

Section 5 Context for a Local Area Plan for Bray Environs

5.1 The Local Area Plan

5.1.1 Introduction

The Draft Bray Environs Local Area Plan (LAP) has been prepared in response to the development pressures facing Bray Town and Environs and the need to provide a positive framework for the future development of the area that is consistent with the policies and objectives contained in the Wicklow County Development Plan 2004 - 2010 and other higher forward planning strategic actions.

5.1.2 Legislative Context

Part II, Chapter II, Section 19 of the Planning and Development Act 2000, as amended, provides that a LAP may be prepared in respect of any area which a planning authority considers suitable and, in particular, for areas which require economic, physical and social renewal and for areas likely to be the subject of large scale development within the lifetime of the Plan. The Planning and Development (Amendment) Act 2002, (Section 8) indicates that a LAP may include specific objectives pertaining to the zoning of the land. These objectives must be consistent with the County Development Plan.

The Draft Bray Environs LAP has been prepared in accordance with the requirements of the Planning and Development Act, 2000, as amended. The LAP shall be valid for a period of six years from the date of its adoption by the County Council, unless amended or revoked within that period. It is intended that the long-term vision articulated by the plan will give a degree of continuity and certainty to the future development of the Plan area.

5.1.3 Structure of the LAP

The LAP consists of a written statement and maps which give a graphic representation of the proposals of the Plan, indicating land use and other development standards together with various local objectives. It is divided into two

Parts, Part A and Part B. Part A is divided into 11 sections as follows:

- Section 1 states the purpose of the LAP;
- Section 2 gives details on the LAP Status and Process;
- Section 3 describes the public consultation process which has been carried out to date;
- Section 4 identifies that development management will be carried out in line with the provisions of the County Development Plan;
- Section 5 provides details on Strategic Environmental Assessment and Appropriate Assessment Screening;
- Section 6 describes the strategic forward planning hierarchy in which the Draft LAP is situated;
- Section 7 provides the rational for development in Bray Environs; and,
- Section 8 identifies population trends and population projections;
- Section 9 provides details with regard to employment in Bray including employment projections for the area;
- Section 10 details the quantities of residential and employment/industrial zoned land provided for by the Draft;
- Section 11 details how the Plan is determined to be implemented by Wicklow County Council.

Part B is divided into 15 sections as follows:

- Section 1 details the purpose and status of the LAP;
- Section 2 details the planning context in which the LAP is situated;

- Section 3 details the settlement strategy including the rationale for development and the settlement form for development;
- Section 4 provides policies and objectives on residential development;
- Section 5 provides policies and objectives employment and enterprise;
- Section 6 provides policies and objectives on retail;
- Section 7 provides policies and objectives on social and community infrastructure
- Section 8 provides policies and objectives on traffic and transportation
- Section 9 provides policies and objectives on public services infrastructure
- Section 10 provides policies and objectives on built and cultural heritage
- Section 11 provides policies and objectives on landscape and natural and visual amenity;
- Section 12 provides policies and objectives urban design;
- Section 13 provides land use zoning objectives;
- Section 14 provides details on phasing and implementation; and,
- Section 15 summarises the SEA process.

5.1.4 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.

5.1.5 Alternatives

Sections 6 and 7 of this report identify, describe and evaluate different alternatives of how to achieve what the LAP seeks to do as outlined under Section 5.1.4 above, taking into account the relevant land use strategic actions (see Section 5.2 below), the SEOs identified in Section 4 as well as the geographical scope of the LAP.

The evaluation of the alternatives results in the identification of potential impacts and leads to the emergence of a preferred alternative for the Draft Plan.

5.2 Interactions with Relevant Planning Policy

5.2.1 Introduction

The Draft Plan is nested in a hierarchy of land use forward planning strategic actions with which it must comply and be consistent.

5.2.2 National Development Plan 2007-2013

The National Development Plan 2007-2013 (NDP) envisages a total investment of €184 billion over 7 years to 'secure the further transformation of our country socially and economically within an environmentally sustainable framework'.

The need for a National Spatial Strategy was formally recognised by the Government with the publication of the 2000-2006 NDP.

5.2.3 National Spatial Strategy 2000-2020

The National Spatial Strategy 2000-2020 (NSS) is a 20 year planning framework designed to achieve a better balance of social, economic, physical development and population growth between the regions. Its objective is to improve the effectiveness of public investment in infrastructure and other relevant services around the country.

The NSS recognises the pivotal role of the Greater Dublin Area to the overall economic wellbeing of Ireland. The overall approach of the NSS is to seek to accommodate these levels of housing need within existing settlement structures rather than seeking to establish new cities or towns.

Bray is located within the Metropolitan Area of the Greater Dublin Area (see Section 5.2.5). It is a key policy of the NSS to physically consolidate the Dublin Metropolitan Area, supported by effective land use policies and an effective public transport system.

The NSS states that sustainable provision of housing in urban areas involves, among other things:

- Concentration of development in locations where it is possible to integrate employment, community services, retailing and public transport;
- Mixed-use and well-designed higher density development, particularly near town centres and public transport nodes; and,
- The efficient use of land by consolidating existing settlements.

5.2.4 Sustainable Development: A Strategy for Ireland 1997

Sustainable Development: A Strategy for Ireland 1997 provides a framework for the achievement of sustainable development at local level. It

identifies 4 key ways Development Plans can contribute to the achievement of sustainability:

- Encourage efficient use of energy, transport and natural resources through careful selection of development locations;
- Promote the most effective use of already developed areas;
- Secure protection and enhancement of the natural environment; and,
- Accommodate new development needs in an environmentally sustainable way.

5.2.5 Regional Planning Guidelines for the Greater Dublin Area 2004-2016

Ireland is divided into eight regional forward planning regions, Dublin, Midlands, Mid East, Mid West, South East, South West, West and Border, each with its own regional planning authority composed of Elected Members selected by the constituent local government councils. Regional planning authorities are required, under the Planning and Development (Regional Planning Guidelines) Regulations 2003 (SI No. 175 of 2003), to draw up regional planning guidelines (RPGs), long term strategic planning frameworks, for their relevant region. RPGs must have regard to the National Spatial Strategy.

The Bray Environs area is located within the Greater Dublin Regional Planning Authority area for which the RPGs for the Greater Dublin Area 2004-2016 have been prepared. The RPGs provide a long term planning framework for the development of the Greater Dublin Area in the twelve year period up to 2016 within the vision of the NSS. The principal objective of the RPGs is to put in place a broad planning framework for the region and to provide an overall long term strategy for the making of Development and Local Area Plans for each local authority in the region.

The settlement strategy of the RPGs divides the Region into two areas: the *Metropolitan Area* and the *Hinterland Area*. The strategy for the *Metropolitan Area* is to consolidate the urban centres, and the provision and facilitation of an integrated public transport system. The strategy

for the *Hinterland Area* focuses on the development of selected large and moderate growth centres to be self-sustaining in terms of employment provision, and housing demands.

Bray is identified as a *Metropolitan Consolidation Town* within the *Metropolitan Area*, and together with Greystones/Delgany forms a *Primary Development Cluster*. Other *Metropolitan Consolidation Towns* include the existing significant urban centres of Swords, Blanchardstown, Lucan, Clondalkin, Tallaght, Dun Laoghaire and Dundrum.

The RPGs provide that Bray should be developed to a relatively large scale as part of the strategy for the consolidation of the *Metropolitan Area*. The Guidelines set out an indicative population range of 40,000 to 100,000 for *Metropolitan Consolidation Towns* and identify their economic function as, inter alia, being a main attractor for major investment and having strong international marketing.

The strategy in the RPGs places fundamental importance on the development of a much-enhanced public transport system. In the *Metropolitan Area*, the intention is to create and sustain conditions suitable for major enhancement of existing public transport. It is therefore, critically important that, in the *Metropolitan Area*, the making of all relevant decisions and policy should give precedence to public transportation, and other sustainable modes, over the requirements of the private car.

The RPGs recommend that additional areas for residential zoning should be selected on the basis of meeting all three of the following criteria:

1. Location within areas identified for development in the strategy;
2. Identified potential to be served by adequate public transport; and,
3. Identified potential for servicing by water supply, drainage, etc.

The RPGs also recommend the consolidation of the urban form of settlements by locating quality employment and residential developments of various sizes in proximity to each other in order to make effective use of suitable lands, reduce the need to travel and reduce the dependence on private car.

5.2.6 Wicklow County Development Plan 2004-2010

Wicklow is one of the most rapidly growing counties in Ireland. This is a result of population retention, growth, in-migration and natural population increase resulting from Wicklow's location within the Greater Dublin Area and the influence of Dublin's Urban Shadow, together with the amenities it offers, including its coastline, mountains and scenic rural areas.

The Wicklow County Development Plan (CDP) 2004-2010 provides a settlement strategy configured in accordance with the NSS and the RPGs, and locates population growth and channels development in line with the strategy advised by RPGs.

It recognised the reality that larger settlements have a critical mass and are thus more successful at providing a wide range of environmental, economic and social facilities, in generating indigenous employment growth and attracting inward investment. The settlement hierarchy placed Bray, the county's only Metropolitan Consolidation Town, a level one town, as the most important settlement in the County. Under the CDP, development in the Bray and its environs area should be focused upon:

- A consolidated approach;
- Increased densities; and,
- Enhancement of the public transport system.

The CDP projects a population for Bray and Environs of 32,012 in 2010 and 35,000 by 2016. The Plan does not expect all towns to reach their indicative populations by 2016. However, it is intended to put the necessary physical infrastructure into place to cater for the future need. The CDP acknowledges the shortfall of available land within the confines of Bray Town Council, and accordingly, the CDP facilitates the expansion of Bray into the environs by zoning lands for development.

5.2.7 North Bray and Environs Land Use and Transportation Study

The preparation of a Land Use and Transportation Study (LUTS) for North Bray and Environs was commissioned jointly by Dun Laoghaire-Rathdown County Council, Wicklow County Council and Bray Town Council in January 2005. The area of the study is defined as a boundary encompassing Woodbrook, Rathmichael, Old Connaught, Fassaroe and North Bray, as well as the N11 as far as the junction with the Bray Southern Cross. The objectives of the commission were to ensure that the study area can cater for expected future levels of development as proposed throughout the Town and County Development Plans, by investigating a range of policies, infrastructural measures, and land use strategies.

The LUTS found that, inter alia, the current zoning of Fassaroe for low density employment is not considered either suitable or sustainable land use management in the context of its location so close to the growth centre of Bray, in view of the consolidation objectives for the Greater Dublin Area and the County policies to promote higher densities and public transport.

The intensification of development in Fassaroe and hence alteration of the current zoning is recommended along with other land use and transportation measures by the study.

The study identifies a proposal for a Rapid Transit Strategy which would incorporate a LUAS extension from Cherrywood to Fassaroe, and a Bus Rapid Transit link from Fassaroe and Old Connaught to Bray Town Centre, including a Park and Ride at Fassaroe.

5.2.8 Bray Town Development Plan 2005-2011

The strategic policy objectives of the Bray Town Development Plan include aspirations to:

- Promote Bray as a regional centre of economic, social, cultural and ecological growth;
- Consolidate the urban form of the town;

- Improve the economic competitiveness of Bray; and,
- Retain the town's population through providing a sufficient amount of affordable residential units in the town and facilitating the development of infrastructure, services, employment and social opportunities to meet the needs of the population.

A number of weaknesses hamper the town's development at the present, including:

- an insufficient supply of houses to match demand;
- a lack of available land within the town which hampers the potential for large-scale development of employment-generating opportunities within the town;
- an insufficient quantum and quality of retail floorspace;
- a lack of employment opportunities;
- an increase in traffic congestion which come about as a result of increased car use, a lack of routes across the Dargle River and a shortfall of car parking facilities; and,
- Pressures on existing social and physical infrastructure as a result of population growth

It is clear from the weaknesses identified by the Bray Town Development Plan that the town will be unable to achieve its strategic policy objectives as set out. Accordingly, to enable Bray Town to fulfil its role as a Metropolitan Consolidation Town it is necessary that the potential of the environs be addressed.

5.2.9 DEHLG Residential Guidelines

The DEHLG's Residential Density Guidelines 1999 and the DEHLG's Sustainable Residential Development in Urban Areas Draft Guidelines 2008 recommend planning authorities to promote higher residential densities, particularly in redeveloping 'brownfield' sites and in proximity to town centres and public transport corridors.

5.3 Environmental Protection Objectives

The Draft Plan is subject to a number of high level national, international and regional environmental protection policies and objectives, including those which have been identified as Strategic Environmental Objectives in Section 4.

Examples of Environmental Protection Objectives include the aim of the EU Habitats Directive - which is to contribute towards ensuring bio-diversity through the conservation of natural habitats and of wild fauna and flora in the European territory of Member States - and the purpose of the Water Framework Directive - which is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater.

The LAP must be consistent with these objectives and implement them at local level in Bray Environs.

Section 6 Description of Alternative Plan Scenarios

6.1 Introduction

One of the critical roles of the SEA is to facilitate an evaluation of the likely environmental consequences of a range of alternative strategies for accommodating future development in Bray Environs.

These alternative strategies must be realistic, capable of implementation, and should represent a range of different approaches within statutory and operational requirements of the particular plan. In some cases the preferred strategy will combine elements from the various alternatives considered.

This section identifies and describes different plan scenarios, taking into account higher level strategic actions as well as the geographical scope of the area.

These scenarios are evaluated for their environmental consequences in Section 7. The policies and objectives which are required to realise the alternative which was chosen for the Plan are evaluated in Section 8.

Mitigation measures which attempt to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the Draft Plan are recommended for inclusion in Section 9.

6.2 Identification and Description of Alternative Scenarios

6.2.1 Introduction

The following summarises a series of 'Scenarios' which provide alternative visions of how the future development of Bray Environs might occur. These are neither predictions nor preferences - instead they offer a range of plausible and internally consistent narratives of the outcome of different planning and development strategies. These provide the basis for the comparative evaluation of the likely environmental effects of each plan, which in turn serves the purpose of identifying which features of plans and policies are likely to be

sensitive or robust over the widest range of circumstances.

6.2.2 Need for a Local Area Plan

Firstly it has been examined whether there is, or will be in the future, a need for an LAP for the Bray Environs area.

Due to higher level strategic forward planning actions, Bray is envisaged to potentially develop to a relatively large scale; the Town is designated by the Regional Planning Guidelines for the Greater Dublin Area as a Metropolitan Consolidation Town, a designation that is reflected in the Settlement Strategy for the County Development Plan (see Section 5.2).

The relatively low rate of recent growth in Bray Town together with the focusing of growth mainly in the Environs and within the functional area of Wicklow County Council indicates the extent to which development is restricted within the town. There is a lack of available land within the town which has contributed to a situation, which has been identified by the Bray Town Development Plan (see Section 5.2.8), whereby: the supply of houses does not meet demand; large-scale development of employment-generating opportunities within the town is limited; there is an insufficient quantum and quality of retail floorspace; there is a lack of employment opportunities; there are pressures on existing social and physical infrastructure as a result of population growth; and, there has been an increase in traffic congestion which has come about as a result of increased car use, a lack of routes across the Dargle River and a shortfall of car parking facilities.

Consequently, Bray Town is unable to provide for the proper planning and sustainable development of its area in line with the objectives of higher level forward planning strategic actions including the Regional Planning Guidelines and the County Development Plan. Also, the Town cannot adequately satisfy both the economic and social needs of its population within the existing boundary, leading to the lack of scope to adequately address economic employment issues and the provision of adequate housing for its population, which clearly has serious implications for the vision,

role and function of Bray Town as outlined in the current Town Development Plan.

The Environs area, therefore, has an integral part to play in the continued growth and development of Bray as a Metropolitan Consolidation Town. Accordingly, the majority of the future growth of the Town has to be accommodated in the Environs area. Proper planning and sustainable development of this growth will only be achieved through a land use plan that provides a framework for the proper planning and sustainable development of the Environs of Bray commensurate with its designation as a Metropolitan Consolidation Town. With regard to the Planning and Development Act 2000 (as amended) the most appropriate land use plan for this purpose has been deemed to be a Local Area Plan (LAP)²¹.

Accommodating growth through a Plan will help to prevent urban sprawl, ribbon development and the coalescence of settlements because outside of the designated LAP boundaries limited development only will be permitted. It would help ensure that the coalescence of the settlements of Bray, Greystones, Kilmacanogue and Enniskerry does not occur.

The need for a Local Area Plan was established.

6.2.3 Method for providing for development through a LAP

As established above, a Local Area Plan that provides a framework for the proper planning and sustainable development of the Environs of Bray commensurate with its designation as a Metropolitan Consolidation Town by, inter alia, allocating of sufficient amounts of land for various landuses is necessary.

Different ways or methods of providing for this need were explored. Alternative methods for facilitating various landuses include brownfield development and greenfield development.

As the Bray Environs area is generally made up generally of greenfield lands and the amount of development which could be provided for by

brownfield development is severely limited, greenfield development was determined to be the chief method by which the need is to be provided for.

Greenfield development was determined to be the method by which the need for the LAP is to be provided for.

6.2.4 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 a number of alternatives relating locations where development could be provided for by the Plan were explored.

These alternatives were identified within and close to an Indicative Study Area which was identified by Wicklow County Council. The north and north-western boundaries of the Study Area were defined by the County boundary and the green belt zoning in the Enniskerry Local Area Plan 2002-2008. The remainder of the northern area was defined by Bray Town Council administrative boundary. The eastern, southern and western boundaries were all defined by existing roads, with the exception of the portion around Kilmacanogue Village, which was defined on the basis of village boundary.

Four alternative locations were identified across the Study Area. These alternatives are evaluated for their likely environmental and planning effects in Section 7 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 6.1);
2. Lands to the South of Bray including those at Kilruddery (see Number 2 on Figure 6.1);
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 6.1); and,

²¹ As a need has been established for the preparation of a Local Area Plan, the *'do-nothing scenario'* has been excluded from the selection of the alternatives as it is not a realistic option.

4. Lands at Fassaroe, located to the west of Bray and the N11 road (see Number 5 on Figure 6.1).

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

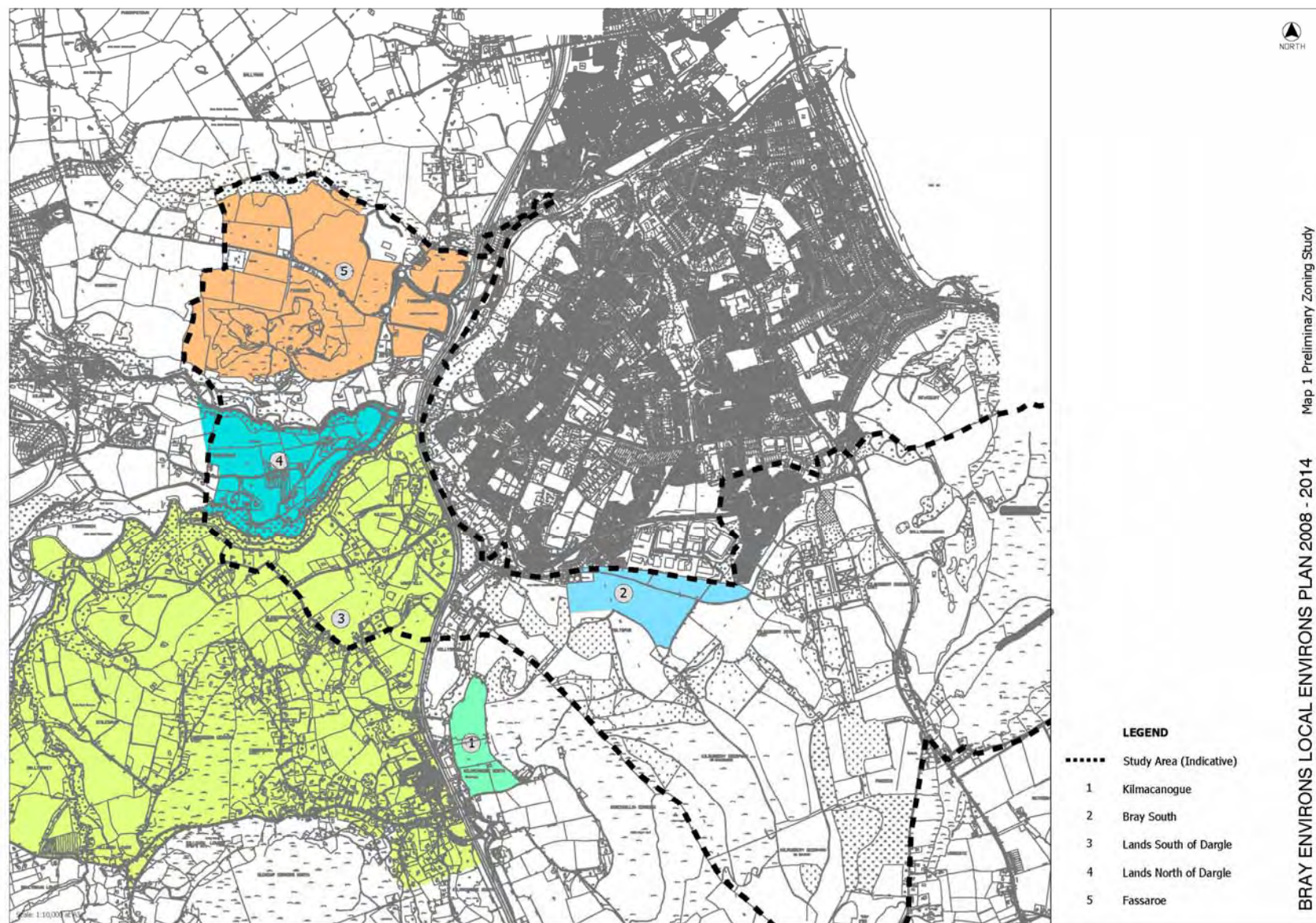


Figure 6.1 Alternative Locations for providing for the Local Area Plan

6.2.5 Alternatives at Fassaroe

6.2.5.1 Introduction

Subsequent to the identification of the favoured alternative locations at Fassaroe and Kilruddery for development, alternatives were developed for these areas. The alternatives for Fassaroe are provided below.

6.2.5.2 Alternatives at Fassaroe

Fassaroe is the primary development centre within the Plan area. The vision for Fassaroe contained in the LAP is *of an area that is integrated, compact, efficient and sustainable with the necessary community, social, employment, retail and recreational facilities providing good linkage within the area and with Bray Town and the wider GDA.*

For Fassaroe, environmental considerations determine the extent and shape of the boundary:

- The Ballyman Glen candidate Special Area of Conservation [cSAC] provides a constraint in the north of the Fassaroe area and a buffer of a relatively non-development accommodating zoning [OS Open Space] was applied to the cSAC;
- The Cookstown River and its northern banks provided a constraint in the south of the Fassaroe area and a relatively non-development accommodating zoning [GB Green Belt] was applied to the northern banks of the River; and,
- The N11 National Primary Road and the M11 Motorway provide a physical eastern boundary to the Fassaroe boundary.

With regard to the area which was determined by the above constraints three alternatives were developed for Fassaroe. The alternatives are mapped on the following pages as Figure 6.2 Fassaroe Land Use Alternative A, Figure 6.3 Fassaroe Land Use Alternative B, Figure 6.4 Fassaroe Land Use Alternative C.

The differences in these alternatives are shown on Table 6.1, Table 6.2 and Table 6.3. Alternatives B and C provide for a population of 10,000 in 3,900 units while Alternative A provides for the least amount of residents, 7,200 residents in 2,800 units.

Alternative B provides for 21,900 employees, Alternative C provides for 16,100 employees and Alternative A provides for 17,100 employees. Employment is provided for by each alternative in a variety of employment/land uses.

The three alternatives have a number of items which are common to all, namely:

- The road network;
- The LUAS alignment;
- Various Community Uses:
 - 2 no. primary schools
 - 1 no. secondary school
 - Crèche facilities
 - Community Centre
 - Public House
 - Post Office
 - Doctor's Surgery
 - District Shopping Centre (10,000 sq.m. gross)
 - Fire Station;
- The location of the main open spaces; and,
- The District Park which is for a total area of approximately 22 hectares.

The zoning categories and related information identified on Table 6.4 are also consistent within the three alternatives.

	Scenario A	Scenario B	Scenario C
Residential Units	2,800	3,900	3,900
Residents	7,200	10,000	10,000

Table 6.1 Residential Units & Residents provided for by each Land Use Scenario for Fassaroe

	Scenario A	Scenario B	Scenario C
High Density Employment	8,000	16,300	9,300
Office (in Mixed Use Zones)	5,500	4,600	4,600
Retail	500	500	500
Industry/Business Park	2,900	500	1,700
Warehousing	200	-	-
Total Employees	17,100	21,900	16,100

Table 6.2 Employees provided for by each Land Use Scenario for Fassaroe

	Scenario A	Scenario B	Scenario C
Residents/Employees Split	29.6%/70.4%	29.4%/70.6%	38.1%/61.9%

Table 6.3 Residents/Employees Split for each Land Use Scenario for Fassaroe

Code	Zoning Category	Detail
R1-R3	Combined Residential Uses	Household size: 2.4-2.7, average 2.55. 10% of site area for pocket parks, buffer zones to countryside etc.
R1	Existing Residential	-
R2	New Residential - High Density	70-100 units/hectare - average 85 units/hectare (net)
R3	New Residential - Medium to Low Density	30-70 units/hectare - average 50 units/hectare (net)
MU1	Mixed Use 1	10,000 sq.m. gross District Shopping Centre (45% site area) Office (20% site area) Residential (15% site area) Community and other (10 % site area) Park and Ride (10 % site area)
MU2	Mixed Use 2	Residential (60% site area) Office (30% site area) Other (10 % site area)
E1	Employment 1 - High Density Employment	To provide for employment uses such as office, high tech activities, telemarketing, IT activities, Research and Development [Maximum Plot Ratio 1.5; Employment Density 25]
E2	Employment 2 - Industry / Business Park	To provide for appropriate industrial and related uses, including the development of business, office, science/technology park [Maximum Plot Ratio 0.5; Employment Density 50]
E3	Employment 3 - Warehousing	To provide for appropriate warehouse, wholesale or light industry [Maximum Plot Ratio 0.3; Employment Density 80]
RWH	Retail Warehousing	[Maximum Plot Ratio - not applicable; Employment Ratio 20]
PU	Public Utility	ESB, Fire Station etc.
OS	Open Space	-
GB	Greenbelt	-
cSAC	candidate Special Area of Conservation	-

Table 6.4 Zoning Categories and Common Detail for each Land Use Scenario for Fassaroe

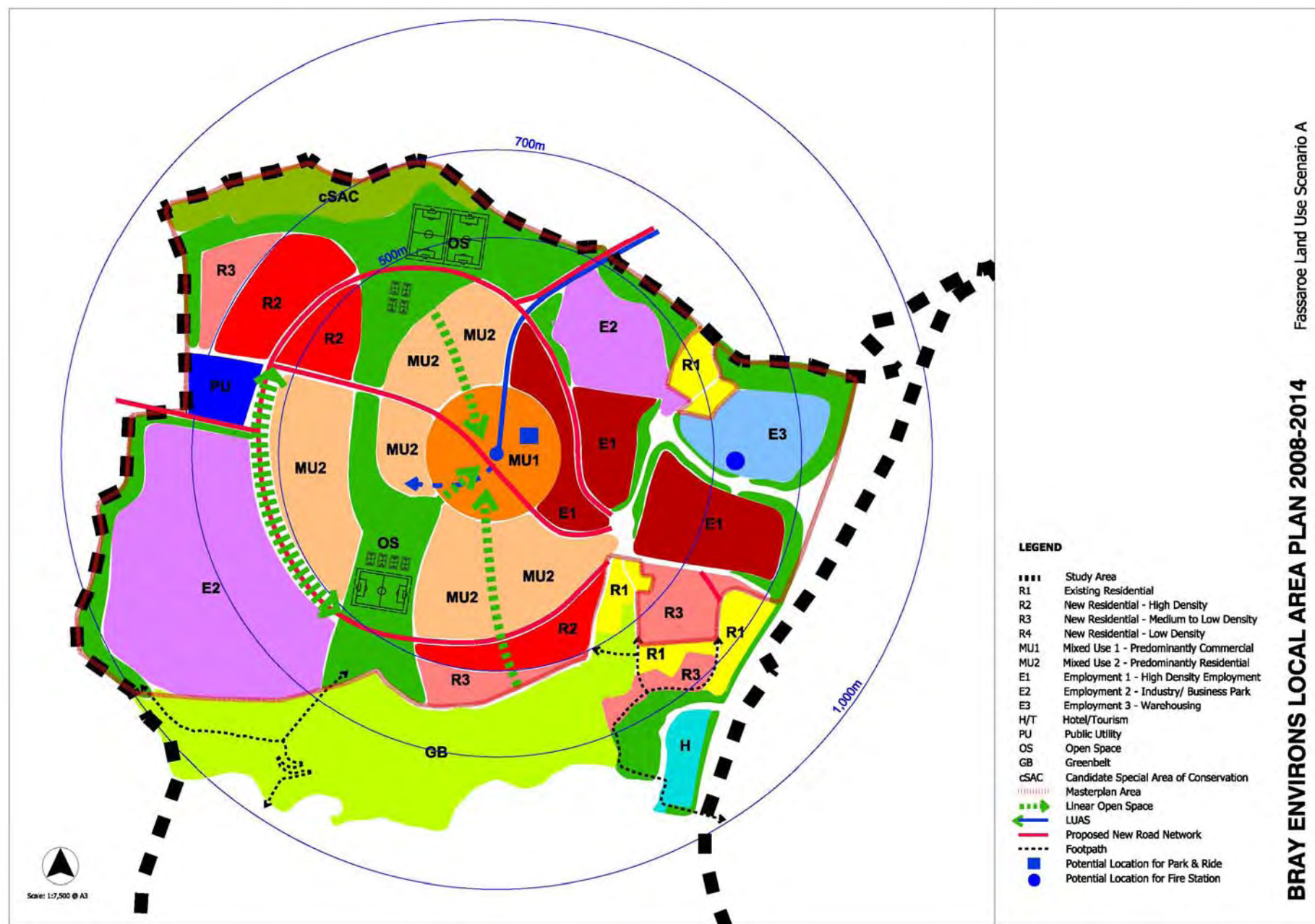


Figure 6.2 Fassaroe Land Use Alternative A

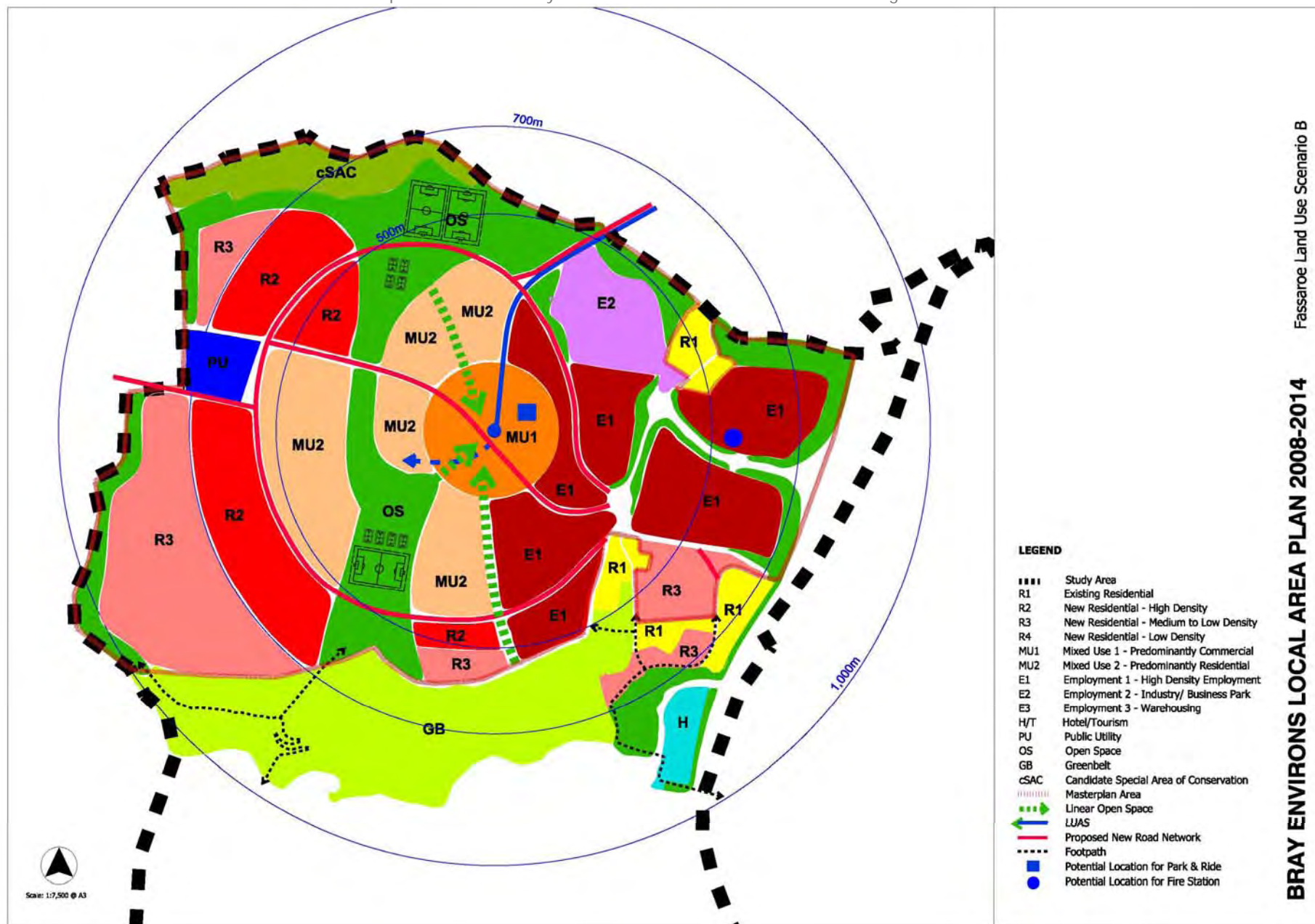


Figure 6.3 Fassaroe Land Use Alternative B

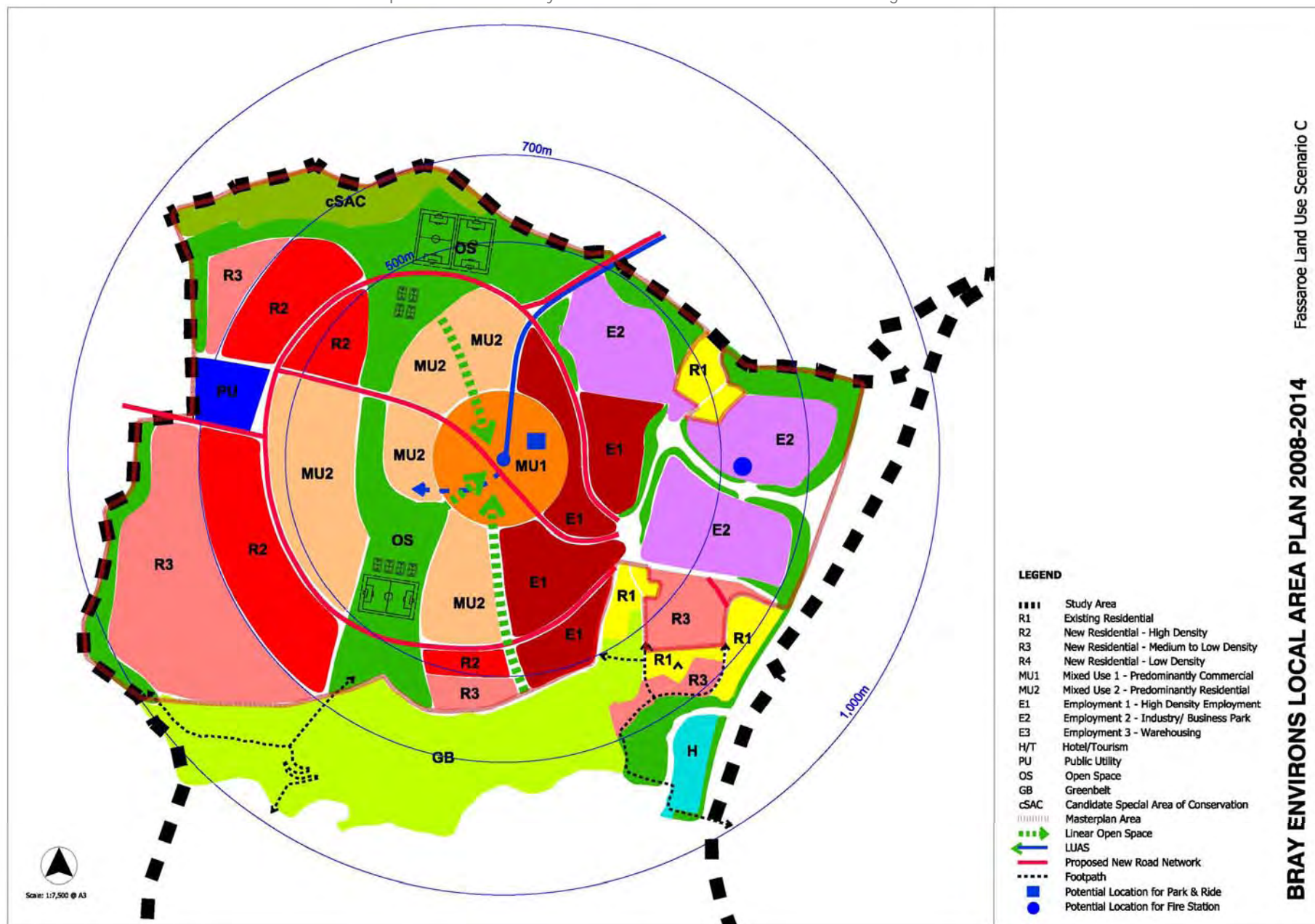


Figure 6.4 Fassaroe Land Use Alternative C

6.2.6 Alternatives at Kilruddery

6.2.6.1 Introduction

Subsequent to the identification of the favoured alternative locations at Fassaroe and Kilruddery for development, alternatives were developed for these areas. The alternatives for Kilruddery are provided below.

The vision for Kilruddery and its Demesne contained in the LAP is *to allow for a limited extent of development, in a considered and sensitive way that maintains the character, integrity and protected status of the House and its Demesne.*

Four alternatives were identified for the Kilruddery area of the LAP, taking into account various extents of land and varying extents of land uses. The alternatives have been prepared with regard to the Pre-Draft Consultation Submissions which were made earlier in the Plan-preparation process.

The land use zoning objectives used for the alternatives are as follows:

- T - Tourism
- E2 - Employment 2 - Industry/Business Park
- OS - Open Space
- R4 - New Residential - Low Density
- MU2 - Mixed Use 2 - Predominately Residential

It is assumed that lands within the Kilruddery Plan area which are not attributed land use zoning objectives under the LAP will retain their existing use(s).

6.2.6.2 Alternative 1

Alternative 1 (see Figure 6.5) consists of:

- E2 (Employment 2 - Industry/Business Park) zoning at Foggy Field which is located to the south west of the roundabout between the R761 and the R768;
- T (Tourism) zoning to the west of Kilruddery House;
- E2 (Employment 2 - Industry/Business Park) zoning to the south of the existing industrial area that adjoins the Southern Cross Road;

- OS (Open Space Zoning) which links the Tourism zoning to the west of Kilruddery House to the wooded area at Giltspur; and,
- R4 (New Residential - Low Density) zoning on the upwardly sloping land around Giltspur.

6.2.6.3 Alternative 2

Alternative 2 (see Figure 6.6) is the same as Alternative 1 minus the E2 (Employment 2 - Industry/Business Park) zoning to the south of the existing industrial area that adjoins the Southern Cross Road.

It consists of:

- T (Tourism) zoning to the west of Kilruddery House;
- E2 (Employment 2 - Industry/Business Park) zoning to the south of the existing industrial area that adjoins the Southern Cross Road;
- OS (Open Space Zoning) which links the Tourism zoning to the west of Kilruddery House to the wooded area at Giltspur; and,
- R4 (New Residential - Low Density) zoning on the upwardly sloping land around Giltspur.

6.2.6.4 Alternative 3

Alternative 3 (see Figure 6.7) is the same as Alternative 1 minus the R4 (New Residential - Low Density) zoning on the upwardly sloping land around Giltspur.

It consists of:

- E2 (Employment 2 - Industry/Business Park) zoning at Foggy Field which is located to the south west of the roundabout between the R761 and the R768;
- T (Tourism) zoning to the west of Kilruddery House;
- E2 (Employment 2 - Industry/Business Park) zoning to the south of the existing industrial area that adjoins the Southern Cross Road; and,
- OS (Open Space Zoning) which links the Tourism zoning to the west of Kilruddery House to the wooded area at Giltspur.

6.2.6.5 Alternative 4

Alternative 4 (see Figure 6.8) consists of:

- E2 (Employment 2 - Industry/Business Park) zoning at Foggy Field which is located to the south west of the roundabout between the R761 and the R768;
- T (Tourism) zoning covering Kilruddery House and Gardens - the extent of this zoning is greater than in any of the other alternatives;
- E2 (Employment 2 - Industry/Business Park) zoning to the south of the existing industrial area that adjoins the Southern Cross Route;
- R4 (New Residential - Low Density) zoning on the upwardly sloping land around Giltspur - the extent of this zoning is greater than in any of the other alternatives; and,
- T (Tourism) zoning at Belmont to the south of Kilruddery.

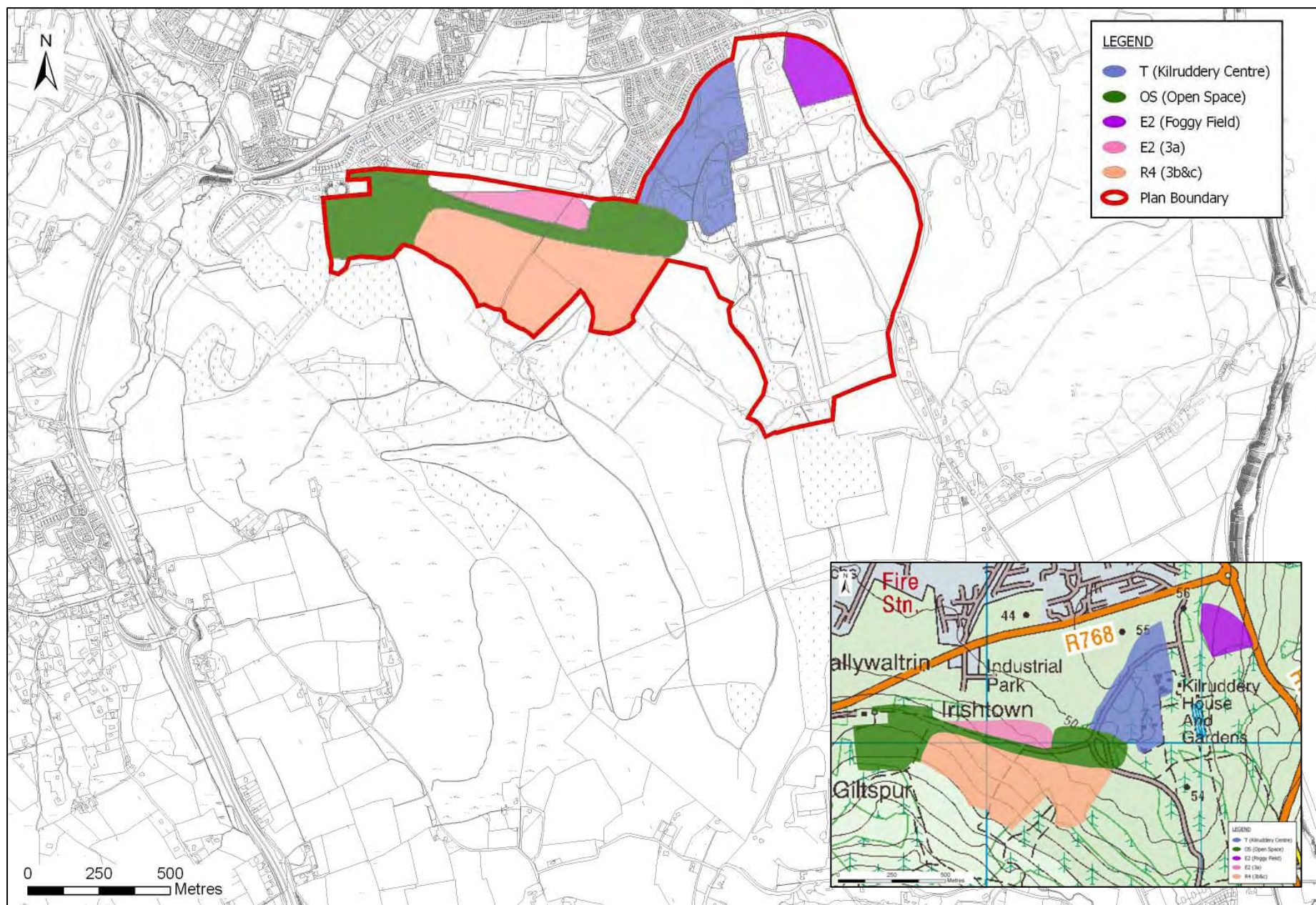


Figure 6.5 Kilruddery Land Use Alternative 1

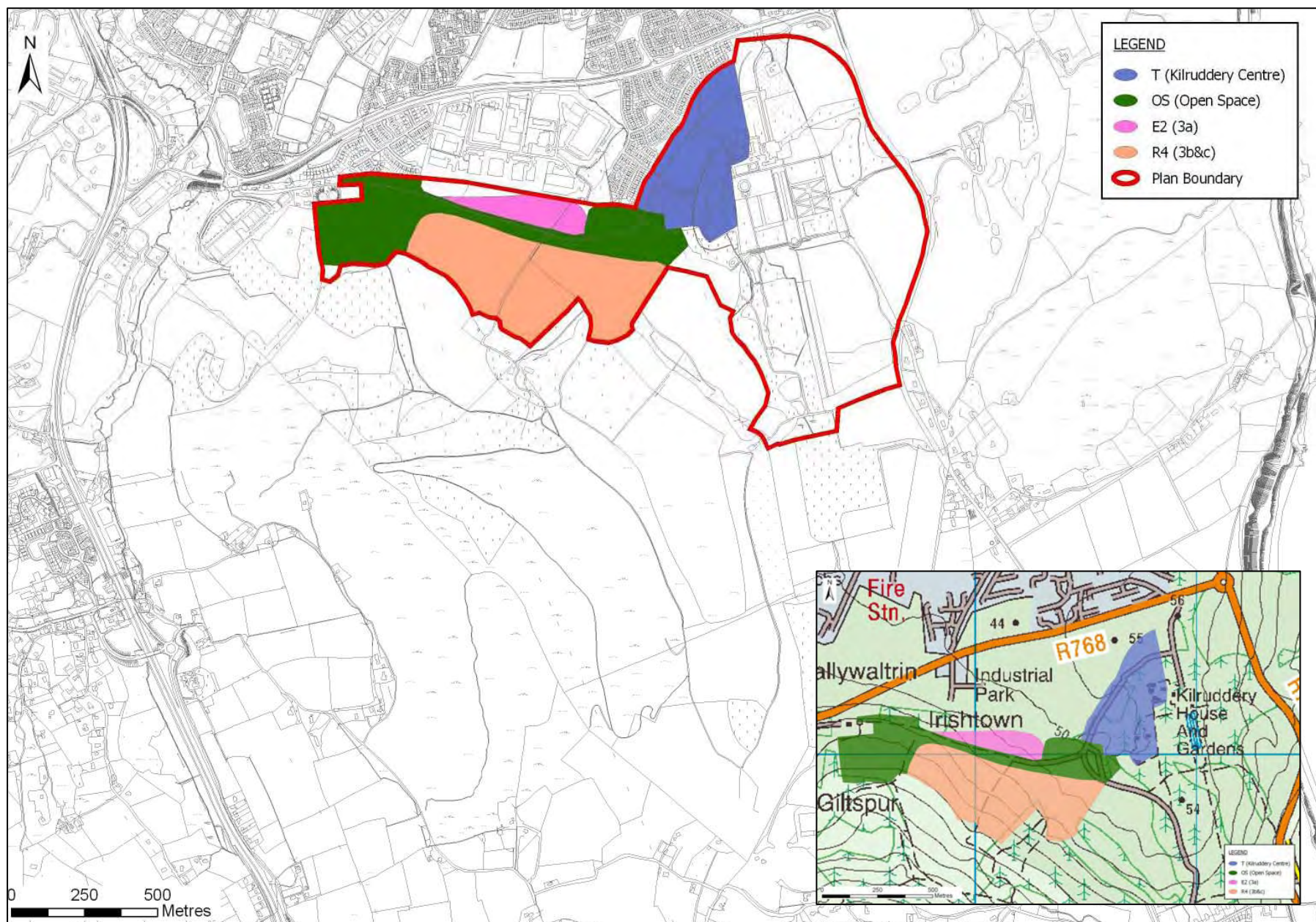


Figure 6.6 Kilruddery Land Use Alternative 2

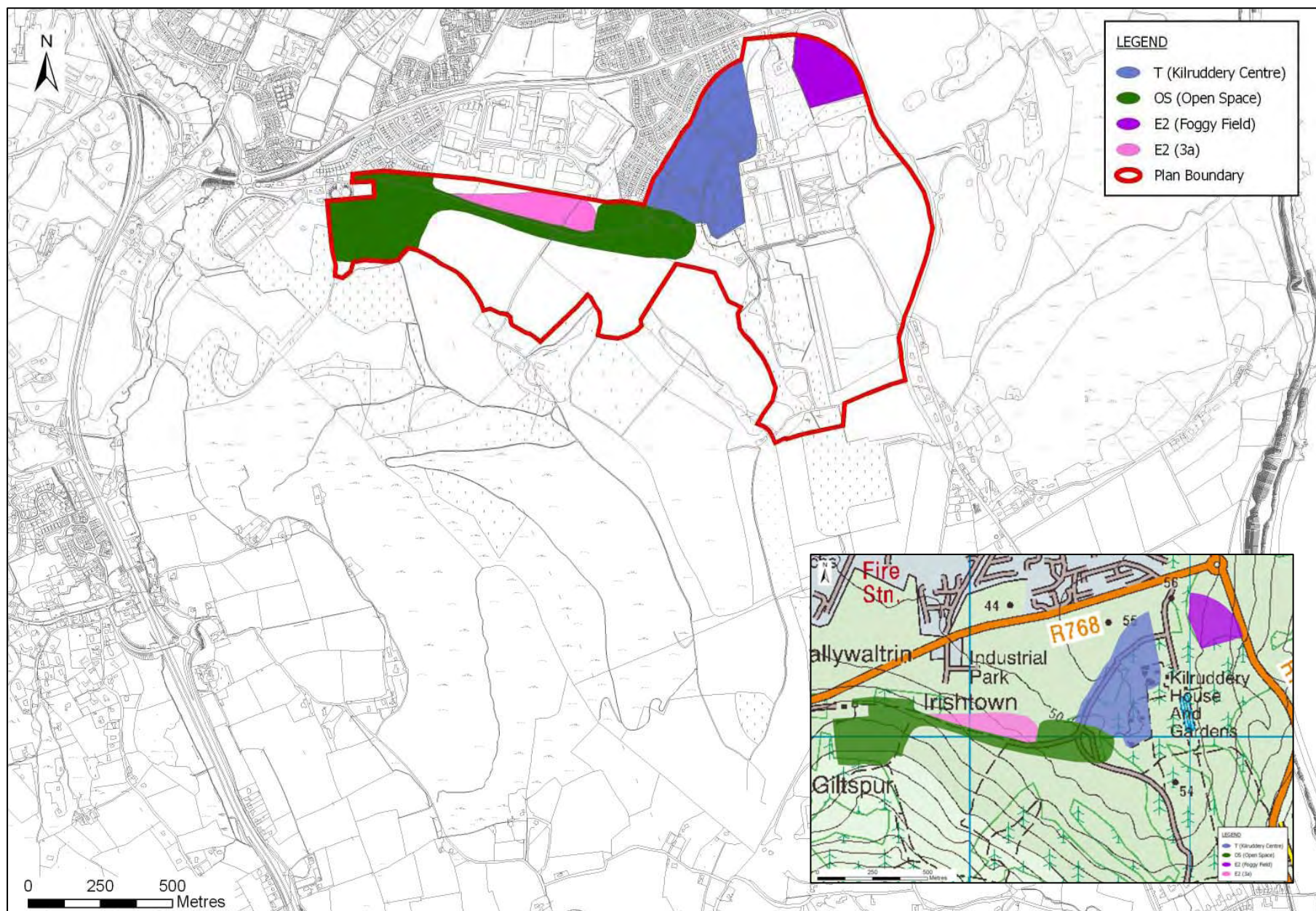


Figure 6.7 Kilruddery Land Use Alternative 3

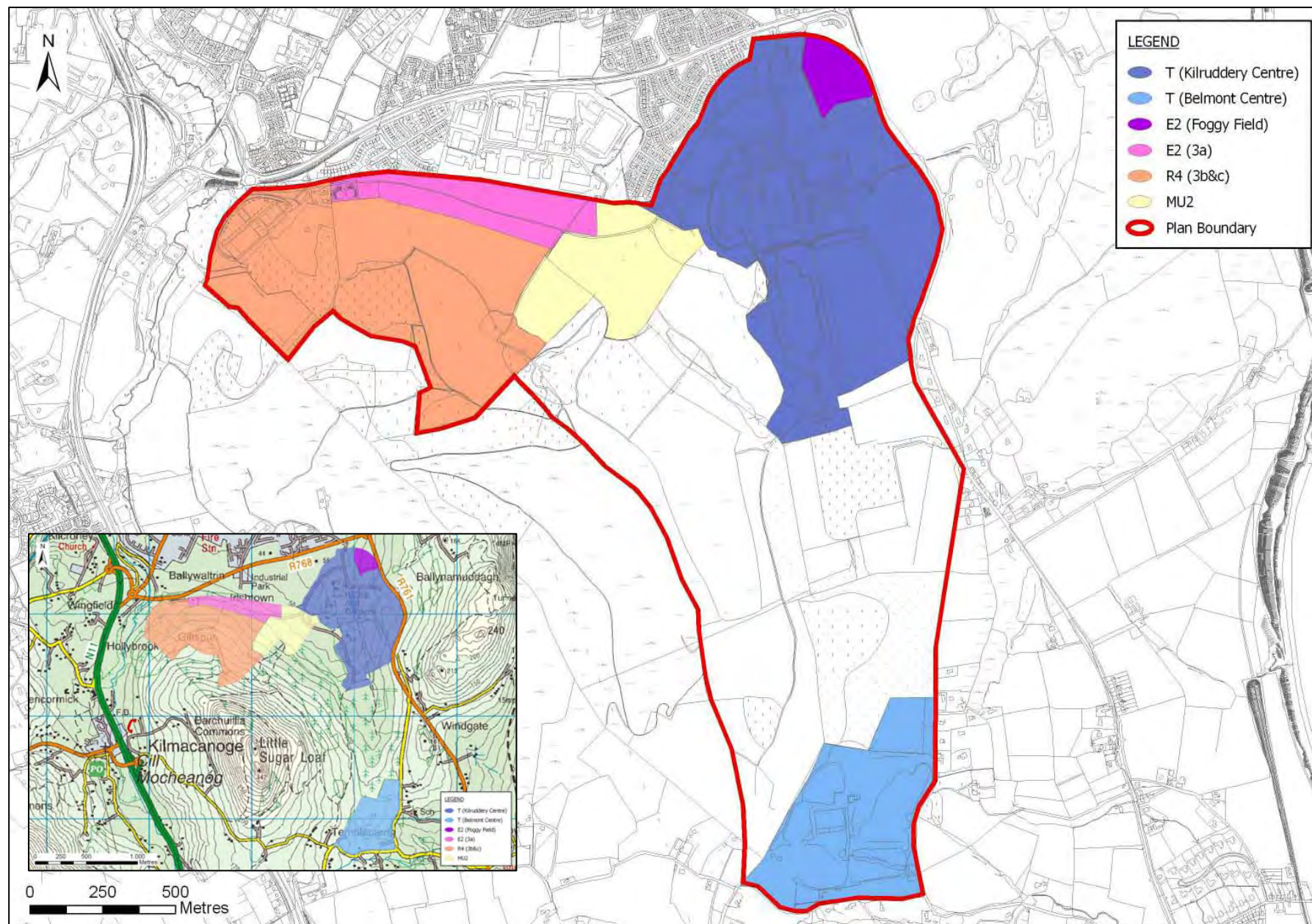


Figure 6.8 Kilruddery Land Use Alternative 4

Section 7 Evaluation of Alternatives

7.1 Introduction

The objective of this section is to determine the relative merits of a range of the alternative scenarios for the future development of Bray Environs. This determination sought to understand whether each alternative was likely to improve, conflict with or have a neutral interaction with the area's environment.

Alternatives are evaluated in a succinct and focused way for both planning and environmental impacts against both the existing environment and the Strategic Environmental Objectives (SEOs).

In order to comply with the SEA Directive Strategic Environmental Objectives have been grouped under relevant parent components such as *water* and *landscape*.

7.2 Methodology

7.2.1 Evaluation

7.2.2 Existing Environment

In order to identify the extent to which environmental sensitivities are likely to be impacted upon by implementation of the Draft Plan, use has been made of the description of the environmental baseline, including the maps which spatially represent components of the

environmental baseline, provided within Section 3.

7.2.3 Strategic Environmental Objectives (SEOs)

Based on an understanding of the existing and emerging environmental conditions in the Plan area a series of SEOs were developed in order to assess the likely environmental effects which would be caused by implementation of each of the four alternative scenarios described in Section 6. The alternatives are evaluated using compatibility criteria (see Table 7.1) in order to determine how they are likely to affect the status of these SEOs.

Table 7.2 brings together all the SEOs which have been developed from international, national and regional policies which generally govern environmental protection objectives.

The SEOs and the alternative scenarios are arrayed against each other to identify which interactions - if any - would cause impacts on specific components of the environment.

Where the appraisal identifies 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 relevant habitats, geological features, species or their sustaining resources in designated ecological sites'.

Likely to Improve status of SEOs	Probable Conflict with status of SEOs- unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	Uncertain interaction with status of SEOs	Neutral Interaction with status of SEOs	No Likely interaction with status of SEOs
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Table 7.1 Criteria for appraising the effect of Plan provisions on Strategic Environmental Objectives

SEO Code	SEO
B1	To avoid loss of relevant habitats, geological features, species or their sustaining resources in designated ecological sites
B2	To avoid significant adverse impacts, including direct, cumulative and indirect impacts, to relevant habitats, geological features, species or their sustaining resources in designated ecological sites by development within or adjacent to these sites
B3	To sustain, enhance or - where relevant - prevent the loss of ecological networks or parts thereof which provide significant connectivity between areas of local biodiversity
HH1	To protect human health from hazards or nuisances arising from exposure to incompatible landuses
S1	Maximise the sustainable re-use of brownfield lands, and maximise the use of the existing built environment rather than developing greenfield lands
W1	To maintain and improve, where possible, the quality of rivers and transitional waters
W2	To prevent pollution and contamination of ground water
W3	To prevent development on lands which pose - or are likely to pose in the future - a significant flood risk
C1	To minimise increases in travel related greenhouse emissions to air
M1	To serve new development with appropriate waste water treatment
M2	To reduce the overall proportion of car dependency within County Wicklow by way of, inter alia, encouraging modal change from car to more sustainable forms of public transport and encouraging development which will not be dependent on private transport
CH1	To protect archaeological heritage - including entries to the Record of Monuments and Places and unknown archaeology - and the context of the above within the surrounding landscape where relevant
CH2	To preserve and protect the special interest and character of architectural heritage with regard to entries to the Record of Protected Structures and their context within the surrounding landscape where relevant
L1	To avoid significant adverse impacts on the landscape, especially with regard to landscapes which are most valuable and most sensitive to change and views and prospects of special amenity

Table 7.2 Strategic Environmental Objectives (SEOs)²²

²² Strategic Environmental Objectives (SEOs) are methodological measures which are developed from international and national policies which generally govern environmental protection objectives and against which the environmental effects of the Draft Plan can be tested. The SEOs are used as standards against which the development strategies, policies and objectives of the Draft Plan can be evaluated in order to help identify areas in which significant adverse impacts are likely to occur, if unmitigated against.

7.3 Evaluation of Alternative Locations which could be subject to an LAP

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7.3.1 Similarities between Alternatives

All alternatives provide for greenfield development²⁴ as it is not possible for brownfield development to cater for the population required to be provided for by the Plan. Greenfield development would be likely to present a number of conflicts with environmental components.

Impacts upon ecological connectivity²⁵ 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 flooding²⁶.

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)²⁷. 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 health²⁸.

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 Directive²⁹.

7.3.2 Alternative 1 - Lands at Kilmacanogue East

There are no designated ecological sites³⁰ within the vicinity of Kilmacanogue east.

The lands at Kilmacanogue East are located within an Area of Outstanding Natural Beauty³¹. Development of these lands would be likely to significantly adversely impact upon Prospect of Special Amenity Number 11 - *Prospect of Great Sugarloaf across Kilmacanogue marsh and quill road* - and View of Special Amenity Number 8 - *View of Little Sugar Loaf* - both of which are protected under the current Wicklow County Development Plan.

The potential lands for development are distant from the existing village of Kilmacanogue, aggravated by the severing impact of the N11, with no access to efficient public transport infrastructure presenting a further locational disadvantage. It is uncertain as to whether development of these lands would be accompanied by public transport therefore it is uncertain whether this alternative would enable greenhouse gas emissions and car dependency to be minimised³².

²³ Footnotes like this are used in this section in order to identify instances where interactions between the relevant Scenario and the relevant SEOs occur. The nature of these interactions are identified on Table 7.3.

²⁴ SEO S1

²⁵ SEO B3

²⁶ SEO W3

²⁷ SEO M1

²⁸ SEO HH1

²⁹ SEO W2

³⁰ SEO B1 and B2

³¹ SEO L1

³² SEOs C1 and M2

Any development of lands at Kilmacanogue East would have to take cognisance of the presence of an entry to the Record of Monuments and Places which is identified as being a Fulacht Fia³³.

7.3.3 Alternative 2 - Lands to the South of Bray (including those at Kilruddery)

There are no designated ecological sites³⁴ within the vicinity of the South of Bray.

Parts of these lands are located in an Area of Outstanding Natural Beauty and adjacent to an area that is under consideration for Special Amenity Area Order to the south. Certain parts of the lands are particularly sensitive due to the topography, which slopes upwards to the Little Sugar Loaf to the south, and their visibility from the Southern Cross Road³⁵.

The Kilruddery lands have no access to public transport infrastructure and it is uncertain as to whether development of these lands would be accompanied by public transport therefore it is uncertain whether this alternative would enable greenhouse gas emissions and car dependency to be minimised³⁶.

There are 6 entries to the Record of Monuments and Places³⁷ (RMP) within these lands. In order to prevent unnecessary impacts on archaeological heritage any development on these lands would have 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 curtilage³⁸.

7.3.4 Alternative 3 - Lands to the North and South of the River Dargle

The Dargle River Valley proposed Natural Heritage Area is located on these lands. In addition, the River Dargle is listed on the Water Framework Directive's Register of Protected Areas for *Habitats Rivers* and is a salmonid river which is protected under the European Communities (Quality of Salmonid Waters) Regulations 1998 (SI No. 293 of 1988). The River Dargle is also classified as being *at significant risk* of meeting the objectives of the Water Framework Directive. Any development on these lands would have to strictly comply with mitigation measures including appropriate land use zoning and other mitigation measures in order to avoid, reduce and/or offset impacts upon ecology³⁹ and water quality⁴⁰.

The eastern part of these lands 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. Development on these lands could have a potentially conflicting interaction with the protection of sensitive landscapes and with the protection of Prospects of Special Amenity Value which are protected under the Wicklow County Development Plan⁴¹.

The interaction between this Alternative and the reduction of greenhouse gas emissions⁴² and the minimisation of car dependency⁴³ is uncertain. It would be important that a sufficient public transport service accompanies development on this Alternative site.

In order to prevent unnecessary impacts on entries to the Record of Monuments and Places⁴⁴ (RMP) - which include a Church, a Graveyard and a possible enclosure - and unknown archaeological heritage, appropriate

³³ SEO CH2

³⁴ SEO B1 and B2

³⁵ SEO L1

³⁶ SEOs C1 and M2

³⁷ SEO CH1

³⁸ SEO CH2

³⁹ SEO B1 and B2

⁴⁰ SEO W1

⁴¹ SEO L1

⁴² SEO C1

⁴³ SEO M2

⁴⁴ SEO CH1

mitigation measures would be required to accompany this alternative.

7.3.5 Alternative 4 - *Lands at Fassaroe*

The Ballyman Glen candidate Special Area of Conservation and proposed Natural Heritage Area is located on these lands. Impacts upon this designated ecological site⁴⁵ could however be avoided, reduced and/or offset through appropriate land use zoning and other mitigation measures.

Development at Fassaroe could have a potential conflicting interaction with the protection of human health⁴⁶ due to presence of lands which were used as landfills in the past and which have not been fully defined or remediated.

By providing for significant increases in the residential and employment populations this alternative would be likely to enable the development of the proposed high quality Luas public transport link - this would help to reduce dependency on private transport⁴⁷ as well as minimising future transport related greenhouse gas emissions⁴⁸.

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 - mitigation measures would be required to avoid and reduce adverse impacts⁴⁹.

While Fassaroe is located within an Area of Outstanding Natural Beauty, the validity of this designation in the area has been eroded in the past by the existing sand and gravel pit as well as more recent development close to the N11. Lands which rise up to the south in the centre of the Fassaroe lands are, however, visually sensitive⁵⁰.

⁴⁵ SEO B1 and B2

⁴⁶ SEO HH1

⁴⁷ SEO M2

⁴⁸ SEO C1

⁴⁹ CH1

⁵⁰ SEO L1

7.3.6 Evaluation against SEO's

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs - unlikely to be mitigated	Potential Conflict with status of SEOs - would be mitigated	Uncertain interaction with status of SEOs	Neutral Interaction with status of SEOs	No Likely interaction with status of SEOs
Alternative 1 <i>Lands at Kilmacanogue East</i>		L1	B3 HH1 S1 W2 W3 M1 CH1	C1 M2		B1 B2 W1 CH2
Alternative 2 <i>Lands to the South of Bray (including those at Kilruddery)</i>			B3 S1 CH1 CH2 W2 M1 HH1 W3	C1 M2 L1		B1 B2 W1
Alternative 3 <i>Lands to the North and South of the River Dargle</i>			B1 B2 B3 HH1 S1 W1 W2 W3 M1 CH1 CH2 L1	C1 M2		
Alternative 4 <i>Lands at Fassaroe</i>	C1 M2		B1 B2 B3 HH1 S1 W1 W2 W3 M1 CH1 CH2 L1			

Table 7.3 Evaluation of Alternative Locations which could be subject to an LAP against SEOs

7.3.7 Determination of Alternative Locations for the Development Plan

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 be 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.

7.3.8 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 Tíros Resources Ltd.

The selected location was 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.

7.4 Evaluation of Alternatives for Fassaroe

7.4.1 Evaluation against Existing Environment

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- **Brownfield vs. Greenfield Development**

Inherent to the implementation of all three alternatives is the method by which they provide for development - which is by way of greenfield development⁵². Brownfield development in Bray Town would not cater for the population required to be provided for by the Plan. Greenfield development of Fassaroe would be likely to present a number of conflicts with environmental components which are identified throughout this section.

Each of the alternatives provide for a similar amount of greenfield land to be developed.

- **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 site⁵³, the application of buffers to development by Alternatives A, B and C together with the integration of measures detailed under Section 9 of this report would mitigate this conflict.

Implementation of Alternatives A, B and C would significantly and adversely affect non-designated biodiversity and flora and fauna by providing for the development of greenfield lands which would result in the replacement of semi

natural habitats with artificial surfaces. Adverse effects upon ecological connectivity⁵⁴ would be likely as a result of such greenfield development 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. Also measures in Section 9 of this report would offset negative impacts to ecological connectivity.

- **Human Health, Old Landfills and Flooding**

Implementation of a Plan for Fassaroe would be likely could have a potential conflicting interaction with the protection of human health and could significantly and adversely affect human health⁵⁵. Such potential conflicts could - in the absence of mitigation - arise from: increasing the risk of flooding⁵⁶ on lands within, upstream and/or downstream of Fassaroe; development of - or development adjacent to - lands which were used as landfills in the past and which have not been fully defined or remediated; and/or, from development which is located alongside the M11 Motorway. Such conflicts and adverse effects would be likely to be mitigated by the land use zoning of each Alternative - which allow for significant buffers around each surface water body - and the measures detailed in Section 9 of this report which include requirements for: the integration of Sustainable Urban Drainage Systems; the adoption of a sequential approach to flood risk management; the preparation of flood risk assessments; and, measures relating to old landfills.

- **Groundwater and Surface Water**

The groundwater body underlying the Fassaroe area is rated as being highly vulnerable to pollution by the Geological Survey of Ireland and the Cookstown River is classified by the Water Framework Directive Characterisation Report as being *at significant risk* of not meeting the objectives of the Water

⁵¹ Footnotes like this are used in this section in order to identify instances where interactions between the relevant Scenario and the relevant SEOs occur. The nature of these interactions are identified on Table 7.4.

⁵² SEO S1

⁵³ SEOs B1 and B2

⁵⁴ SEO B3

⁵⁵ SEO HH1

⁵⁶ SEO W3

Framework Directive by 2015. The Cookstown River has been listed on the Water Framework Directive Register of Protected Areas for Drinking Water while groundwater beneath the Plan area is listed on the Water Framework Directive Register of Protected Areas for Drinking Water (Ground Water).

Implementation of Alternatives A, B and C could conflict with the status of ground⁵⁷ and surface⁵⁸ waters and associated flora and fauna - if unmitigated - by providing for the development of greenfield lands. Changes in the characteristics of run-off and groundwater recharge associated with the replacement of semi natural surfaces with artificial surfaces could impact upon water quality as could the construction of buildings and associated infrastructure. Such impacts could affect the ability of Wicklow County Council to achieve its requirements under the Water Framework Directive.

- **Waste Water Infrastructure, Bathing Water and Human Health**

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)⁵⁹. 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 health⁶⁰.

Alternatives A and C would require waste water treatment for a similar number of employees, 17,100 and 16,100 respectively while Alternative B would require waste water treatment for a significantly larger 21,900 persons. Alternatives B and C would both require waste water treatment for 10,000 persons while Alternative A would require waste water treatment for 7,200 persons. Taking these figures into account Alternative B would be likely to need most waste water treatment capacity, followed by Alternative C with Alternative A likely to need the least amount of waste water treatment capacity.

- **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 transport⁶¹ 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

⁵⁷ SEO W2

⁵⁸ SEO W1

⁵⁹ SEO M1

⁶⁰ SEO HH1

⁶¹ SEO M2

traffic and future transport related greenhouse gas emissions⁶² 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 Draft 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 (see previous information under Waste Water Infrastructure, Bathing Water and Human Health), 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 Places⁶³ (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)⁶⁴.

- **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* designation⁶⁵.

Lands in Fassaroe which rise up to the south towards the central MU2 (Mixed Use 2 - Predominantly Residential) zones are visually sensitive⁶⁶. 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 by Section 9 of this report will 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.*

⁶² SEO C1

⁶³ SEO CH1

⁶⁴ SEO CH2

⁶⁵ SEO L1

⁶⁶ SEO L1

7.4.2 Summary Evaluation against SEO's

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs - unlikely to be mitigated	Potential Conflict with status of SEOs - would be mitigated	Uncertain interaction with status of SEOs	Neutral Interaction with status of SEOs	No Likely interaction with status of SEOs
Alternative A	C1 M2		B1 B2 B3 HH1 S1 W1 W2 W3 M1 CH1 CH2 L1			
Alternative B	C1 M2		B1 B2 B3 HH1 S1 W1 W2 W3 M1 CH1 CH2 L1			
Alternative C	C1 M2		B1 B2 B3 HH1 S1 W1 W2 W3 M1 CH1 CH2 L1			

Table 7.4 Evaluation of Alternatives for Fassaroe against SEOs

7.4.3 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 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 Draft Plan and mitigation measures including those which have been integrated into the Plan and those which are recommended in Section 9 of this report.

7.4.4 The Draft LAP

The Alternatives that were examined were produced and evaluated at an earlier - more embryonic - stage to facilitate evaluation and selection of a plan - having regard, *inter alia* to environmental consequences. The figures overleaf illustrate the comparison between the Fassaroe component of the LAP (Alternative A) (top) and the Fassaroe component of the emerging, preferred Draft Plan (below).

The preferred Draft Plan will provide for a residential population of approximately 6,659 persons, compared with Alternative A's population of 7,200 persons.

There are 3 differences between Alternative A and the Draft Plan:

1. The proposed residential area in the north west of the Fassaroe area is of a higher density in the Draft Plan;
2. The residential area to the south of the mixed use area which surrounds the core is of a lower density in the Draft Plan; and,
3. There is an additional area of zoning provided for a relatively smaller area of land to the east of the M11 motorway.

The differences between Alternative A and the Draft Plan posed by points 1 and 2 above do not warrant a change in the assessment provided while the difference posed by point 3 is the subject of Appendix I to this report.

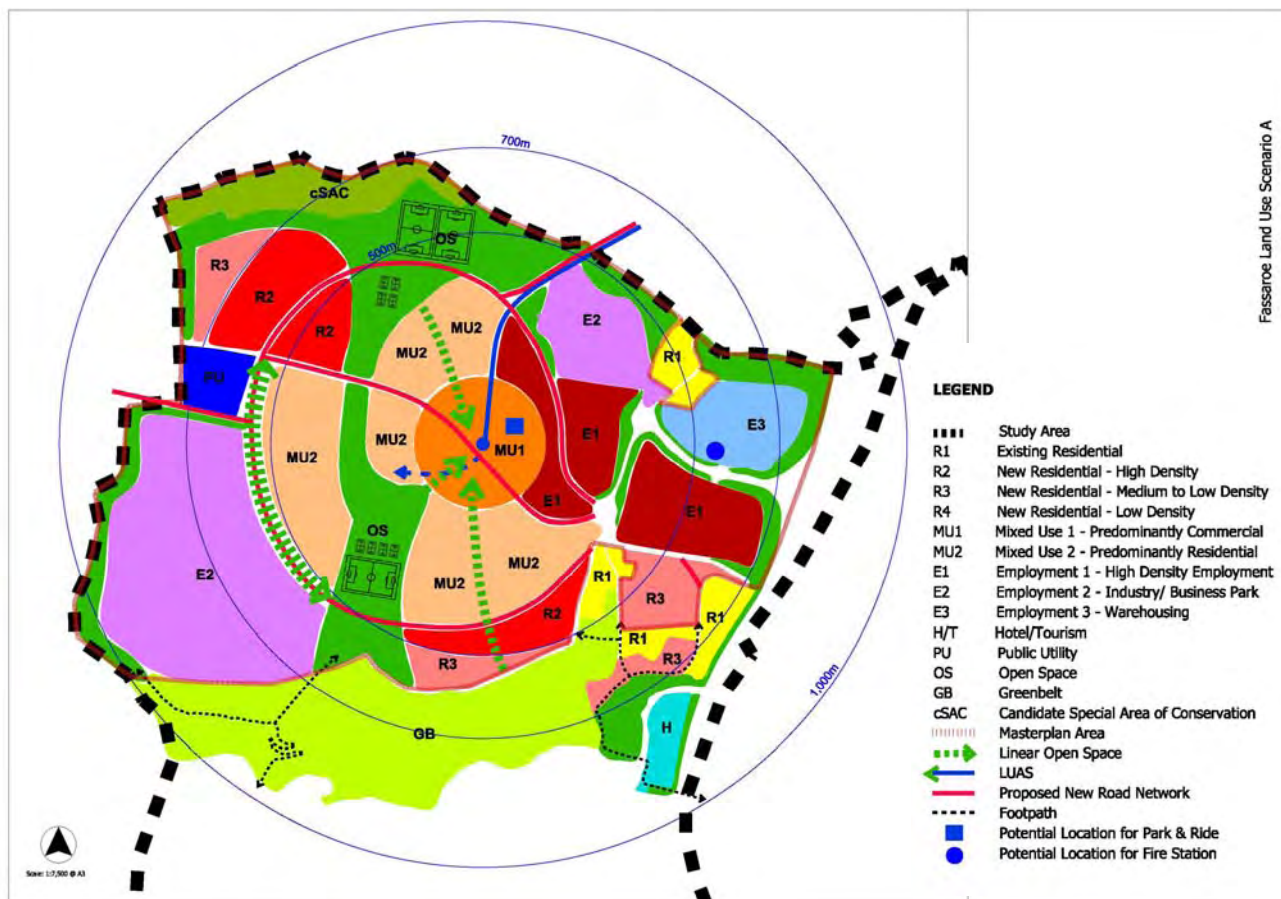


Figure 7.1 Fassaroe Land Use Alternative A

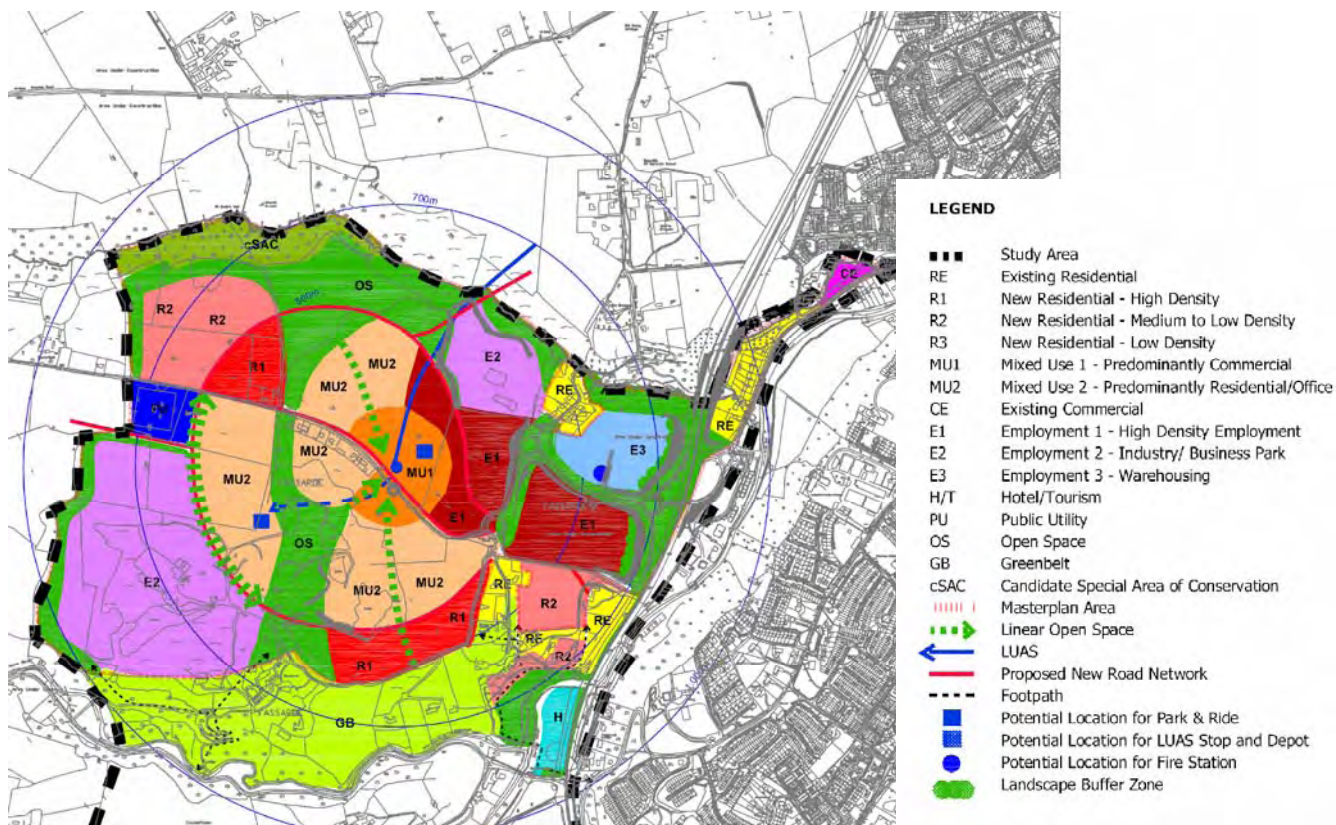


Figure 7.2 Fassaroe Land Use Zoning Map from the Draft LAP

7.5 Evaluation of Alternatives for Kilruddery

7.5.1 Evaluation against Existing Environment

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• Brownfield vs. Greenfield Development

All four alternatives provide for growth by way of greenfield development⁶⁸. 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.

• Biodiversity and Flora and Fauna

None of the four alternatives would have a conflicting interaction with the protection of ecologically designated sites⁶⁹. Alternative 3 would not have a conflicting interaction with the protection of ecological connectivity⁷⁰ while Alternatives 1, 2 and 4 would all potentially conflict with ecological connectivity⁷¹.

• Flooding

In the absence of mitigation potential conflicts could arise from increasing the risk of flooding⁷² within the Kilruddery area. Alternatives 1, 2 and 4 would pose the highest flood risk while the flood risk

by Alternative 3 would be less. Conflicts and adverse effects with regard to flooding would be likely to be mitigated by measures detailed in Section 9 of this report which include requirements for: the integration of Sustainable Urban Drainage Systems; the adoption of a sequential approach to flood risk management; and, the preparation of flood risk assessments.

• Groundwater

The vulnerability of the groundwater body underlying the Kilruddery area ranges from extreme to moderate. The Water Framework Directive Characterisation Report rates the groundwater body as being *at significant risk* of meeting the objectives of the Water Framework Directive by 2015. Groundwater beneath the Plan area is listed on the Water Framework Directive Register of Protected Areas for Drinking Water (Ground Water). Implementation of all Alternatives could conflict with the status of groundwaters⁷³ - if unmitigated - by providing for the development of greenfield lands. As Alternatives 1, 2 and 4 provide for greater extents of greenfield development, these alternatives would be likely to result in the greatest effects upon the status of the groundwater body.

• Waste Water Infrastructure, Bathing Water and Human Health

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)⁷⁴.

⁶⁷ Footnotes like this are used in this section in order to identify instances where interactions between the relevant Scenario and the relevant SEOs occur. The nature of these interactions are identified on Table 7.5.

⁶⁸ SEO S1

⁶⁹ SEOs B1 and B2

⁷⁰ SEO B3

⁷¹ SEO B3

⁷² SEO W3

⁷³ SEO W2

⁷⁴ SEO M1

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 health⁷⁵.

Alternative 3 would require waste water treatment for the smallest new population of all alternatives while Alternative 4 would require waste water treatment for the largest new population of all alternatives. Alternatives 1 and 2 would require waste water treatment for similar numbers of new populations.

- **Greenhouse Gas Emissions and Car Dependency**

The interaction between all 4 Alternatives and the reduction of greenhouse gas emissions⁷⁶ and the minimisation of car dependency⁷⁷ 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 Places⁷⁸ (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)⁷⁹. 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 Loaf⁸⁰.

Alternatives 1, 2 and 4 propose R4 low density residential development on the slopes of the Little Sugar Loaf. This

⁷⁵ SEO HH1

⁷⁶ SEO C1

⁷⁷ SEO M2

⁷⁸ SEO CH1

⁷⁹ SEO CH2

⁸⁰ SEO L1

development would be likely to significantly and adversely affect the landscape and would not be likely to be fully mitigated.

7.5.2 Evaluation against SEO's

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs - unlikely to be mitigated	Potential Conflict with status of SEOs - would be mitigated	Uncertain interaction with status of SEOs	Neutral Interaction with status of SEOs	No Likely interaction with status of SEOs
Alternative 1		L1	B3 S1 CH1 CH2 W2 M1 HH1 W3	C1 M2		B1 B2 W1
Alternative 2		L1	B3 S1 CH1 CH2 W2 M1 HH1 W3	C1 M2		B1 B2 W1
Alternative 3			S1 CH1 CH2 W2 M1 HH1 W3 L1	C1 M2		B1 B2 B3W1
Alternative 4		L1	B3 S1 CH1 CH2 W2 M1 HH1 W3	C1 M2		B1 B2 W1

Table 7.5 Evaluation of Alternative Scenarios against SEOs

There are two differences between Alternative 3 and the Draft Plan:

7.5.3 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 mitigation measures, including those which have been integrated into the Plan and those which are recommended in Section 9 of this report.

1. The E2 Employment - Industry/Business Park zoning of the lands to the immediate south of the business park shown in Alternative 3 is zoned R4 New Residential - Low Density and covers a larger area in the Draft Plan; and;
2. The E2 Employment - Industry/Business Park zoning of the Foggy Field area in Alternative 3 is zoned H - Hotel in the Draft Plan.

The differences between Alternative 3 and the Draft Plan posed by points 1 and 2 above do not warrant a change in the assessment provided.

7.5.4 The Draft LAP

The Alternatives that were examined were evaluated having regard, *inter alia* to environmental consequences. The figures overleaf illustrate the comparison between the evaluated alternative which is closest to the Kilruddery component of the Draft LAP (Alternative 3) (top) and Kilruddery component of the emerging, preferred Draft Plan (below).

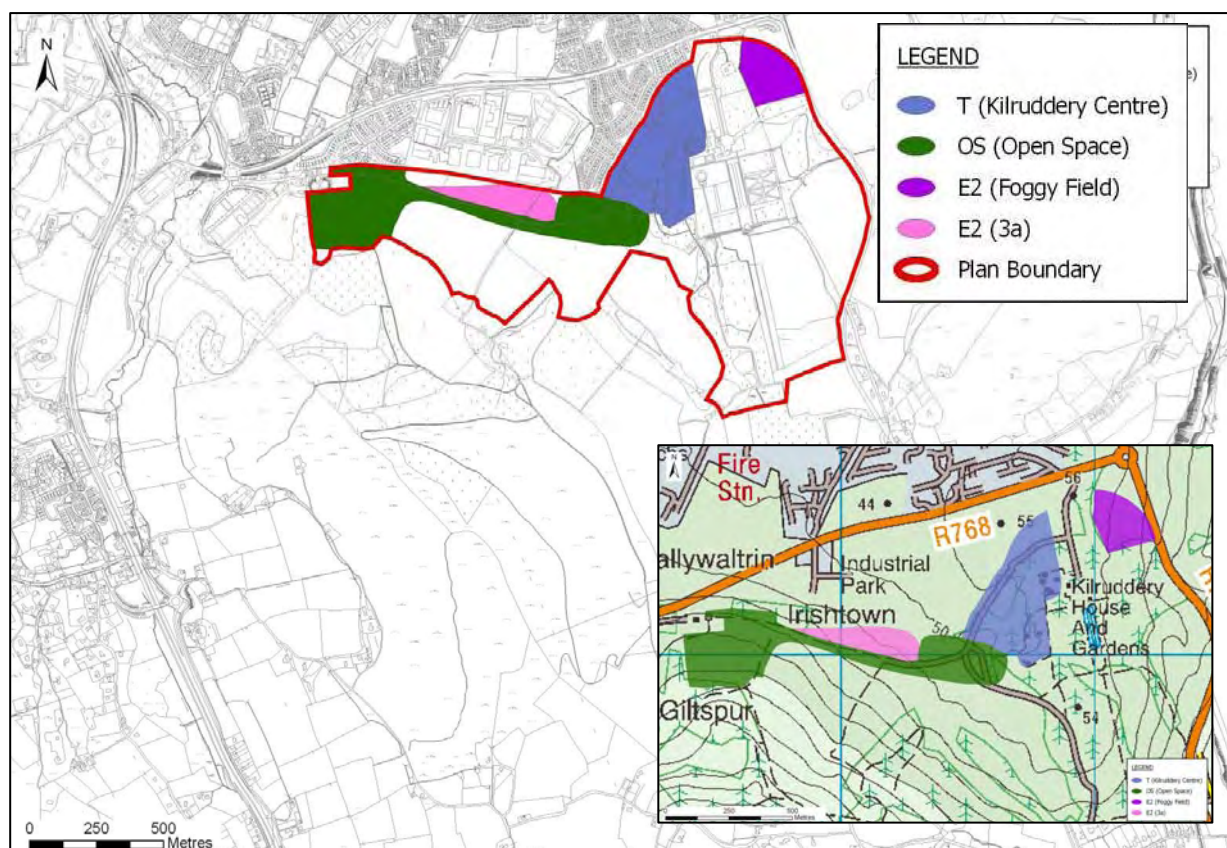


Figure 7.3 Kilruddery Land Use Alternative 3

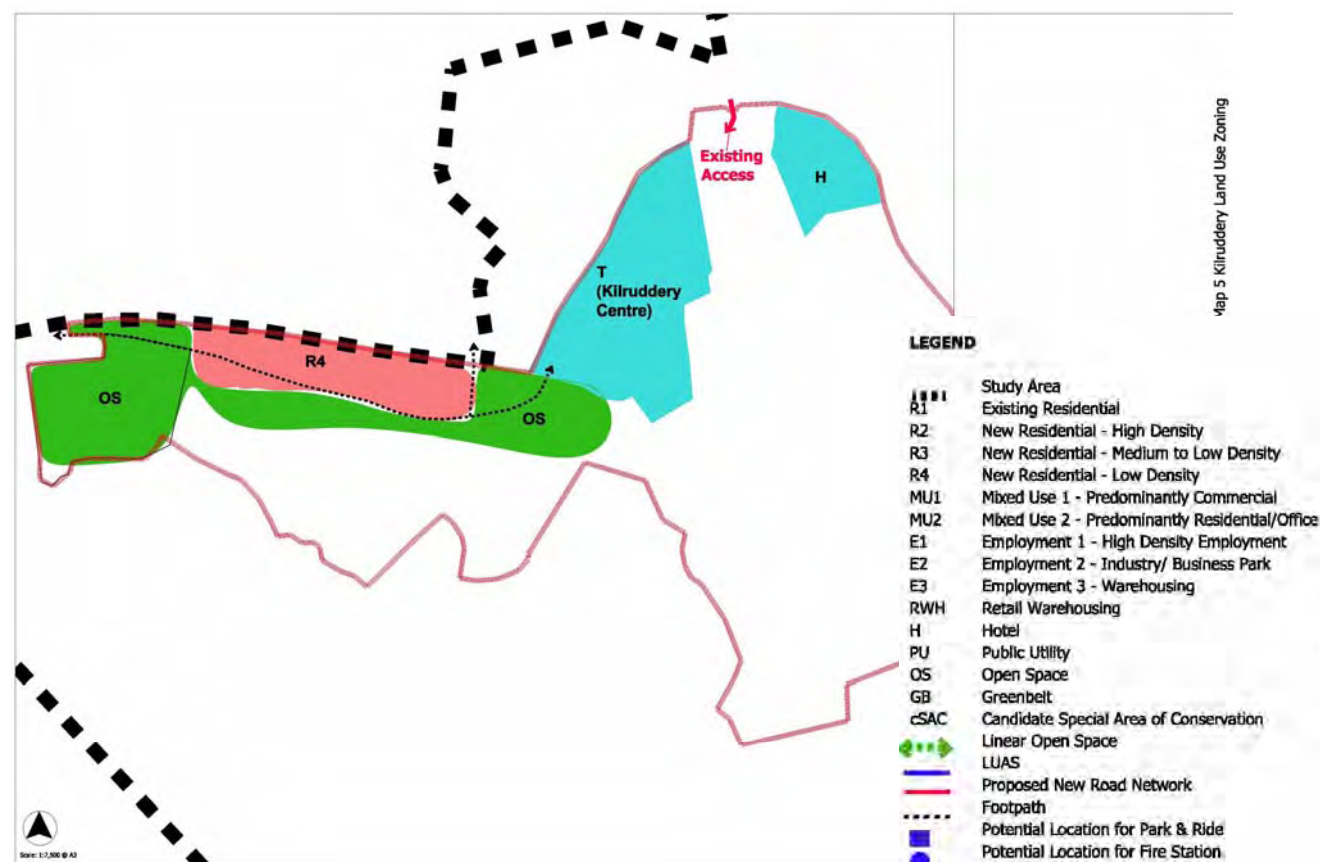


Figure 7.4 Kilruddery Land Use Zoning Map from the Draft LAP

Section 8 Evaluation of Draft Plan Policies and Objectives

8.1 Methodology

This section evaluates the Draft Plan's strategy, policies, objectives and standards. Strategic Environmental Objectives (SEOs) are used as outlined under Section 7.2.3 in order to evaluate the relevant measures of the Draft Plan. Use has been made of the environmental baseline descriptions and the maps of the individual components provided in Section 3 for this purpose.

Table 8.1 brings together all the SEOs which have been developed from international, national, regional and county policies which generally govern environmental protection objectives.

SEO Code	SEO
B1	To avoid loss of relevant habitats, geological features, species or their sustaining resources in designated ecological sites
B2	To avoid significant adverse impacts, including direct, cumulative and indirect impacts, to relevant habitats, geological features, species or their sustaining resources in designated ecological sites by development within or adjacent to these sites
B3	To sustain, enhance or - where relevant - prevent the loss of ecological networks or parts thereof which provide significant connectivity between areas of local biodiversity
HH1	To protect human health from hazards or nuisances arising from exposure to incompatible landuses
S1	Maximise the sustainable re-use of brownfield lands, and maximise the use of the existing built environment rather than developing greenfield lands
W1	To maintain and improve, where possible, the quality of rivers and transitional waters
W2	To prevent pollution and contamination of ground water
W3	To prevent development on lands which pose - or are likely to pose in the future - a significant flood risk
C1	To minimise increases in travel related greenhouse emissions to air
M1	To serve new development with appropriate waste water treatment
M2	To reduce the overall proportion of car dependency within County Wicklow by way of, inter alia, encouraging modal change from car to more sustainable forms of public transport and encouraging development which will not be dependent on private transport
CH1	To protect archaeological heritage - including entries to the Record of Monuments and Places and unknown archaeology - and the context of the above within the surrounding landscape where relevant
CH2	To preserve and protect the special interest and character of architectural heritage with regard to entries to the Record of Protected Structures and their context within the surrounding landscape where relevant
L1	To avoid significant adverse impacts on the landscape, especially with regard to landscapes which are most valuable and most sensitive to change and views and prospects of special amenity

Table 8.1 Strategic Environmental Objectives (SEOs) ⁸¹

⁸¹ Strategic Environmental Objectives (SEOs) are methodological measures which are developed from international, national, regional and county policies which generally govern environmental protection objectives and against which the environmental effects of the Draft Plan can be tested. The SEOs are used as standards against which the development strategies, policies and objectives of the Draft Plan can be evaluated in order to help identify areas in which significant adverse impacts are likely to occur, if unmitigated against.

8.1.1 Note: Uncertainty of Plan Measures

With regard to strategies, policies, objectives and standards evaluated as having an uncertain interaction with the status of SEOs, the interaction, and environmental impacts, if any, which the implementation of these Plan measures would have would be determined by: the nature and extent of development arising from these Plan measures, and; site specific environmental factors. These impacts may be assessed as part of an EIA of a particular project and/or by the development management process.

Avoidance of conflict is dependent upon the development management process only granting permission for individual projects arising from these measures which do not conflict with the status of SEOs. Providing other Plan measures, including the measures recommended by this report, and measures arising out of lower tier assessments are complied with, conflicts with SEOs would be likely to be avoided.

8.2 Residential Development

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs- unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	Uncertain interaction with status of SEOs	Neutral interaction with status of SEOs	No Likely interaction with status of SEOs
Policies and Objectives						
Notwithstanding the zoning of land for residential purposes, the Development Management process shall monitor and implement the 2010 and 2016 population targets and shall phase and restrict, where necessary, the granting of residential planning permissions to ensure these targets are not exceeded.				✓		
All planning applications must be accompanied by a sustainability assessment. Innovative design solutions, paying particular attention to environmental sustainability, will be supported subject to compliance with the objectives set out in this Plan and the principles of proper planning and sustainable development.				✓		
Provide for the consolidated and sustainable development of housing within the Plan area, incorporating the necessary physical, social, community and employment infrastructure to match the need of new residents.	M1 M2	S1	B1 B2 B3 HH1 W1 W2 W3 CH1 CH2 L1			
Protect existing residential amenity within the Plan area.				✓		
Facilitate higher residential densities at appropriate locations as per the zoning objectives, subject to a high standard of design, layout and finish.	C1 M2	S1	B3 HH1 W1 W2 W3 M1 CH1 CH2 L1			
Alternative and contemporary designs shall be encouraged (including alternative materials, heights and building forms) to provide for high quality visual diversity, legibility and permeability, subject to the protection of established amenity.	CH2					
Provide for a mix of residential types to ensure social integration and to meet the needs of different households, including the special requirements of elderly persons and persons with disabilities.						✓

8.3 Employment and Enterprise

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs- unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	Uncertain interaction with status of SEOs	Neutral interaction with status of SEOs	No Likely interaction with status of SEOs
Policies and Objectives						
Promote the location of high-density employment uses in locations within or close to the core area and close to public transport nodes within Fassaroe.	C1 M2	S1	B3 HH1 W2 W3 M1 CH1 L1			B1 B2
Protect and enhance existing employment within Fassaroe, including the Greenstar waste recycling facility.			HH1			

Provide for the development of a tourism/enterprise development on lands within the Kilruddery Demesne. Any proposal for development should be to a high quality of design and layout, and have particular regard for the surrounding environment and the protected status of the Demesne.			B3 W2 M1 CH2 L1	HH1 W3 CH1			
Provide for the development of a hotel within Kilruddery Demesne located south of the Southern Cross roundabout at the foot of Bray Head.			B3 W2 M1 CH2 L1	HH1 W3 CH1			
The employment component of the MU2 zone shall be located in close proximity to the core.	C1 M2						

8.4 Retail

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs- unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	Uncertain interaction with status of SEOs	Neutral interaction with status of SEOs	No Likely interaction with status of SEOs
Policies and Objectives						
Within the core, retail/service use will be encouraged at street level to provide for a vibrant neighbourhood centre.	C1 M2		HH1			
Provide for small-scale retail facilities outside the core, subject to the protection of the identified neighbourhood centres and residential amenity.	CH2		HH1			

8.5 Social and Community Infrastructure

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs- unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	Uncertain interaction with status of SEOs	Neutral interaction with status of SEOs	No Likely interaction with status of SEOs
Policies and Objectives						
Provide a District Park of 23 hectares within Fassaroe. The Park will consist of both active and passive open space, and include such facilities as outdoor playing pitches and other sports facilities for adults and children. This park will be sufficiently sized and laid out in order to accommodate both active and passive open space areas. The park will provide for recreational amenity requirements of the Fassaroe area, and for Bray town and the wider environs.	C1 M2 B3 L1		HH1			
A large community facility shall be provided in the core area of Fassaroe. At local neighbourhood level, facilities such as community meeting space and equipped play space/ informal youth hardcourt areas shall be provided. Community Meeting Space should be clustered with other local level development such as primary schools and neighbourhood retail, while approximately 5.6 ha of equipped play space/informal youth areas should be dispersed throughout the Plan area.	C1 M2	S1	B3 W2 M1 CH1 L1	HH1 W3		
A minimum of c. 3 ha shall be reserved for the provision of 2 no. primary schools within the Fassaroe area. It is a specific objective to provide a 1 x 12 classroom primary school requiring c. 1.2 ha, and a 1 x 24 school classroom requiring 1.6 ha located within the north-west/south-east sectors (Map 6).		S1	B3 W2 M1 CH1 L1	HH1 W3		
A site of c. 5 ha shall be reserved for the purpose of providing a post-primary school to cater for up to 1,000 pupils. The	C1 M2	S1	B3 HH1			

secondary school is envisaged to be provided within the core.			W2 W3 M1 CH1 L1			
All significant developments within the Mixed Use zones (MU1 and MU2) shall be required to provide appropriate community facilities, to be determined through consultation with the Community & Enterprise Section of Wicklow County Council, including such facilities as a library, childcare facilities, medical centre etc.	C1 M2		B3 HH1 W2 W3 M1 CH1 L1			
Provide a greenbelt zone to the south of Fassaroe to protect the visual amenity of the area, and to act as a transition zone between the Plan area and unzoned lands to the south.	B3 L1					
Provide linear parks though the extent of zoned lands in both Fassaroe and Kilruddery Demesne as indicated on the relevant land use maps 4 & 5. A minimum width of 20 metres should be provided for this type of open space.	C1 M2 B3 L1		HH1			
All new public amenity areas shall be provided with safe pedestrian routes, as well as appropriate lighting and furniture.	C1 M2					
Provide for the appropriate amount of childcare facilities within residential zones, in accordance with Childcare Facilities Guidelines. Appropriate childcare facilities should also be provided within employment zones.	C1 M2					
15% of play/open space land shall be provided in residential areas in excess of the requirements set out above and in accordance with the provisions of the CDP.						✓

8.6 Traffic and Transportation

	Likely to <u>Improve</u> status of SEOs	Probable <u>Conflict</u> with status of SEOs- unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	Uncertain interaction with status of SEOs	<u>Neutral</u> interaction with status of SEOs	<u>No Likely</u> interaction with status of SEOs
Transport Policies and Objectives						
Promote sustainable travel patterns from new development through appropriate land use mixes and providing high levels of accessibility, by ensuring good permeability within the development and connectivity to surrounding areas.	C1 M2					
Ensure traffic calming principles are adopted as a design dynamic of new developments.	C1 M2					
Roads Policies and Objectives						
Ensure sufficient land is reserved to provide for an east west link road known as Ballyman Link Road from the N11 to Ballyman.			B1 B2 B3 W1 L1 HH1			
Provide for a Western Link Road to connect Fassaroe with Old Connaught. It is intended that the bridge over the valley be designed to accommodate vehicular, pedestrian, cyclist and LUAS related traffic.	C1 M2		B3 W1 L1			
Public Transport Policies and Objectives						
Facilitate and support the Railway Procurement Agency (RPA) in works relating to the provision of LUAS services in Fassaroe.	C1 M2					
Ensure Park and Ride car parking, bus parking and bicycle spaces are provided at the LUAS stops to facilitate interchange between the various modes of transport. This will assist in providing an integrated public transport network.	C1 M2		HH1 W3			
A site of c. 6 ha shall be reserved for the provision of a LUAS Park and Ride facility within the core area.	C1 M2		HH1 W3			
A site shall be reserved for a tram stabling depot within the south-west sector including a land reservation for park and ride.	C1 M2		HH1 W3			
Pedestrian and Cyclist Policies and Objectives						
Encourage and promote cycling and walking efficiencies.	C1 M2					
Walking and cycling routes, along rivers and through all green space areas, shall be provided throughout the areas designated for development to ensure permeability within both Fassaroe and Kilruddery.	C1 M2					
Provide foot and cycle paths across the hotel zone at St. Valery's and through to the centre of Fassaroe.	C1 M2					
Provide adequate lighting along pedestrian and cycling routes.	C1 M2					

Improve pedestrian facilities on existing and proposed linkages through the provision of formal pedestrian crossings that are suitable for mobility impaired road users.	C1 M2					
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8.7 Public Services Infrastructure

	Likely to <u>Improve</u> status of SEOs	Probable <u>Conflict</u> with status of SEOs- unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	Uncertain interaction with status of SEOs	<u>Neutral</u> interaction with status of SEOs	<u>No Likely</u> interaction with status of SEOs
Water Supply Policies and Objectives						
Development will not be permitted unless adequate water supply can be provided.				✓		
Investigate the possibility of constructing and source a location for a new high level reservoir to serve the Kilruddery area and provide additional supply to the Bray Town area.			L1 CH1 CH2	✓		
Support the use of water saving systems including rainwater harvesting and greywater recycling on all new developments.						✓
Waste and Surface Water Policies and Objectives						
Development will not be permitted unless treatment and distribution capacity can be provided.	M1			✓		
Ensure the implementation of Sustainable Urban Drainage Networks (SUDS) and compliance with the Greater Dublin Strategic Drainage Study (GDSDS) within developments.	HH1 W3					
Implement strict surface water discharge allowances from proposed development sites and encourage the use of SUDS measures to reduce surface water run off from proposed development sites to reduce the cumulative loading on the surface water network.	HH1 W2 W3					
Ensure that each application for a development is supported by a flood risk assessment.	HH1 W3					
Energy and Communication Networks Policies and Objectives						
To support and facilitate the provision of improved energy supplies and telecommunication networks to the area in order to support economic and social development.				✓		
Facilitate the improvement and extension of telecommunications networks to ensure the availability of affordable and high quality communications media such as telephone and broadband internet for all residents and employees in the LAP area.				✓		
Facilitate the provision of 'Bring Centres' in suitable locations to encourage recycling of waste materials.				✓		

8.8 Built and Cultural Heritage

	Likely to <u>Improve</u> status of SEOs	Probable <u>Conflict</u> with status of SEOs- unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	Uncertain interaction with status of SEOs	<u>Neutral</u> interaction with status of SEOs	<u>No Likely</u> interaction with status of SEOs
Built Heritage Policies and Objectives						
Protect the built and cultural heritage of Kilruddery Demesne.	CH1 CH2 L1					
Proposals for the development of the Kilruddery Demesne shall, as part of the masterplan, outline how the proposal fits with				✓		

the estate and the objectives for its conservation						
At masterplan stage all recorded monuments in the study area shall be listed and mapped, including St. Valery's Cross and Fassaroe Castle. Pre-development archaeological testing surveying, monitoring and recording shall be carried out as appropriate, where proposals for development occur in the vicinity of known Archaeological sites.	CH1					
Natural heritage Policies and Objectives						
Wicklow County Council shall ensure the protection of existing ecological corridors including rivers, streams, hedgerows, trees, wooded areas, scrub and traditional stone walls. All proposals for development shall be required to identify all ecological corridors, assess the impact of the proposal on these and set out detailed mitigation measures to offset any negative impact.	B1 B2 B3 W1 L1					
The council shall ensure the protection of all trees of environmental, landscape and amenity value. Proposals which require the felling of these trees to facilitate development shall be discouraged.	B3 L1					
All proposals for development will be required to submit a tree impact assessment and mitigation plans as part of the masterplanning application.	B3 L1					
Buffer zones shall be put in place along watercourses to conserve the ecological value of these areas and to enhance their role as green corridors. Where open space zoning is proposed along watercourses masterplan criteria shall actively strive to conserve and enhance biodiversity.	B1 B2 B3 W1 L1					

8.9 Landscape and Natural & Visual Amenity

	Likely to Improve status of SEOs	Probable Conflict with status of SEOs- unlikely to be mitigated	Potential Conflict with status of SEOs- likely to be mitigated	Uncertain interaction with status of SEOs	Neutral interaction with status of SEOs	No Likely interaction with status of SEOs
Policies and Objectives						
To have regard to the existing landscape and visual character in the context of the developments proposed.	L1					
Protect views or prospects of special amenity value.	L1					
Protect the value and amenity of designated areas.	B1 B2 B3					
Create a network of public open space to ensure the maintenance of certain views across the lands from Carrigolan and the Sugar Loaf Mountain.	L1					
Provide pedestrian connections into Ballyman Glen to harness its potential as a local amenity.						✓
Protect the integrity of the Ballyman Glen and the Dargle and Cookstown River Valleys.	L1 B3					
The masterplan shall be subject to enhanced requirements in terms of visual impact assessment, integration of the design into the surrounding landscape, and use of appropriate tree planting and landscaping, preferably predominantly of native species.	L1					
The design and landscaping of all open spaces shall demonstrate best practice in terms of identifying local biodiversity value, retaining riparian vegetation, avoidance of disturbance to wildlife and promoting active biodiversity enhancement.	B3					
Development proposals shall be accompanied by a visual impact assessment demonstrating that landscape impacts have been anticipated to a level consistent with the sensitivity of the landscape.	L1					

Section 9 Mitigation Measures

9.1 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 on the Draft LAP lands.

Additional more detailed mitigation measures to those detailed below and those integrated into the Draft LAP would be likely to be required by the development management and EIA processes of individual projects.

9.2 SEA Recommendation

It is recommended that the mitigation measures detailed under Section 9.3 be integrated into and adopted as part of the Draft Local Area Plan.

Note: The wordings of measures contained hereafter constitute an undertaking - as per the most relevant equivalent Irish Guidelines on the best practice⁸².

⁸² The most commonly encountered and significant problem in Environmental Impact Statements is the complete or partial omission of any clear, legally enforceable commitment to undertake the mitigation measures proposed in response to a predicted impact. EPA (2003) *Advice notes on Current Practice (In the Preparation in of Environmental Impact Statements)* Wexford: EPA

Accordingly Mitigation measures contained hereafter should be incorporated in their entirety - or should be omitted. The degree of undertaking should remain as that the measure 'shall' or 'will' be implemented. The substitution of these words with the words 'should', 'ought' or 'may' is not in accordance with best practice and should be avoided.

9.3 Mitigation Measures

9.3.1 Biodiversity and Flora and Fauna

No projects giving rise to significant adverse direct, indirect or secondary impacts on Natura 2000 sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either individually or in combination with other plans or projects)⁸³.

All projects arising from this plan will be screened for the need to undertake Appropriate Assessment under Article 6 of the Habitats Directive.

Wicklow County Council shall ensure the protection of existing ecological corridors including rivers, streams, hedgerows, trees, wooded areas, scrub and traditional stone walls. All proposals for development shall be required to identify all ecological corridors, assess the impact of the proposal on these and set out detailed mitigation measures to offset any negative impact.

Any road project which involves crossing a Natura 2000 site will:

⁸³ Except as provided for in Section 6(4) of the Habitats Directive, viz. There must be:
(a) no alternative solution available,
(b) imperative reasons of overriding public interest for the plan to proceed; and
(c) adequate compensatory measures in place.

- Demonstrate the need for the project in light of a 'do nothing' context;
- Examine the potential for intensifying/upgrading existing roads and routes as an alternative to carrying out new road development affecting a *Natura 2000* site;
- Develop and evaluate a comprehensive series of plausible alternative routes and design strategies (the latter to include long span and tunnel options);
- Demonstrate how each route has been taken due account of, and accommodated, ecological considerations and legislative requirements; and,
- Demonstrate that the chosen route will not cause any incursions onto or significant adverse effects on these habitats.

9.3.2 Water Protection

When published, the relevant policies and objectives of the Eastern River Basin Management Plan and associated Programme of Measures shall be integrated into the Plan through amendment or otherwise.

Developments provided for by the Plan shall be undertaken in such a way so as not to compromise the quality of surface water (and associated habitats and species) and groundwater within the zones of influence of the Plan area.

Landuses shall not give rise to the pollution of ground or surface waters during the construction or operation of developments. This shall be achieved through the adherence to best practice in the design, installation and management of systems for the interception, collection and appropriate disposal or treatment of all surface waters and effluents.

9.3.3 Waste Water

Public wastewater collection and treatment infrastructure - which fully complies with requirements of 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) including the need to provide secondary treatment - shall be operational and with adequate capacity to accommodate waste water arising from the development, prior to

developments being occupied. Discharges arising from this collection and treatment shall also comply with the requirements of the Directive.

Wicklow County Council shall work alongside Dún Laoghaire-Rathdown County Council to help ensure that the relevant recommendations set out in *Urban Waste Water Discharges in Ireland for Population Equivalents Greater than 500 Persons – A Report for the Years 2004 and 2005* (Office of Environment Enforcement - EPA, 2007) are implemented.

The feasibility of connecting of unsewered, areas including individual properties/ premises, serviced by septic tanks to existing and planned sewer networks shall be examined.

9.3.4 Drinking Water

Conformity with the relevant recommendations set out in *The Provision and Quality of Drinking Water in Ireland – A Report for the Years 2006-2007* (Office of Environment Enforcement- EPA, 2007) shall be achieved.

Existing and new populations under the LAP shall be served with clean and wholesome drinking water.

Compliance shall be achieved with the 48 parameters set out under the European Communities (Drinking Water) Regulations (No. 2) 2007.

9.3.5 Flooding

Proposals for development shall be required, where relevant, to integrate adequate and appropriate Sustainable Urban Drainage Systems (SUDS) and comply with the provisions of the Greater Dublin Strategic Drainage Study.

Development in areas at risk of flooding, particularly floodplains, shall be avoided by not permitting development in flood risk areas unless: it is fully justified that there are wider sustainability grounds for appropriate development; unless the flood risk can be managed to an acceptable level without increasing flood risk elsewhere; and, where possible, it reduces flood risk overall.

A sequential approach to flood risk management based on avoidance, reduction and then mitigation of flood risk as the overall framework

for assessing the location of new development in the development planning processes shall be adopted.

Flood risk assessments shall accompany planning applications and these assessments shall be incorporated into the process of making decisions on planning applications and planning appeals.

9.3.6 Old Landfills

Wicklow County Council shall ensure that adequate and appropriate investigations are carried out into the nature and extent of old landfills, the nature and extent of soil and groundwater contamination arising and the risks associated with site development work or proximate development. These risks shall be mitigated by Wicklow County Council by order or otherwise before development takes place.

9.3.7 Cultural Heritage

Landuses shall not give rise to significant losses of the integrity, quality or context of archaeological material - except as may be conditioned or directed by the appropriate heritage agencies. This shall be achieved by the application of appropriate design standards and criteria.

New developments shall not result in any significant loss in the architectural integrity, quality or character of the area, where appropriate. Planning applications may be required to be accompanied by an assessment undertaken by an accredited conservation architect, where appropriate, detailing the impacts of the relevant development upon the special interest and character of the surrounding architectural heritage. Wicklow County Council shall be consulted at an early stage in this regard in order to determine whether there is a need for such an assessment or for specific mitigation measures.

In order to protect, strengthen and improve the presentation and the general character of Sligo Town and Environs, alterations and interventions to Protected Structures shall be executed to the highest conservation standards (Venice Charter and subsequent ICOMOS Charters), and shall not detract from their significance or value.

Planning applications for developments in sensitive areas shall be accompanied by an assessment undertaken by an accredited conservation architect, where appropriate, detailing the impacts of the proposed development upon the special interest and character of the surrounding architectural heritage. The relevant Planning Authority shall be consulted at an early stage in this regard in order to determine whether there is a need for such an assessment or for specific mitigation measures.

The Record of Protected Structures shall be extended on a phased basis, as appropriate, in order to incorporate any recommendations from the National Inventory of Architectural Heritage.

9.3.8 Air and Climatic Factors

Wicklow County Council shall protect air quality in the Bray Environs areas zoned for increased urban development and transport related development.

9.3.9 Transportation

Traffic management measures to reduce the potential for traffic congestion and associated vehicular emissions within and emanating from the Plan areas where issues relating to traffic congestion and associated vehicular emissions arise will be implemented.

9.3.10 Waste Management

An integrated approach to waste management for proposed developments - to include wastes generated during the construction, operation and maintenance phases - shall be implemented, having particular regard to Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (DEHLG, July 2006).

9.3.11 Energy/ Energy Conservation

Energy conservation measures shall be promoted and the use of renewable energy systems in new developments which are provided for by the LAP.

9.3.12 Amendments to Wording of Policies Required - Landscape

Change the wording of the following policy:

Development proposals shall be accompanied by a visual impact assessment demonstrating that landscape impacts have been anticipated to a level consistent with the sensitivity of the landscape.

To:

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.

Section 10 Monitoring Measures

10.1 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 Local Area Plan (LAP) which are adopted alongside 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 reexamined and whether the proposed mitigation measures are being implemented.

10.2 Indicators and Targets

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 Strategic Environmental Objectives used in the evaluation. Focus will be given to indicators which are relevant to the likely significant environmental effects of implementing the LAP and existing monitoring arrangements will be used in order to monitor the selected indicators. Each indicator to be monitored will be accompanied by the relevant target(s) which were identified with regard to the relevant legislation (see Section 4).

Table 10.1 below shows the indicator and targets which have been selected with regard to the monitoring of the plan.

10.3 Sources

Measurements for indicators should come from existing monitoring sources and no new monitoring should be required to take place. Existing monitoring sources exist for each of the indicators and include those maintained by Wicklow County Council and the relevant authorities e.g. the Environmental Protection

Agency, the National Parks and Wildlife Service and the Central Statistics Office.

The *Development Management Process* in Wicklow County Council will provide passive monitoring of various indicators and targets on an application by application basis. Where significant adverse effects - including positive, negative, cumulative and indirect - are likely to occur upon, for example, entries to the RMP, entries to the RPS or ecological networks as a result of the undertaking of individual projects or multiple individual projects such instances should be identified and recorded and should feed into the monitoring evaluation.

10.3.1 Excluded Indicators and Targets

As noted on Table 10.1 below, monitoring data on Indicator W2 (Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC) may not be available for the preliminary monitoring evaluation as the groundwater threshold values to which this indicator relates have not yet been identified by the EPA.

In addition, future monitoring data for Indicators C1i (Percentage of population within the plan area travelling to work or school by public transport or non-mechanical means) and C1ii (Average distance travelled to work or school by the population of the LAP area) will not be available until the results of the next CSO Census are made available. It is recommended that data for these indicators be sourced for the SEA of the next review of the Plan.

10.4 Reporting

A preliminary monitoring evaluation report on the effects of implementing the LAP will be prepared within two years of the making of the plan.

10.5 Responsibility

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.

It is recommended that a Steering Committee be established to oversee the monitoring process.

10.6 Thresholds

Appropriate thresholds will be set for the monitoring programme before the Plan and Environmental Report are adopted. These may include, for example:

- boil notices on drinking water;
- fish kills;
- complaints received from statutory consultees regarding avoidable impacts resulting from development which is granted permission under the LAP; and,
- court cases taken by the DEHLG regarding impacts upon archaeological heritage including entries to the Record of Monuments and Places.

Environmental Component	Selected Indicator(s)	Selected Target(s)	Source
Biodiversity, Flora and Fauna	<p>B1: Percentage of relevant habitats and designated ecological sites lost as a result of implementation of the LAP</p> <p>B2: Number of significant adverse impacts, including direct, cumulative and indirect impacts, to relevant habitats, geological features, species or their sustaining resources in designated ecological sites by development within or adjacent to these sites as a result of implementation of the LAP</p> <p>B3: Percentage loss of connectivity between areas of local biodiversity as a result of implementation of the LAP - as evidenced from a resurvey of CORINE mapping</p>	<p>B1: No losses of relevant habitats, species or their sustaining resources in designated ecological sites as a result of implementation of the LAP</p> <p>B2: No significant adverse impacts, including direct, cumulative and indirect impacts, to relevant habitats, geological features, species or their sustaining resources in designated ecological sites by development within or adjacent to these sites as a result of implementation of the LAP</p> <p>B3: No ecological networks or parts thereof which provide significant connectivity between areas of local biodiversity to be lost without remediation as a result of implementation of the LAP</p>	<p>CORINE Mapping, NPWS Records & Development Management Process in Wicklow County Council</p> <p>Development Management Process in Wicklow County Council & Consultation with the National Parks and Wildlife Service</p> <p>CORINE mapping</p>
Population and Human Health	HH1: Occurrence (any) of a spatially concentrated deterioration in human health	HH1: No spatial concentrations of health problems arising from environmental factors	Wicklow County Council, EPA, Health and Safety Authority
Soil	S1: Area of brownfield land developed over the plan period.	S1: Reduced availability of brownfield land (subject to availability on the open market, the demand for such land and the ability for such lands to be sustainably re-used within the provisions of the LAP) at the end of the LAP lifespan	Development Management Process in Wicklow County Council

Environmental Component	Selected Indicator(s)	Selected Target(s)	Sources
Water	Indicator W1i: Biotic Quality Rating (Q Value)	W1ia: To maintain a biotic quality rating of Q4, in line with the requirement to achieve good water status under the Water Framework Directive, by 2015 W1ib: To improve biotic quality ratings, where possible, to Q5	Environmental Protection Agency
	W1ii: Trophic Status (ATSEBI)	W1ii: To maintain or to improve trophic status, where relevant, to unpolluted in line with the requirement to achieve good water status under the Water Framework Directive, by 2015	Environmental Protection Agency
	W2: Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC	W2: Compliance with Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC	As noted under Section 10.3.1, monitoring data may not be available for this indicator when the monitoring evaluation is being prepared. Environmental Protection Agency
	W3: Number of developments granted permission on lands which pose - or are likely to pose in the future - a significant flood risk	W3: Minimise developments granted permission on lands which pose - or are likely to pose in the future - a significant flood risk	Development Management Process in Wicklow County Council
Air and Climatic Factors	C1i: Percentage of population within the plan area travelling to work or school by public transport or non-mechanical means	C1i: An increase in the percentage of the population travelling to work or school by public transport or non-mechanical means	Central Statistics Office: As noted under Section 10.3.1, future monitoring data may not be available for these indicators until results from the next Census are made available.
	C1ii: Average distance travelled to work or school by the population of the LAP area	C1ii: A decrease in the average distance travelled to work or school by the population of the LAP area	

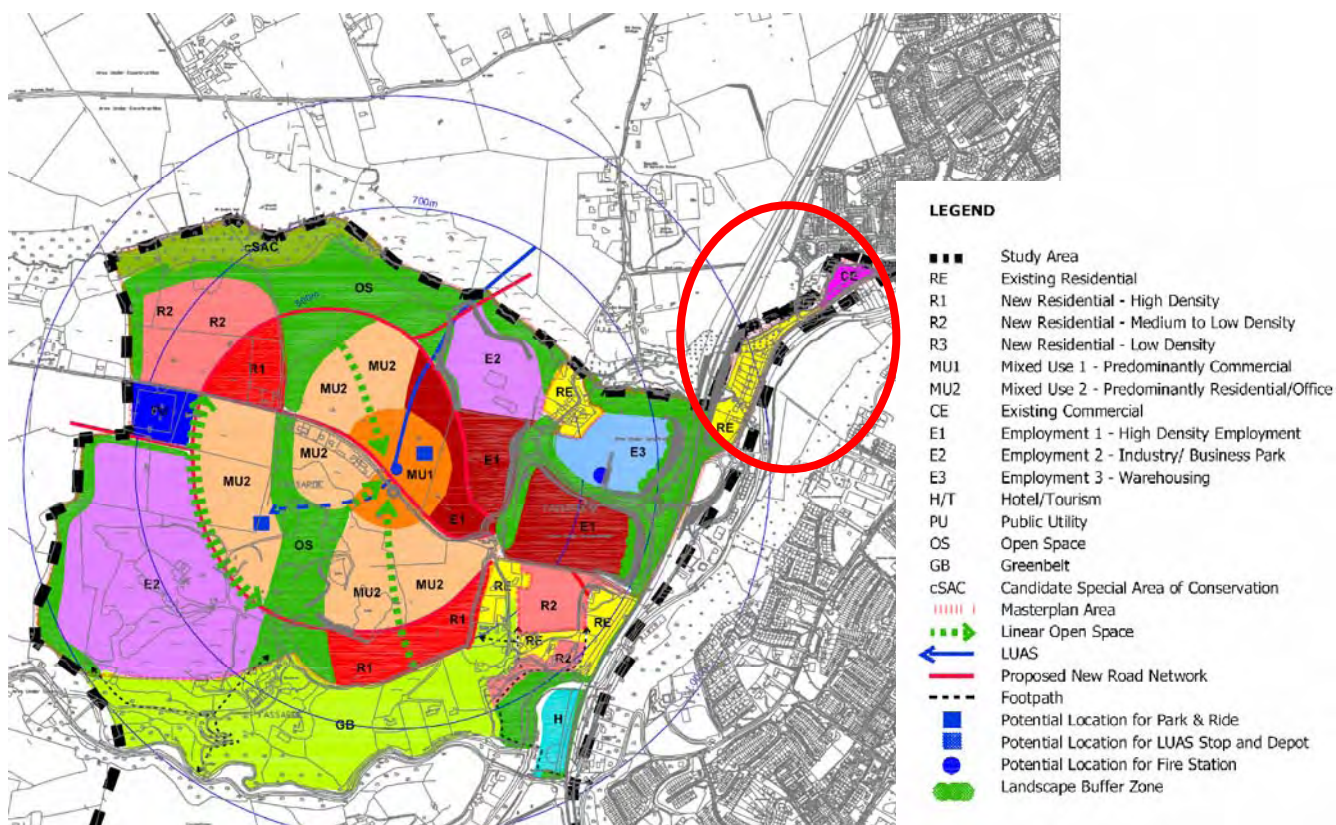
Environmental Component	Selected Indicator(s)	Selected Target(s)	Sources
Material Assets	M1: Number of new developments granted permission which cannot be adequately served by a public waste water treatment plant over the lifetime of the LAP	M1: No new developments granted permission which cannot be adequately served by a public waste water treatment plant over the lifetime of the LAP	Development Management Process in Wicklow County Council
Cultural Heritage	CH1: Number of unauthorised developments occurring which result in full or partial loss to archaeological heritage - including entries to the Record of Monuments and Places and unknown archaeology - and the context of the above within the surrounding landscape where relevant CH2i: Number of unauthorised developments occurring which result in physical loss or loss entries to the Record of Protected Structures and/or their context within the surrounding landscape where relevant CH2ii: Number of additions to the Record of Protected Structures and the number of additional ACAs and comparison with the NIAH	CH1: No unauthorised developments occurring which result in full or partial loss to archaeological heritage - including entries to the Record of Monuments and Places and unknown archaeology - and the context of the above within the surrounding landscape where relevant CH2i: No unauthorised developments occurring which result in physical loss or loss entries to the Record of Protected Structures and/or their context within the surrounding landscape where relevant CH2ii: Make Additions to the Record of Protected Structures and make additional ACAs, where appropriate	Development Management Process in Wicklow County Council Development Management Process in Wicklow County Council Development Management Process in Wicklow County Council
Landscape	L1: Number of complaints received from statutory consultees regarding avoidable impacts resulting from development which is granted permission under the LAP	L1: No developments permitted which result in avoidable impacts on visually prominent landscapes and protected focal points and views	Development Management Process in Wicklow County Council

Table 10.1 Selected Indicators, Targets and Monitoring Sources

Appendix I New Plan Material

This section provides an outline of an additional area of zoning provided for a relatively smaller area of land to the east of the M11 motorway which was submitted as the assessment was being prepared for lands outside what was the original Plan boundary at Fassaroe.

Baseline data and subsequent evaluation of newly emerging land uses contained in the Environmental Report for the area indicated by the red circle on the map below are preliminary only and may be subject to revision during the plan development process.



Fassaroe Land Use Zoning Map from the Draft LAP

Appendix II Site Synopses

Special Areas of Conservation⁸⁴

Site Name: Ballyman Glen cSAC and pNHA

Site Code: 000713

Ballyman Glen is situated approximately 3 km north of Enniskerry. It is orientated in an east-west direction with a stream running through the centre. The glen is bounded mostly by steeply sloping pasture with Gorse (*Ulex europaeus*) and areas of wood and scrub. This site is a candidate SAC selected for alkaline fen and petrifying springs, both habitats listed on Annex I of the EU Habitats Directive. The glen contains a small strip of fen, which runs along the county boundary and extends into County Dublin. This fen is very alkaline and is associated with petrifying spring/seepage areas that have given rise to thick deposits of marl. The vegetation of the main part of the fen is dominated by Greater Tussock-sedge (*Carex paniculata*), Tall Fescue (*Festuca arundinacea*), Butterworts (*Pinguicula vulgaris* and *P. lusitanica*), Black Bog-rush (*Schoenus nigricans*) and Broad-leaved Cottongrass (*Eriophorum latifolium*). The site is particularly notable for its orchids, which includes Early Marsh-orchid (*Dactylorhiza incarnata*), Narrow-leaved Marsh-orchid (*D. traunsteineri*) and Marsh Helleborine (*Epipactis palustris*). In addition, twenty species of sedge have been recorded in the area, including the scarce Long-stalked Yellow-sedge (*Carex lepidocarpa*). The fen area is being invaded by Downy Birch (*Betula pubescens*). Associated with the fen, and also with the woodland elsewhere in the site, are petrifying springs. These lime-encrusted seepage areas are rich in bryophytes including such diagnostic species as Great Horsetail (*Equisetum telmateia*), *Cratoneuron commutatum* and *C. filicinum*. Wet woodland and scrub occur along the margins of the stream for most of the length of the glen, extending outwards in areas to create inaccessible and species-rich patches of woodland. The canopy is dominated by Alder (*Alnus glutinosa*), Willow (*Salix* spp.) and Ash (*Fraxinus excelsior*). The woodland has a dense shrub layer which includes Hawthorn (*Crataegus monogyna*) and Spindle (*Euonymus europaeus*), and a diverse ground flora with Marsh Hawks-beard (*Crepis paludosa*), Sanicle (*Sanicula europaea*), Herb-Robert (*Geranium robertianum*), Bugle (*Ajuga reptans*), Horsetails (*Equisetum* spp.), Meadowsweet (*Filipendula ulmaria*) and some sedges (*Carex* spp.). Areas of marsh are found in the wetter areas by the stream, particularly at the western end of the site. There is an area of broad-leaved woodland on the steeper southern slopes of the glen. Common species occurring here are Ash and Sycamore (*Acer pseudoplatanus*), with Brambles (*Rubus fruticosus* agg.) colonizing the more open areas. An area of land that slopes towards the fen has been used as a landfill site for domestic refuse. The site is also used a clay pigeon shoot and shattered clay pigeons are scattered throughout the area. Fens are rare in Wicklow/Dublin and this is one of only two sites in Wicklow for the Narrow-leaved Marsh-orchid. The fen vegetation is well developed, with an unusually large number of sedge species present. The presence of alkaline fen and of petrifying spring/seepage areas on the site is particularly notable, as these habitats are listed, the latter with priority status, on Annex I of the EU Habitats Directive.

30.10.2002

Site Name: Bray Head SAC and pNHA

Site Code: 000714

This coastal site is situated in the north-east of Co. Wicklow between the towns of Bray and Greystones. Bedrock geology is Cambrian quartzites and shales (with mudstones and greywackes). Bray Head consists of a plateau of high ground, with five prominent quartzite knolls and has a maximum height of 241 m. The more exposed higher ground has a covering of shallow acidic soils, with protruding bedrock and scree. Elsewhere, deeper soils are formed by drift deposits, calcareous in character. Heath, a habitat listed on Annex I of the EU Habitats Directive, is the principal habitat over much of the Head. The vegetation of the upper plateau area is dominated by dwarf shrubs, mainly Ling (*Calluna vulgaris*), Bell Heather (*Erica cinerea*) and Gorse (*Ulex europaeus* and *U. gallii*). Broom (*Cytisus scoparius*) also occurs and associated with the gorse and broom is the Red Data Book species Greater Broomrape (*Orobancha rapum-genistae*). In the areas where the shrubs are less dense Tormentil (*Potentilla erecta*), Milkwort (*Polygala vulgaris*), Heath Bedstraw (*Galium saxatile*) and a variety of grasses (e.g. *Aira praecox*, *Agrostis tenuis*, *Deschampsia flexuosa*) are present. Where rock outcrops occur species such as English Stonecrop (*Sedum anglicum*) and Sheep's-bit Scabious (*Jasione montana*) are found. Bracken (*Pteridium aquiliforme*) is dominant in some areas. The heath communities which occur on the dry slopes above the sea-cliffs, especially those south-facing, are more open in character and dominated by grasses rather than dwarf shrubs. The annual plant communities which develop here are very typical of those found only on sites in south-eastern Ireland. Common species include Wood Sage (*Teucrium scordonia*), clovers (*Trifolium dubium*, *T. campestre*), Scarlet Pimpernel (*Anagallis arvensis*) and Field Madder (*Sherardia arvensis*). An uncommon annual species which can appear abundantly in the heath after a fire event is Yellow Fumitory (*Corydalis claviculata*). Some rare plants are found in this habitat, notably Bird's-foot (*Ornithopus perpusillus*) and Spring Vetch (*Vicia lathyroides*), both Red Data Book species. Calcareous dry grassland, typically species-rich, occurs on deposits of glacial till. The primary grass species are Quaking Grass (*Briza media*), Smooth Meadow-grass (*Poa pratensis*) and Red Fescue (*Festuca rubra*). Typical calcicole herbs include Pale Flax (*Linum bienne*), Salad Burnet (*Sanguisorba minor*), Burnet-saxifrage (*Pimpinella saxifrage*), Carlina Thistle (*Carlina vulgaris*) and Kidney Vetch (*Anthyllis vulneraria*). Orchids are a feature of this habitat, with five species known from the area - Pyramidal Orchid (*Anacamptis pyramidalis*), Common Spotted Orchid (*Dactylorhiza fuchsii*), Common Twayblade (*Listera ovata*), Fragrant Orchid (*Gymnadenia conopsea*) and Bee Orchid (*Ophrys apifera*). Bloody Crane's-bill (*Geranium sanguineum*) was refound recently in this community at Bray Head - this is a typical species of the Burren and is very rare in eastern Ireland. Rocky sea cliffs, another Annex I habitat, form most of the seaward boundary at this site and extend for approximately 2 km. Steep clay cliffs extend southwards for a further 1 km, with a small area of clay cliff also at the northernmost part of site. The rocky cliffs are divided by a railway track built in the 1800s. The lower cliffs are fairly steep in places but above the track they are less steep and often support heath or dry grassland vegetation. In parts the cliffs are up to 60 m in height. Typical species of the more exposed rock areas are Common Scurvy-grass (*Cochlearia officinalis*), Rock Spurrey (*Spergularia rupicola*), Thrift (*Armeria maritima*), Sea Campion (*Silene maritima*), and Sea Samphire (*Crithmum maritimum*). On some

⁸⁴ National Parks and Wildlife (various) *Site Synopses for Special Areas of Conservation* Dublin: Government of Ireland

sections of the cliff face, the locally scarce Tree Mallow (*Lavatera arborea*) is found. Species of the upper cliff flora include Kidney Vetch (*Anthyllis vulneraria*) and Red Fescue. A widespread species found from the mid to upper zones of the cliff face is Ivy (*Hedera helix*). Associated with the Ivy is the scarce *Rubia peregrina*. The clay cliffs in the southern part of the site are steep and unstable and have little vegetation. A stand of mostly native woodland occurs in the northern part of the site. This is a fairly pure Sessile Oak (*Quercus petraea*) dominated woodland, with some Ash (*Fraxinus excelsior*) and Birch (*Betula pubescens*). Understorey trees which occur are Holly (*Ilex aquifolium*) and Hawthorn (*Crataegus monogyna*). The wood is on shallow drift and the ground flora often has species more associated with heath than woodlands. Other habitats which are found at this site include bedrock shore, a sandy/shingle beach and an area of shallow marine water. Bray Head has an important seabird colony. A census in 1999 gave the following populations: Fulmar (55 pairs), Shag (8 pairs), Kittiwake (781+ pairs), Guillemots (286 individuals), Razorbills (191 individuals) and Black Guillemots (123 individuals). A few pairs of gulls also breed. Both the Kittiwake and Black Guillemot populations are of national importance. Peregrine Falcon, an Annex I species of the EU Birds Directive, breeds, as well as Raven and Kestrel. Characteristic bird species of the heath areas are Stonechat, Whitethroat, Linnet and Skylark. The heath and grassland habitats at this site are threatened by reclamation for agriculture and also by frequent burning. The site is a popular recreational area and is especially used by walkers. Bray Head is of high conservation importance as it has good examples of two habitats (sea cliffs and dry heath) listed on Annex I of the EU Habitats Directive. It also supports a number of rare plant species and has ornithological importance.
22.10.1999

Site Name: Knocksink Woods SAC and pNHA
Site Code: 000725

Knocksink Wood is situated in the valley of the Glencullen River north-west of Enniskerry. The fast-flowing Glencullen River winds its way over granite boulders along the valley floor. The steep sides of the valley are mostly covered with calcareous drift. Some of the slopes are dominated by Sessile Oak (*Quercus petraea*) with a sparse shrub layer of Holly (*Ilex aquifolium*) and Hazel (*Corylus avellana*), while on the ground there is a carpet of Great Wood-rush (*Luzula sylvatica*). Other areas are characterised by mixed woodland, with Oak, Ash (*Fraxinus excelsior*), Beech (*Fagus sylvatica*), Sycamore (*Acer pseudoplatanus*) and the occasional conifer occurring. The ground flora includes Ivy (*Hedera helix*) and Brambles (*Rubus fruticosus* agg.), and often luxuriant ferns, such as Hart's Tongue (*Phyllitis scolopendrium*), Soft Shield-fern (*Polystichum setiferum*), and mosses. Lichens occur abundantly on some trees. A notable feature of the slopes is the frequent and extensive springs and seepage areas within the woodland. These petrifying springs are listed as a priority habitat on Annex I of the EU Habitats Directive. Associated with the springs and the river are stands of wet alluvial forest, also a habitat listed with priority status on Annex I of the EU Habitats Directive. The wet woodland is dominated by Ash and Alder (*Alnus* spp.) and is assigned to the group *Carici remotae-Fraxinetum*. Other species which occur include Willow (*Salix* spp.), Birch (*Betula pubescens*) and Hazel. Islands in the river and open gravelly areas provide further habitat diversity. A number of scarce or rare plants occur within the site including Blue Fleabane (*Erigeron acer*), Ivy-leaved Bellflower (*Wahlenbergia hederacea*) and Yellow Archangel (*Lamium galeobdolon*). This site has one of the most diverse woodland invertebrate faunas in Ireland, incorporating wet woodland organisms threatened

internationally within the EU. Vertebrates noted in the vicinity, either by tracks, sett or sight, include Red Squirrel, Badger, Rabbit and Deer. The woodland supports large populations of birds, including many common passerines (Robin, Blackbird, Song Thrush, Wren, Chaffinch) and crows, such as Rook, Hooded Crow, Magpie, Jackdaw and Raven. A Buzzard has been noted in the area and Dipper are occasionally seen in the river. The importance of this site lies in the diversity of woodland habitats which occur. The presence of rare or threatened plants and invertebrates adds to the interest. Much of this site has been designated a Statutory Nature Reserve and there is presently an educational centre within the site.
07.08.2003

Proposed Natural Heritage Areas⁸⁵

Site Name: Great Sugar Loaf pNHA
Site Code: 001769

The Great Sugar Loaf is situated about 5 km southwest of Bray. It is a steep mountain, 501 m above sea level, and has been modified greatly by glacial erosion. It stood as a nunatak which was scoured by the Ivernian, Midland and Mountain ice sheets. Its profile thus contrasts with those of a Bray Head and Howth, both over-ridden by ice sheets and flat on top. The main habitats of the site are dry mountain heath and upland grassland. The lower slopes are dominated by Gorse *Ulex europaeus* and *U. gallii*, but Heather (*Calluna vulgaris*), Bilberry (*Vaccinium myrtillus*) and Cross-leaved Heath (*Erica tetralix*) also occur and become more frequent on the upper slopes. Bracken (*Pteridium aquilinum*) is found in dense patches amongst the Gorse. The heath grades into upland grassland in places; grass species include *Nardus stricta*, *Festuca ovina* and *Agrostis capillaris*. The wetter grassland areas have rushes (*Juncus* spp.), sedges (*Carex* spp.) and mosses (*Sphagnum* spp.). Exposed rocky outcrops or areas of scree occur on the mountain sides, especially on the eastern slopes. The lichen and moss communities are well developed in these places, with species of *Cladonia* spp., *Dicranum* spp. and *Polytrichum* spp. An area of woodland, known as the Quill, occurs on the lower eastern slope. This is secondary woodland dominated by Oak *Quercus petraea*, Birch (*Betula pubescens*) and Holly (*Ilex aquifolium*). Part of the woodland is wet, with Birch as the dominant species and a ground flora more characteristic of wet heath. The wet seepage areas within the wood have Purple Moor Grass (*Molinia caerulea*), Bog Asphodel (*Narthecium ossifragum*), Pondweeds (*Potamogeton* spp.) and mosses *Sphagnum* spp.). A rare liverwort, *Cryptothallus mirabilis*, has been recorded beneath the *Sphagnum* layer. The stream running from the woodland provides a hydrological link with another Natural Heritage Area, Kilmacanogue Marsh. The site is of both ecological and geological interest, and is also a prominent feature in the landscape of north County Wicklow. Because of its ease of access and close proximity to large urban areas, the Great Sugar Loaf is a valuable educational and recreational asset.
15.02.1995

Site Name: Kilmacanogue Marsh pNHA
Site Code: 000724

This site is located off the main Dublin to Wexford road, just south of Kilmacanogue and at the base of the Great Sugarloaf. A small stream links the site to the Great Sugarloaf NHA. The site is a well-developed mosaic of wet woodland surrounded by poor fen and wet grassland. A

⁸⁵ National Parks and Wildlife (various) *Site Synopses for Proposed Natural Heritage Areas* Dublin: Government of Ireland

stream flows through the site in a northerly direction. The whole area is very wet due to the presence of numerous springs and seepage areas, arising from run-off from the Sugarloaf on the western side of the site and Kilmurry on the eastern side. The wet woodland is mainly of dense Alder (*Alnus glutinosa*) and Willow (*Salix atrocinerea*). Plant species of the open areas of wet grassland and poor fen includes Purple Loosestrife (*Lythrum salicaria*), Meadow Sweet (*Filipendula ulmaria*), Common Spotted-Orchid (*Dactylorhiza fuchsii*), Reed Canary-grass (*Phalaris arundinacea*), rushes (*Juncus effusus*, *J. acutiflorus*) and Great Horsetail (*Equisetum telmateia*). Many small sedges occur within the site including *Carex paniculata*, *C. panicea*, *C. nigra*, *C. hirta* and *C. remota*. Plants recorded in the wetter areas include Bogbean (*Menyanthes trifoliata*), Ragged Robin (*Lychnis flos-cuculi*), Marsh Marigold (*Caltha palustris*), Water Mint (*Mentha aquatica*). The site is of international importance on account of the fen/fen carr invertebrate communities, which includes two species of fly endangered within the European Union - (*Oxycera falleni* and *Oxycera morrisii*, Order Diptera). Another scarce fly species, *Parhelophilus consimilis*, Order Diptera, has been recorded. The site is vulnerable to drainage and fen carr clearance from farming activities and to pollution of the stream by up-stream adjacent dwellings. The proposed widening of the Dublin-Wexford road could alter the hydrology of the system. This site is important in having a diversity of species-rich wetland habitats within a relatively small area, and particularly for the presence of some rare invertebrates.

16.02.1995

Site Name: Powerscourt Woodland pNHA

Site Code: 001768

Powerscourt Woodland is located about 2 km south-west of Enniskerry. It is largely contained within the two large demesnes of Powerscourt and Charleville, and includes a 4 km stretch of the Dargle River. The topography of the area is rolling hillside sloping down to the river. The site includes some parkland with large specimen trees. Mixed woodland covers most of the site and includes both native and introduced species. Beech (*Fagus sylvatica*), Sycamore (*Acer pseudoplatanus*), Horse Chestnut (*Aesculus hippocastanum*) and many exotic conifers are among the introductions. The native Oak (*Quercus petraea*) and Ash (*Fraxinus excelsior*) are locally common. The shrub layers are variable, sometimes sparse where conifers predominate and otherwise with Holly (*Ilex aquifolium*), Elder (*Sambucus nigra*) and Honeysuckle (*Lonicera periclymenum*). Rhododendron (*Rhododendron ponticum*) and Laurel (*Prunus laurocerasus*) are locally abundant. Typical plants of the ground layer include Bluebells (*Hyacinthoides non-scripta*), Ramsons (*Allium ursinum*), Herb Robert (*Geranium robertianum*), Wood Sanicle (*Sanicula europaea*), Enchanter's-nightshade (*Circaea lutetiana*), Germander Speedwell (*Veronica chamaedrys*), Wood Sorrel (*Oxalis acetosella*) and Dog Violet (*Viola riviniana*). The fern and moss floras are well developed in places; Powerscourt is also the site of a rare species of Myxomycete fungus, *Didymium clavus*. The Dargle River holds a rich flora on its sandy and rocky banks. Species include Red Campion (*Silene dioica*), Tufted Wheatgrass (*Agropyron caninum*), Wood Fescue (*Festuca gigantea*), Wood Brome (*Bromus ramosus*), Goldilocks (*Ranunculus auricomis*) and Wood Rush (*Luzula pilosa*). Exposed areas in the centre of the river hold Coltsfoot (*Tussilago farfara*), Water Mint (*Mentha aquatica*), Welsh Poppy (*Meconopsis cambrica*), Remote Sedge (*Carex remota*) and Purple Loosestrife (*Lythrum salicaria*). There is some wet woodland associated with low-lying areas of the Dargle - Alder (*Alnus glutinosa*) is the predominant tree species. There are many tributaries to the Dargle at the southern end of the site. They flow through small steep-

sided ravines, which are often covered in a Hazel (*Corylus avellana*) dominated scrub/woodland. Although the site includes many exotic plant species, the habitats are still of interest and support an interesting flora. The mix of semi-natural habitats and estate woodland is particularly conducive to macro-fungi. The well documented record of land management practices held by the demesnes adds to the scientific interest. The area is also of great educational value, being frequently used for teaching.

31.03.1998

Site Name: Dargle Valley pNHA

Site Code: 001754

This site is located about 2 km south-east of Enniskerry. It is a section of the River Dargle with steep wooded banks. At one point along the river a well exposed series of Ordovician volcanic rocks are faulted against well-exposed Bray group Cambrian strata. Such a clear exposed junction is not seen elsewhere in Co. Wicklow. The area is dominated by mature Oak (*Quercus petraea*) woodland, with some Hazel (*Corylus avellana*), Beech (*Fagus sylvatica*), Birch (*Betula* spp.) and Holly (*Ilex aquifolium*). Pockets of mature conifers occur in places, as well as Laurel (*Prunus laurocerasus*). The ground flora is rather sparse and mainly of Wood Rush (*Luzula sylvatica*) and Blackberry (*Rubus fruticosus* agg.). The steep gorges over the river hold a luxuriant growth of mosses, while species common along the river bank include Red Campion (*Silene dioica*), Yellow Pimpernel (*Lysimachia nemorum*), Marsh Hawk's-beard (*Crepis paludosa*), New Zealand Willowherb (*Epilobium brunnescens*) and Giant Fescue (*Festuca gigantea*). A Red Data Book species, Yellow Archangel (*Lamiastrum galeobdolon*), occurs along the river. This is a very localised species confined to eastern Ireland.

The importance of this site is that it is a fine example of a wooded valley. It is likely that this valley has been wooded for a long period and such habitats are becoming rare in north County Wicklow. The removal of the conifers would increase the interest of the site. The site is also of considerable geological importance.

15.02.1995