a lower density in the LAP. This difference does not change the assessment summarised above for Alternative A.

#### Difference 2

The proposed residential area in the north west of the Fassaroe area is of a higher density in the LAP than it is in Alternative A. This difference does not change the assessment summarised above for Alternative A.

#### Difference 3

The LAP provides for an additional area of *New Residential Development* in comparison with Alternative A. This difference would be likely to have significant adverse effects on non-designated biodiversity and flora and fauna and ecological connectivity which could be mitigated however residual effects would remain as a result of the greenfield development.

#### Difference 4

There is an additional area of zoning provided for an area of land to the east of the M11 motorway. The LAP provides for *New Residential* and *Existing Commercial* zoning objectives in this area.

The area contains a number of buildings as well as areas of grass and tree cover. There are no ecologically designations sites within this area. The Dargle forms the eastern boundary of this area and the western boundary is confined by the County Brook Stream (information on the status of the Dargle is provided in previous sections however there is no Water Framework Directive information available for the County Brook Stream). According to Wicklow County Council's Landscape Characterisation (2004), this section lies within an Area of Outstanding Natural Beauty. To the east of the area there is one monument listed on the Record of Monuments and Places. This area has been identified in the Bray Flood Emergency Plan (2008) as lying within an *Outline Area likely to be affected by flood* though properties in the area are not classed as being of high or medium risk.

Although the lands are already developed, the potential provision of new or replacement development of these lands would be likely to conflict with minimising increases in flood risk, if unmitigated. Measures which have been integrated into the Plan would be likely to mitigate effects arising from this conflict.

#### Difference 5

The Fassaroe component of the LAP will provide for a residential population of approximately 6,659 persons, compared with the population of 7,200 persons provided for by Alternative Scenario A. Consequently the extent of loadings upon infrastructure and services as a result of implementing the LAP would be likely to be less than those resulting from implementation of Alternative A. This difference however does not change the assessment summarised above for Alternative A.

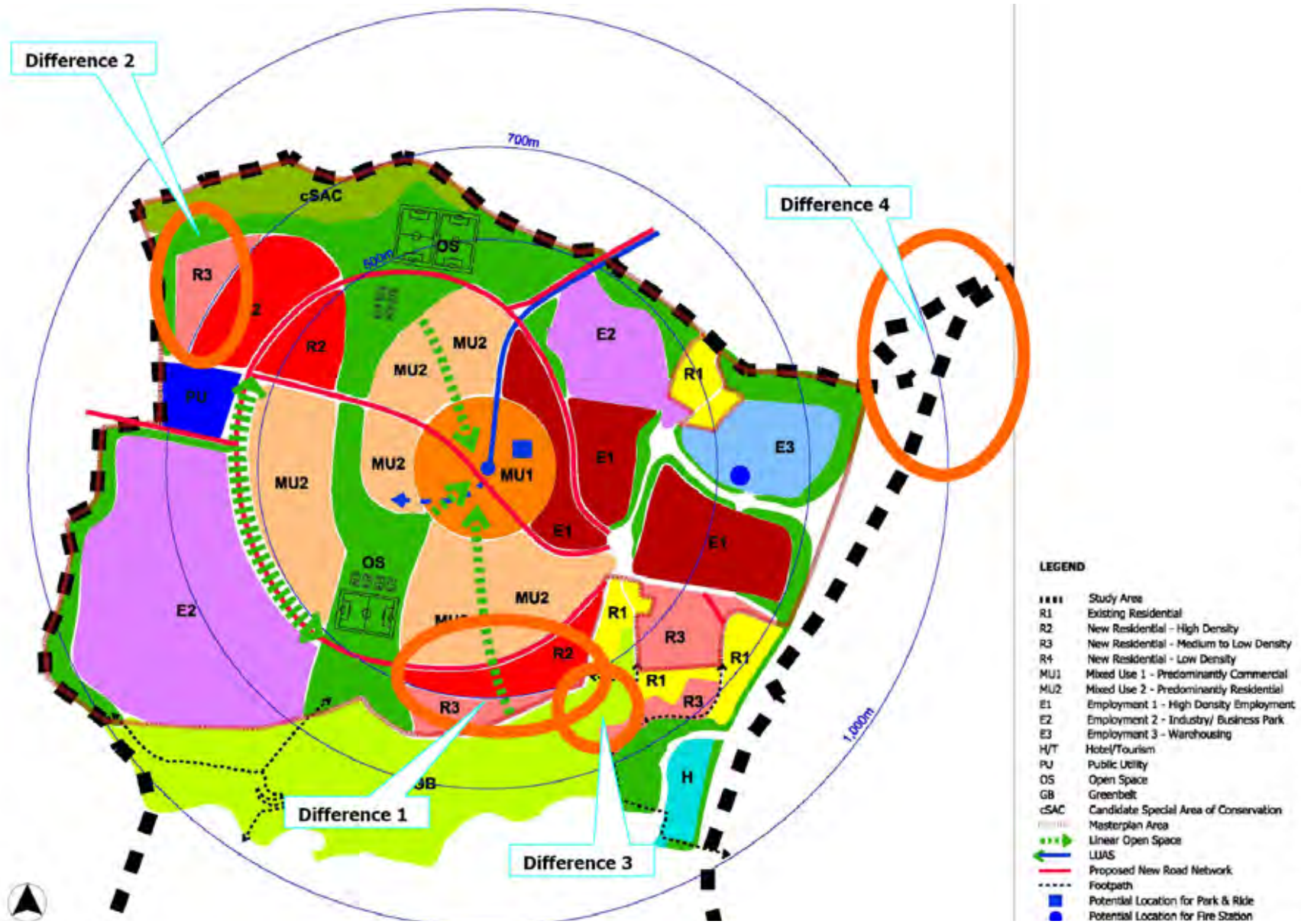


Figure 5.1 Fassaroe Land Use Alternative A (Differences between this Alternative and the LAP are identified)



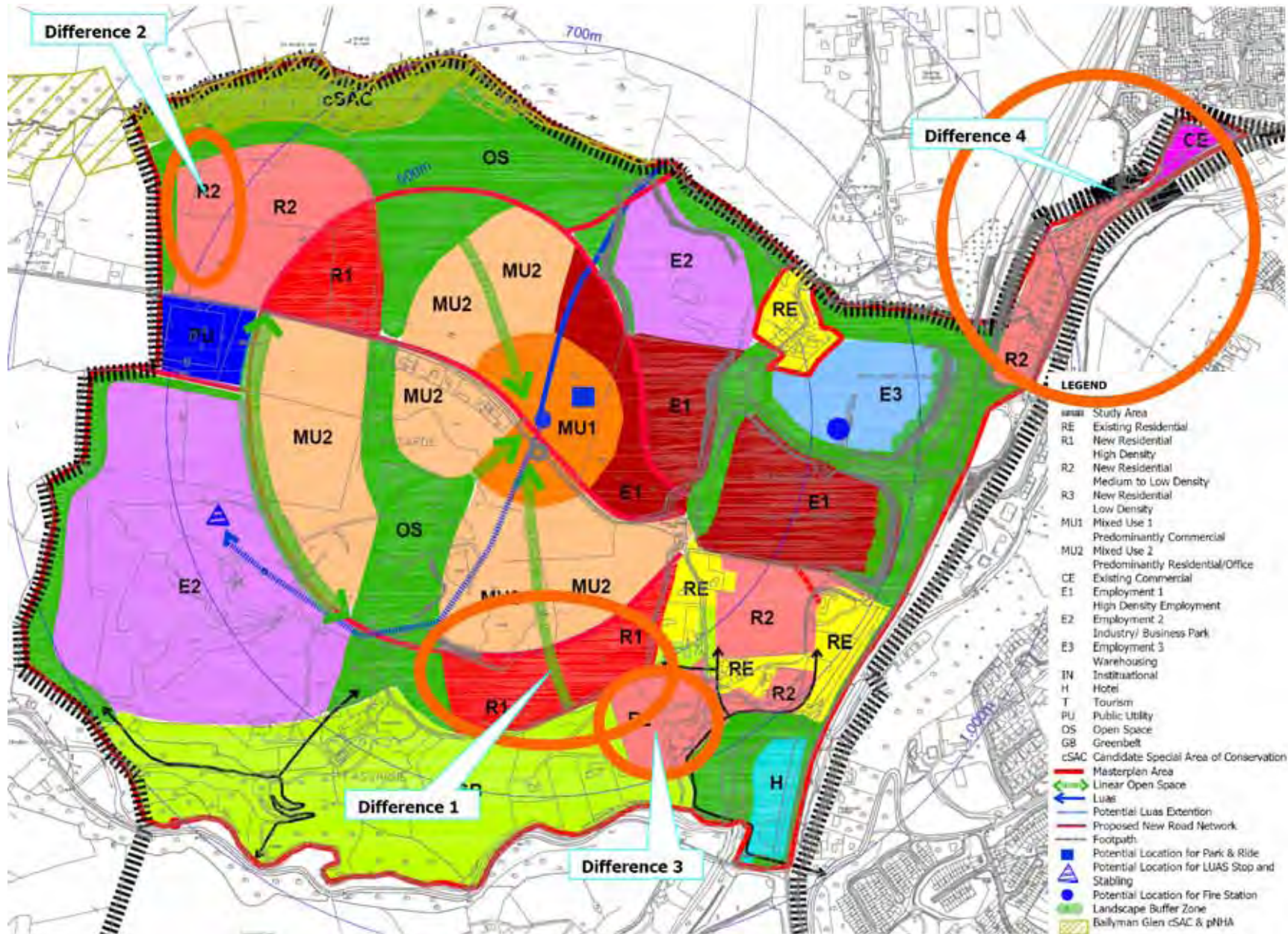


Figure 5.2 Fassaroe Land Use Zoning Map from the LAP (differences between the LAP and Alternative A are identified)

## 5.3 Alternatives for Kilruddery

### 5.3.1 Overview of Evaluation

- **Brownfield vs. Greenfield Development**

All four alternatives provide for growth by way of greenfield development. Alternative 3 provides a balance between brownfield/infill development while Alternatives 1, 2 and 4 provide for greater extents of greenfield development. Alternatives 1, 3 and 4 provide for E2 Employment uses at the Foggy Field to the immediate north east of the Kilruddery Estate. This provision could encourage ribbon development south of the roundabout in the direction of Greystones.

- **Greenhouse Gas Emissions and Car Dependency**

The interaction between all 4 Alternatives and the reduction of greenhouse gas emissions and the minimisation of car dependency is uncertain. It would be important that a sufficient public transport service is provided to all lands which are zoned for residential and employment development by the LAP.

- **Architectural and Archaeological Heritage**

There are 6 entries to the Record of Monuments and Places (RMP) within the Kilruddery lands including a *possible burial ground, Kilruddery House* and *2 Fulacht Fias*. It is possible that there is subterranean archaeological heritage beneath the subject lands which has not been identified to date. In order to prevent unnecessary impacts on archaeological heritage it will be necessary to carry out pre-development archaeological testing surveying, monitoring and recording.

By providing for development in the vicinity of the Protected Structure of Kilruddery House potential conflicts could arise between new development and the protection of this structure, including its curtilage (the parcel of ground immediately associated with the structure or in use for the purposes of the structure). The cultural heritage and historic importance of Kilruddery Estate could be cumulatively diminished by the continual selling of land facilitated by rezoning. Consequently, the form of any proposed development within Kilruddery Demesne should be informed by the protected status of the Kilruddery House and its curtilage and the consequent need to uphold the heritage value of the estate.

- **Landscape**

The eastern lands at Kilruddery are classified under the Wicklow County Development Plan 2004-2010 County Landscape Characterisation as being within a *Corridor Area* while the western lands are classified as being within an *Area of Outstanding Natural Beauty*. The *Area of Outstanding Natural Beauty* classification indicates that the western lands are of a high sensitivity and value on a County level. In addition, the eastern lands in Kilruddery are adjacent to an area under consideration for a Special Amenity Area Order.

All alternatives propose E2 Employment uses to the south of the existing business park. These lands are particularly visually prominent and sensitive due to the elevated and sloping character of the lands which are located in the vicinity of the Little Sugar Loaf. This land is highly visible from the Southern Cross Road and from other parts of Bray. Development of these lands should have regard to existing topography and minimise visual encroachment on the lower slopes of the Great Sugar Loaf.

Alternatives 1, 2 and 4 propose R4 low density residential development on the slopes of the Little Sugar Loaf. This development would be likely to significantly and adversely affect the landscape and would not be likely to be fully mitigated.

### 5.3.2 Summary

Implementation of Alternative 3 for Kilruddery would be likely to result in the least amount and least severity of adverse effects on the environment while implementation of Alternative 4 for Kilruddery would be likely to result in the most amount and most severity of effects on the environment.

The potential conflicts and associated adverse effects of Alternative 3 would be likely to be avoided or reduced by complying with various aspects of the land use zoning objectives of the LAP and mitigation measures including those which are recommended to be integrated into the Plan (provided in Section 9 of the Environmental Report).

### 5.3.3 The Kilruddery Component of the LAP

The Kilruddery component of the LAP that emerged from the Plan preparation process has a close correlation to Alternative 3. The evaluation summarised above for Alternative 3 is generally applicable for the Kilruddery component of the LAP.

The Alternatives that were examined were produced and evaluated at an earlier - more embryonic - stage to facilitate evaluation and selection of a plan. Consequently there are a number of differences between Alternative 3 and the Kilruddery component of the LAP. These differences are indicated on Figure 5.1 and Figure 5.2. The differences are identified and discussed below.

#### Difference 1

Lands zoned by Alternative 3 to the immediate south of the existing business park as *Employment (E2)* are zoned R3 *New Residential Low Density* by the LAP. These lands together with the adjacent lands zoned Open Space (OS) are not configured in the same way in the LAP as they are in Alternative 3 - the lands zoned *New Residential Low Density* in the LAP cover a greater area than those zoned Employment in Alternative 3.

Although this difference does not change the assessment provided for Alternative A above, it is noted that the LAP provides that *the elevation of the residential development shall be confined to a contour of no higher than 65 metres*. This provision will positively impact upon the protection of the landscape.

#### Difference 2

The LAP provides for a buffer between the Kilruddery Tourism zone and the Swanbrook and Hollybrook housing developments that is not provided for by Alternative 3. This buffer will positively impact upon the protection of the context of Kilruddery Demesne and the protection of ecological connectivity.

#### Difference 3

The E2 Employment - Industry/Business Park zoning of the Foggy Field area in Alternative 3 is zoned T - Tourism in the LAP. This difference does not change the assessment summarised above for Alternative 3.

#### Difference 4

The majority of lands within the Plan boundary of Alternative 3 are not attributed a zoning. The LAP attributes a Green Belt zoning objective to these lands. As this Green Belt zoning will significantly restrict new built development, this difference would be likely to have significantly beneficial impacts upon the protection of the landscape, architectural heritage, archaeological heritage, ecological connectivity and non-designated flora and fauna.



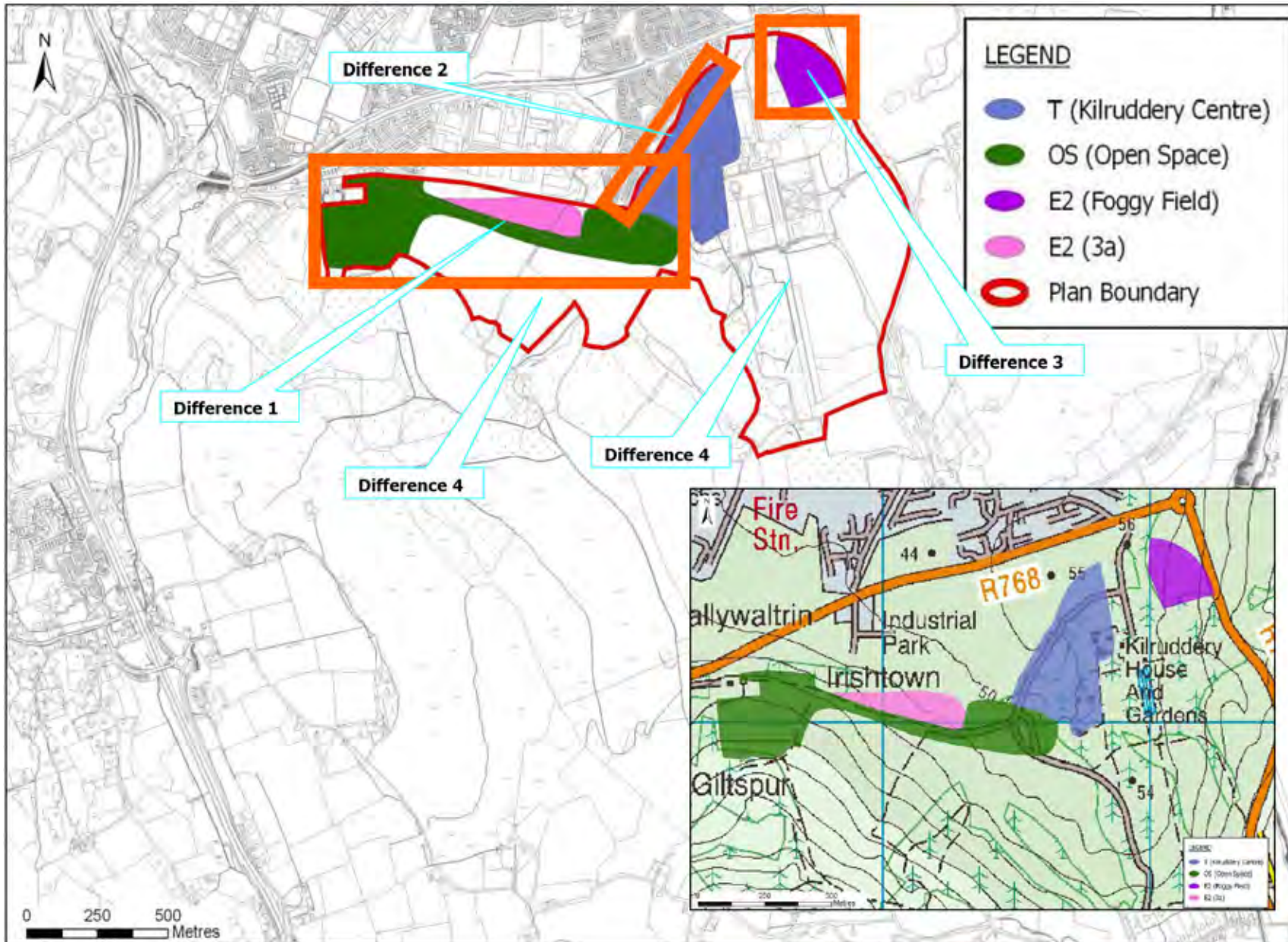


Figure 5.3 Kilruddery Land Use Alternative 3 (Differences between this Alternative and the LAP are identified)

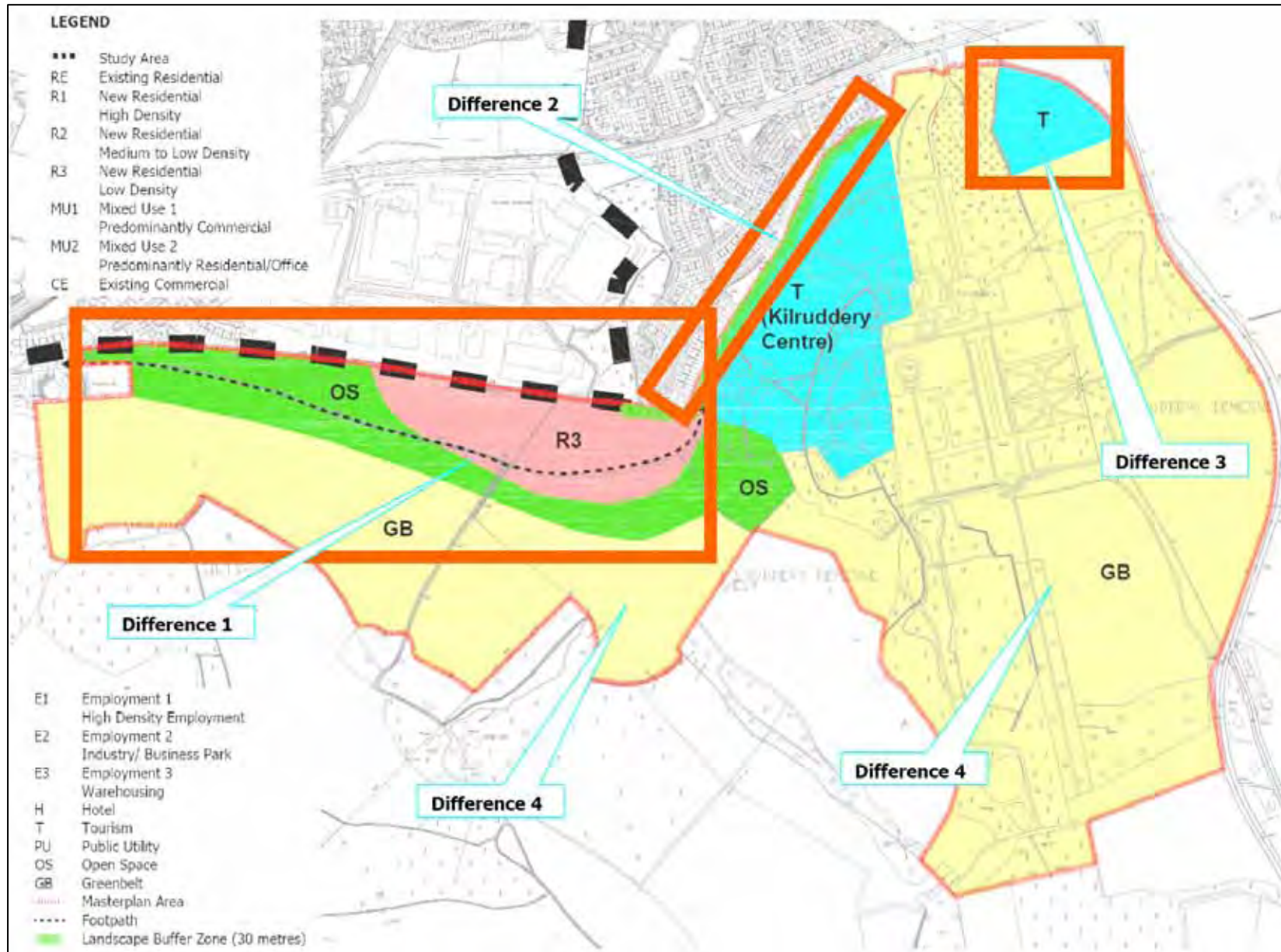


Figure 5.4 Kilruddery Land Use Zoning Map from the LAP (differences between the LAP and Alternative 3 are identified)



## Section 6 Mitigation and Monitoring Measures

### 6.1 Mitigation

#### 6.1.1 Introduction

Mitigation measures are measures envisaged to prevent, reduce and, as fully as possible, offset any significant adverse impacts on the environment of implementing the Local Area Plan (LAP).

Mitigation involves ameliorating significant negative effects. Where there are significant negative effects, consideration is given in the first instance to preventing such effects or, where this is not possible for stated reasons, to lessening or offsetting those effects. Mitigation measures can be roughly divided into those that: *avoid* effects; *reduce* the magnitude or extent, probability and/or severity of effects; *repair* effects after they have occurred, and; *compensate* for effects, balancing out negative impacts with other positive ones.

The mitigation measures may be incorporated into the briefing of design teams as well as the subsequent design, specification and development management of the landuses to be accommodated within the LAP area.

### 6.2 Mitigation Measure Topics

Mitigation measures are recommended for the following topics:

- Biodiversity and Flora and Fauna
- Water Protection
- Waste Water
- Drinking Water
- Flooding
- Old Landfills
- Cultural Heritage
- Air and Climatic Factors
- Transportation
- Waste Management
- Energy/ Energy Conservation
- Amendments to Wording of Policies Required - Landscape

### 6.3 Monitoring

The SEA Directive requires that the significant environmental effects of the implementation of plans and programmes are monitored. puts forward proposals for monitoring the likely significant environmental effects of implementing the LAP. Monitoring enables, at an early stage, the identification of unforeseen adverse effects and the undertaking of appropriate remedial action. In addition to this, monitoring can also play an important role in assessing whether the LAP is achieving its environmental objectives and targets - measures which the LAP can help work towards - whether these need to be re-examined and whether the proposed mitigation measures are being implemented.

The Environmental Report identifies indicators - which allow quantitative measures of trends and progress in the environment over time. Measurements for indicators should come from existing monitoring sources and no new monitoring should be required to take place. A preliminary monitoring evaluation report on the effects of implementing the LAP will be prepared within two years of the making of the Plan. Wicklow County Council are responsible for collating existing relevant monitored data, the preparation of a monitoring report, the publication of this report and, if necessary, the carrying out of corrective action.