

**Appendix A**  
**Baseline Information for the Region**  
**(Refer to Chapter 8 of the Main Report)**

## 8.1.4 Baseline Information – Population and Settlement Patterns

### 8.1.4.1 Population of the Study Area

The population figures for the counties which are located within the study area are listed in **Table 8.1b**. This table sets out the population of each county recorded during the 2006 and 2011 census and the level of growth experienced in each county over the last two census periods.

**Table 8.1b: County Population within Study Area 2006-2011 & % Change between '02-'06 and '06-'11**

Area	Population (Number)		Population (Change)	
	2006	2011	'02-'06	'06-'11
<b>State</b>	4,239,848	4,588,252	8.2	8.2
<b>Carlow</b>	50,349	54,612	9.4	8.5
<b>Cork</b>	481,295	519,032	7.5	7.8
<b>Dublin</b>	1,187,176	1,273,069	5.7	7.2
<b>Kildare</b>	186,335	210,312	13.7	12.9
<b>Kilkenny</b>	87,558	95,419	9.0	9.0
<b>Laois</b>	67,059	80,559	14.1	20.1
<b>Limerick</b>	184,055	191,306	5.0	3.9
<b>South Tipperary</b>	83,221	88,432	5.2	6.3
<b>Waterford</b>	107,961	113,795	6.3	5.4
<b>North Tipperary</b>	66,023	70,322	8.2	6.5
<b>Wexford</b>	131,749	145,320	13.0	10.3
<b>Wicklow</b>	126,194	136,640	10.0	8.3

Source: CSO 2011

All counties within the study area experienced continuous growth between 2002 and 2011. While the State as a whole experienced a constant level of growth over the last two intercensal periods at 8.2%, the rate of growth within the study area varied but was generally strong (i.e., in excess of 5%).

Kildare, Laois and Wexford experienced strong levels of continuous growth over the last two census periods while the weakest levels of growth were experienced in Limerick. Relative to the State the strongest level of growth was experienced in Laois during the last intercensal period at 20.1% (i.e., the population increasing by one fifth) while Limerick experienced the weakest level of growth over the same period (3.9%).

Population trends at county level, taken from the CSO's 'This is Ireland – Highlights from Census 2011', are illustrated in **Figure 8.1.1**. Population trends at the electoral division (ED) level are illustrated in **Figure 8.1.2**. At this level observations include *inter alia* that strongest growth is evident proximate to the larger urban areas and transport networks (e.g. the M8 and M9), while slower population growth / declining population is evident in upland and remote areas (e.g., west Wicklow, and parts of Tipperary).

#### 8.1.4.2 Population Distribution in the Study Area

The percentage of the population living within urban and rural areas of each county within the study area in 2011 is set out in **Table 8.1c**. In counties Cork, Dublin, Kildare, Wicklow and Waterford the majority of the population live within the urban areas while Kilkenny, Wexford, North and South Tipperary have the highest population levels living in rural areas.

**Table 8.1c: Percentage of Population within the Urban and Rural Areas of each County within the Study Area in 2011**

Area	Urban	Rural
State	62%	38%
Carlow	49%	51%
Cork	62%	38%
Dublin	98%	2%
Kildare	68%	32%
Kilkenny	37%	63%
Laois	47%	53%
Limerick	54%	46%
South Tipperary	42%	58%

Area	Urban	Rural
Waterford	62%	38%
North Tipperary	40%	60%
Wexford	38%	62%
Wicklow	65%	35%

Source: CSO 2011

#### 8.1.4.3 Population Density in the Study Area

**Figure 8.1.3 (1-4)** in the main Constraints Report illustrates the population density of the country based on a 1 sq km grid. This figure illustrates that while the study area is highly urbanised it remains largely rural in character. It also highlights the influencing factors of proximity to urban areas and transport networks, and topography on the settlement pattern of the study area, including *inter alia* no / limited population in mountainous terrain (e.g. Wicklow, Comeragh, Galtee and Knockmealdown Mountains) and population concentrations around major cities and towns and linking transportation infrastructure (e.g. Cork, Waterford, Wexford, Kilkenny and Carlow). Higher densities are also evident along the coastal parts of the study area.

#### 8.1.4.4 Settlement Characteristics

It is important to highlight the partial inclusion of the Greater Dublin Area (GDA) within the northern part of the study area. Some of the most significant growth rates were recorded in areas in the northern half of the study area (e.g., Kildare, Laois, north Wexford, surrounding Carlow Town etc). This illustrates the strong influence the GDA has on adjoining urban and rural areas, particularly those areas and towns within commuting distance. This is also reflected in the higher population densities evident along the north-western, northern and north-eastern boundaries of the study area.

Waterford City and its environs with a population of 51,519 (Census 2011) is the main conurbation fully included within the study area. It has been identified as a “Gateway City” in the National Spatial Strategy (NSS). Cork City and its suburbs (with a population of 198,582) are partially included within the study area and are also identified as a “Gateway City” in the NSS. This designation acknowledges nationally significant centres, whose location and scale support the achievement of the type of critical mass necessary to sustain strong levels of job creation and growth in the regions. Population increases have also been recorded in towns and rural areas surrounding Cork and Waterford City illustrating their importance; however, resulting development pressures include the suburban expansion of these towns and one-off housing.

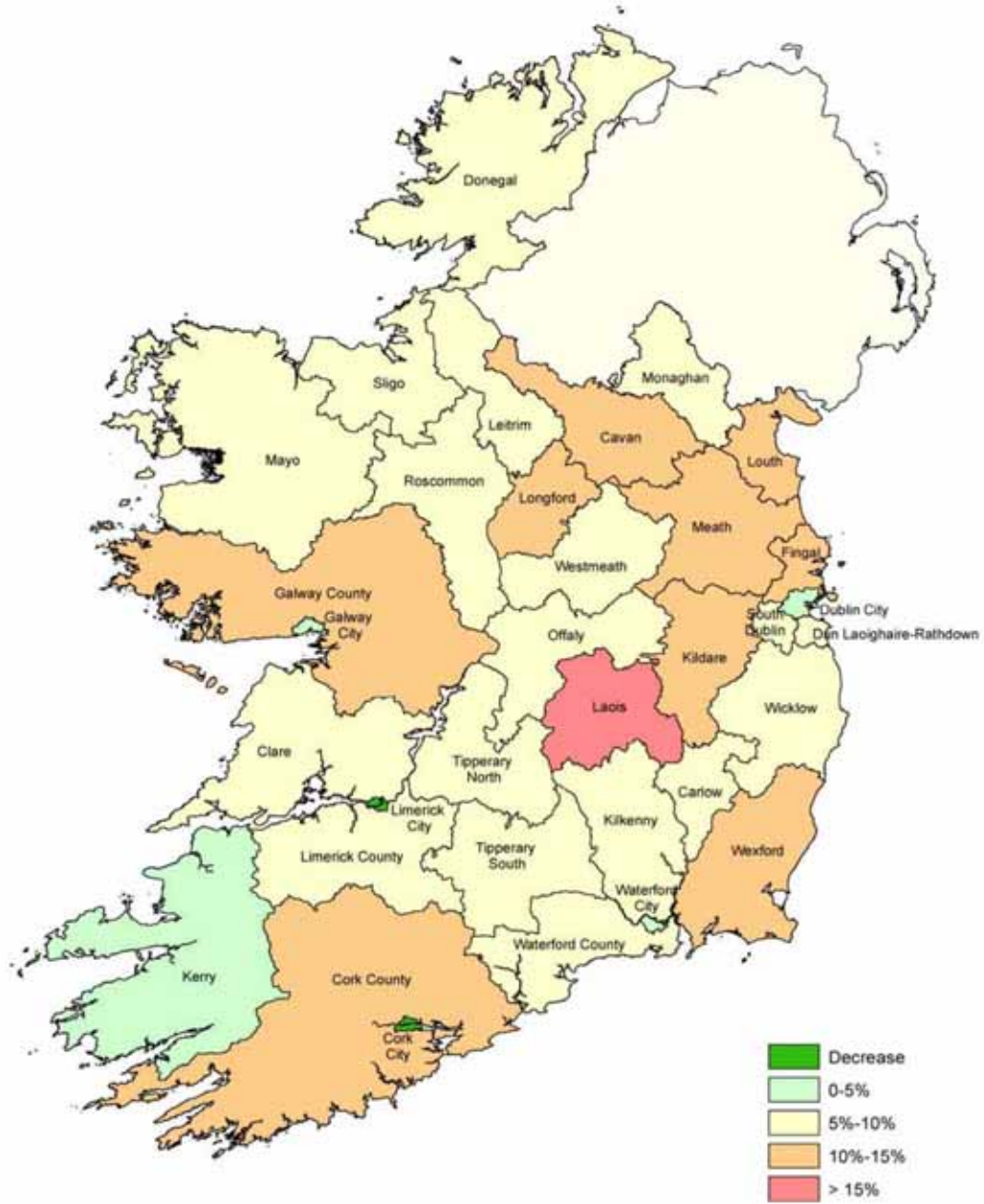
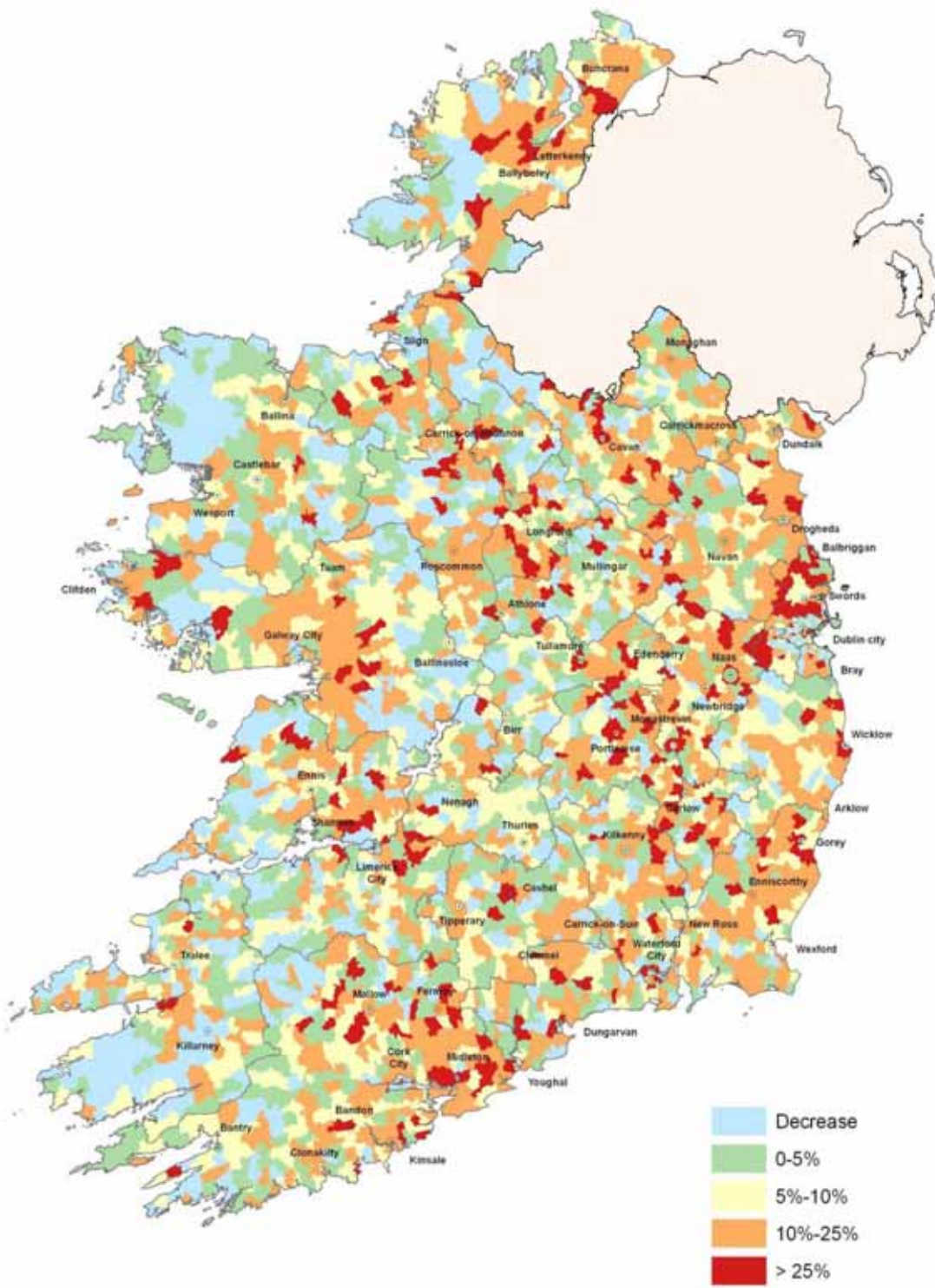


Figure 8.1.1: Population Trends by County 2006-2011 (Source: CSO 2011 Make your Mark)



**Figure 8.1.2: Percentage Change in the Population of Electoral Divisions 2006-2011 (Source: CSO 2011 Make your Mark)**

Balanced patterns of growth are supported by towns that link the capabilities of the gateways to other areas. Within the study area, Kilkenny City and environs (with a population of 24,423) and Wexford Town and environs (with a population of 20,072) are identified in the NSS as supporting “hubs” to the Waterford Gateway.

Also supporting balanced patterns of growth are the towns that capitalise on their local and regional roles and which are linked to the gateways and development hubs. Within the study area these “County Towns” and other towns include *inter alia* Wicklow, Naas, Carlow, Dungarvan, Clonmel and Portlaoise.

The population of settlements over 1,000 within the study area for 2011 is listed in **Table 8.1d** together with their NSS designations.

**Table 8.1d: Population of Towns over 1,000 at 2011 within the Study Area (excluding Dublin)**

County	Town	2011 Population	NSS Designation
Carlow	Tullow	3,972	1,500-5,000 Town
	Muinebeag (Bagenalstown) & Environs	2,950	1,500-5,000 Town
	Graiguenamanagh-Tinnahinch	1,543	Urban Centre (c1,000)
	Carlow & Environs	23,030	County Town
	Bunclody-Carrickduff	2,012	Urban Centre (c1,000)
Cork	Cork & Suburbs	198,582	Gateway
	Cobh & Environs	12,347	<5,000 Town
	Midleton & Environs	12,001	<5,000 Town & Urban Strengthening Opportunity
	Youghal & Environs	7,794	<5,000 Town & Urban Strengthening Opportunity
	Fermoy & Environs	6,489	1,500-5,000 Town & Urban Strengthening Opportunity
	Passage West & Environs	5,790	1,500-5,000 Town
	Carrigtwohill	4,551	-

<b>County</b>	<b>Town</b>	<b>2011 Population</b>	<b>NSS Designation</b>
	Mitchelstown (part)	3,677	1,500-5,000 Town & Urban Strengthening Opportunity
	Cloyne	1,562	-
	Rathcormac	1,534	-
	Castlemartyr	1,277	-
	Watergrasshill	1161	-
	Whitegate	1,067	-
	Aghada-Farsid-Rostellan	1,015	-
Kildare	Droichead Nua (Newbridge) & Environs	21,561	PDC
	Naas Legal Town	20,713	PDC
	Athy & Environs	9,926	<5,000 Town & Urban Strengthening Opportunity
	Kildare	8,142	1,500-5,000 Town & Urban Strengthening Opportunity
	Sallins	5,283	-
	Monasterevin	3,710	1,500-5,000 Town & Urban Strengthening Opportunity
	Kilcullen	3,473	PDC
	Kill	3,095	1,500-5,000 Town
	Castledermot	1,398	-
	Athgarvan	1,016	-
	Johnstown	1,004	-



<b>County</b>	<b>Town</b>	<b>2011 Population</b>	<b>NSS Designation</b>
	Blessington	5,010	1,500-5,000 Town
Kilkenny	Kilkenny & Environs	24,423	Hub
	Callan	2,330	Urban Centre (c1,000)
	Thomastown	2,273	1500-5000 Town
	Castlecomer-Donaguile	1,456	Urban Centre (c1,000)
	Piltown	1,187	-
	Mooncoin	1,166	-
	Ballyragget	1,089	-
Laois	Portlaoise (Maryborough) & Environs	20,145	County Town
	Abbeyleix	1,827	Urban Centre (c1,000)
	Stradbally	1,154	-
	Ballylinan	1,084	-
Limerick	N/A	N/A	N/A
Tipperary South	Clonmel & Environs	17,908	County Town
	Cashel & Environs	4,051	1,500-5,000 Town & Urban Strengthening Opportunity
	Cahir	3,578	1,500-5,000 Town & Urban Strengthening Opportunity
	Fethard	1,541	Urban Centre (c1,000)
North Tipperary	N/A	N/A	N/A
Waterford	Waterford & Suburbs	51,519	Gateway

<b>County</b>	<b>Town</b>	<b>2011 Population</b>	<b>NSS Designation</b>
	Tramore & Environs	10,328	<5,000 Town
	Dungarvan & Environs	9,427	County Town
	Carrick-on-Suir & Environs	5,931	<5,000 Town & Urban Strengthening Opportunity
	Portlaw	1,696	-
	Dunmore East	1,559	Urban Centre (c1,000)
	Lismore & Environs	1,369	Urban Centre (c1,000)
	Ballinroad	1,097	-
Wexford	Wexford & Environs	20,072	Hub
	Enniscorthy	10,838	<5,000 Town & Urban Strengthening Opportunity
	Gorey & Environs	9,114	1,500-5,000 Town
	New Ross & Environs	8,151	<5,000 Town & Urban Strengthening Opportunity
	Courtown Harbour	2,857	-
	Castlebridge	1,726	-
	Ferns	1,362	Urban Centre (c1000)
Wicklow	Bray & Environs	31,872	<5,000 Town
	Greystones & Environs	17,468	<5,000 Town
	Arklow & Environs	13,009	<5,000 Town
	Wicklow & Environs	10,356	County Town
	Kilcoole	4,049	1,500-5,000 Town

County	Town	2011 Population	NSS Designation
	Rathnew	2,964	Urban Centre (c1,000)
	Newtownmountkennedy	2,410	1500-5000 Town
	Baltinglass	2,061	Urban Centre (c1,000)
	Enniskerry	1,811	Urban Centre (c1,000)
	Rathdrum	1,586	Urban Centre (c1,000)
	Ashford	1,449	-
	Aughrim	1,364	-
	Kilpedder	1,287	-
	Carnew	1,091	-
	Kilmacanogue	1,028	-

Source: CSO and NSS

All towns with 50 or more inhabited houses within the country for 2011 are illustrated in **Figure 8.1.4** below. This figure again illustrates the influencing factor of topography and transport networks on urban settlement patterns in the study area.

While the study area has a strong urban structure, much of the region is rural in character with almost 55% of the population living in rural areas. The NSS identifies different “Rural Area Types” and these are identified in **Table 8.1e** and **Figure 8.1.5**. From these it is evident that the study area is primarily characterised by strong rural areas and rural areas that are changing.

**Table 8.1e: Different Rural Types**

Rural Area Type	Description
Areas that are Strong	Mainly in the South and East where agriculture will remain strong, but where pressure for development is high and some rural settlements are under stress.
Areas that are Changing	Including many parts of the Midlands, the Border, the South and West where population and agricultural employment have started to decline and where replacement employment

	is required.
Areas that are Weak	Including more western parts of the Midlands, certain parts of the Border and mainly inland areas in the West, where population decline has been significant.
Areas that are Remote	Including parts of the west coast and the islands.
Areas that are Culturally Distinct	Including parts of the west coast and the Gaeltacht which have a distinctive cultural heritage. <b>Figure 8.1.3</b> in the main Constraints Report provides further details on Gaeltacht Areas.

Source: NSS

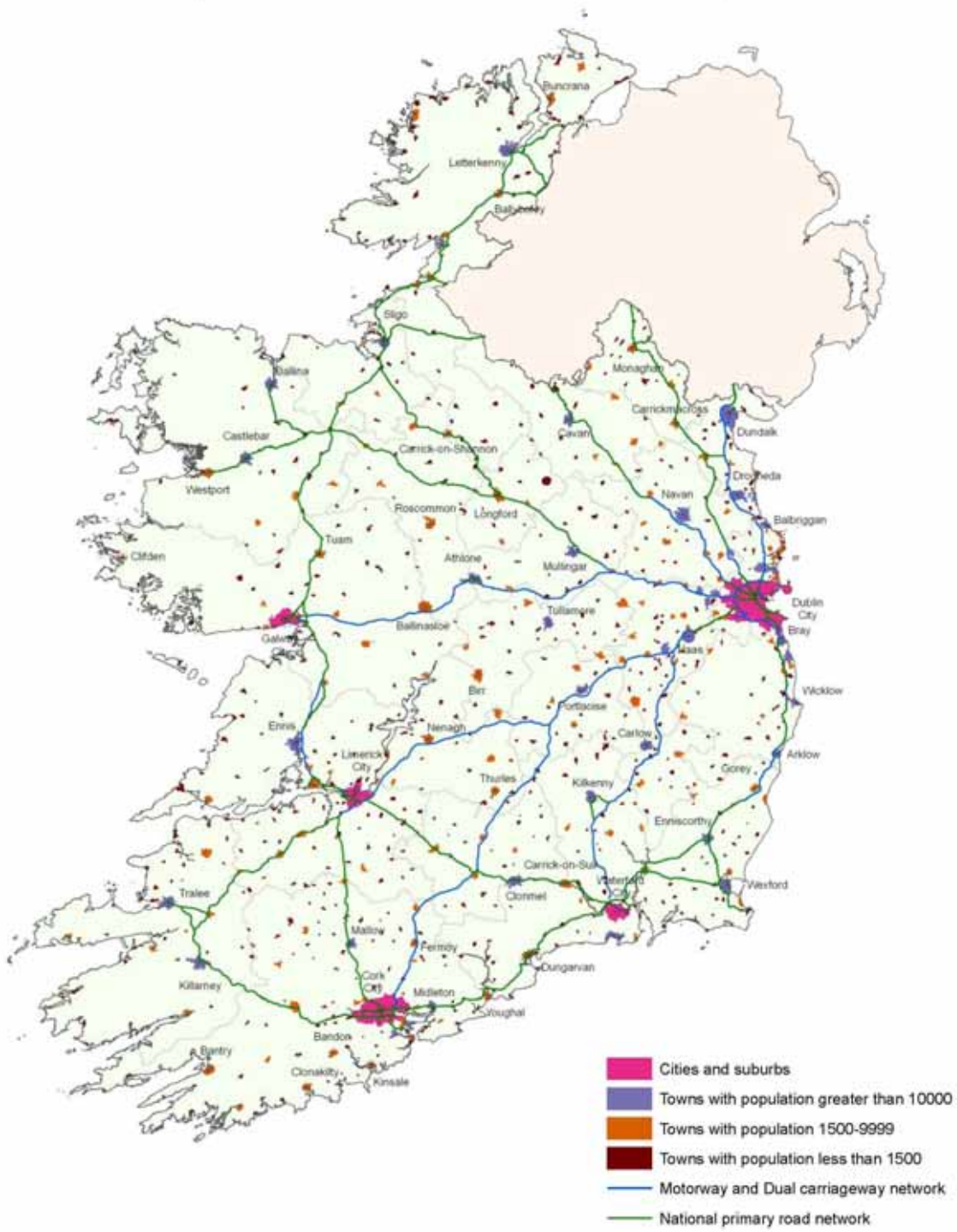
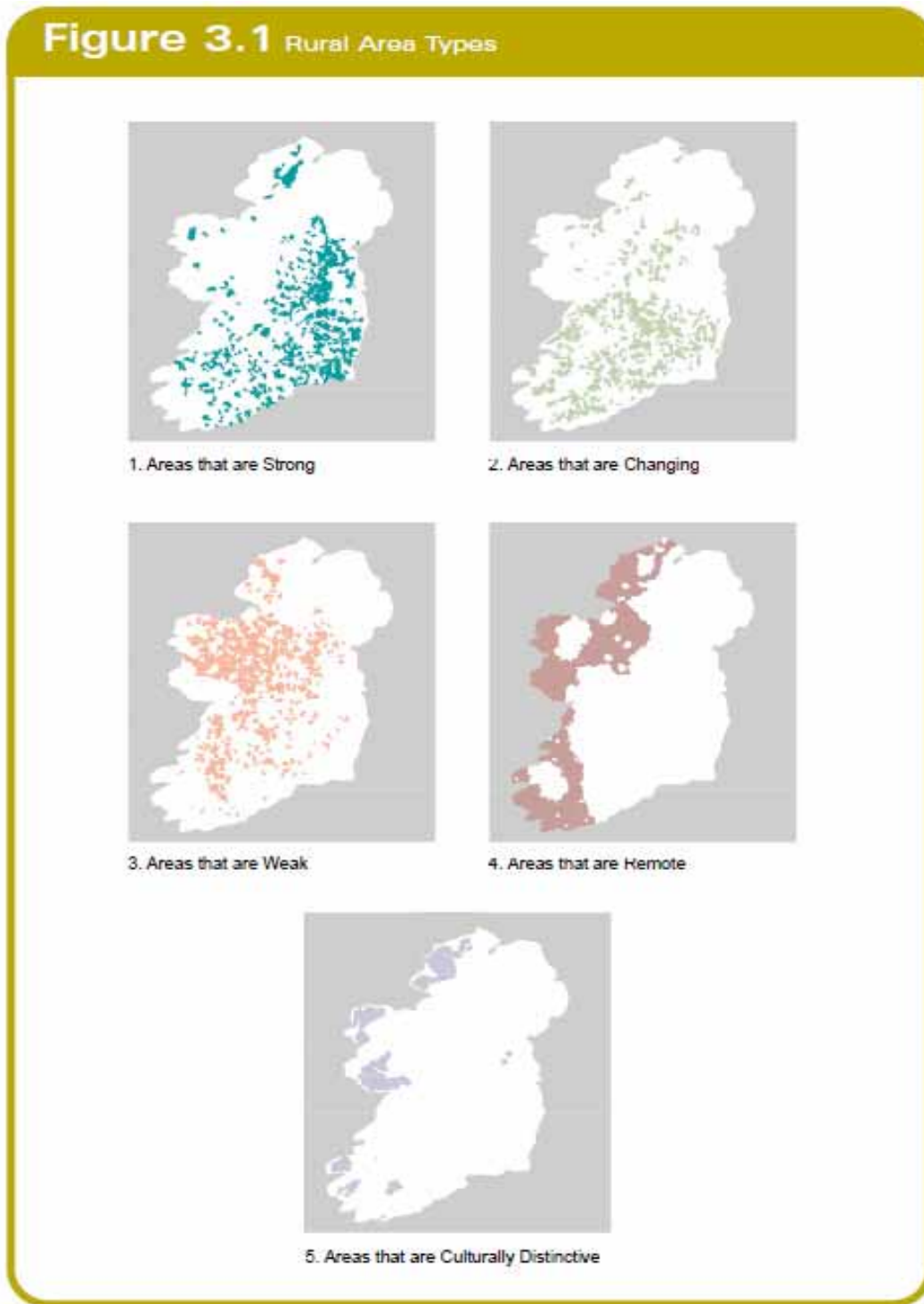


Figure 8.1.4: All Towns with 50 or more Inhabited Houses (Source: CSO Formerly Vol 1)



**Figure 8.1.5: Rural Area Type (Source NSS)**

An important consideration is the resultant settlement pattern in the rural area including villages and smaller settlements (including residential clusters, ribbon development and one-off housing).

Villages and smaller settlements are dispersed throughout the study area generally providing a small range of services (e.g. primary school, shops, recreational or sports facilities) for the wider rural population. Much of this population however is more dispersed, living in residential clusters, ribbon development along roads or one-off housing in the rural hinterland.

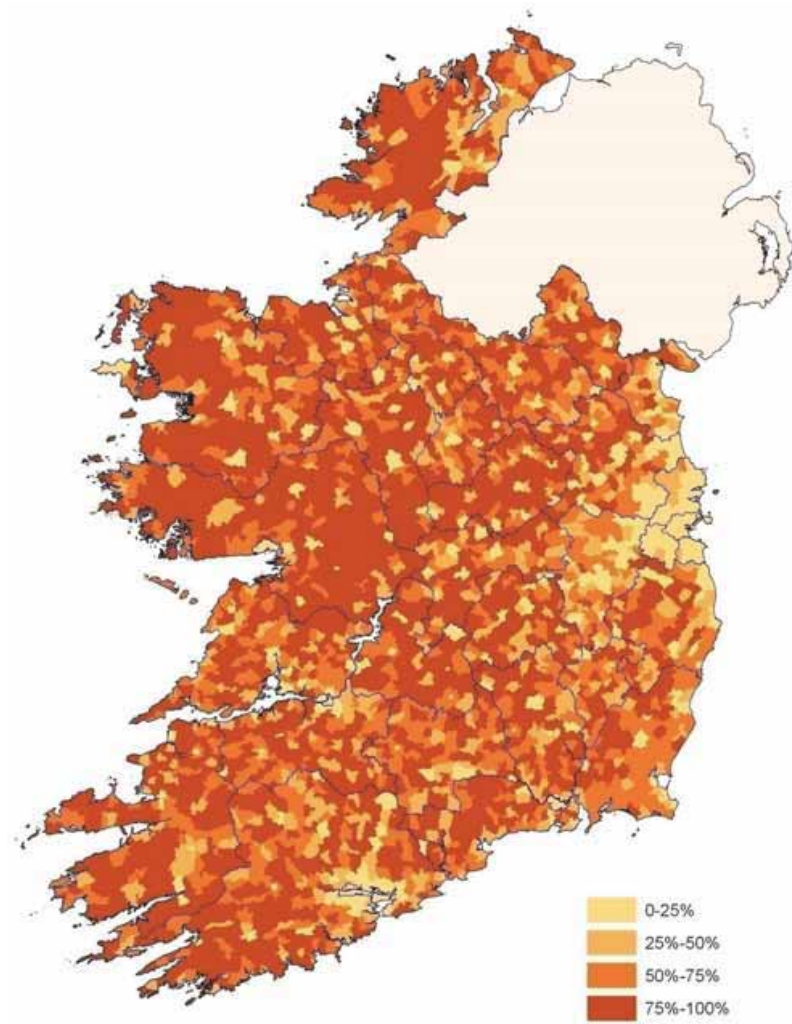
Reference is made to the CSO data on the number of one-off housing applications granted for all the counties within the study area over the last 10 years (i.e. 2001 – 2011). The total number of planning permissions granted for one-off housing is set out in **Table 8.1f**. Of the total for the study area, strong demand and grants of permission for one-off housing are evident in Cork (28%), Wexford (13%) and Limerick (10%).

**Table 8.1f: Total Number of Planning Permissions Granted for One-Off Housing for Study Area (2001 – 2011)**

	Carlow	Cork	Kildare	Kilkenny	Laois	Limerick	Tipp South	Tipp North	Waterford	Wexford	Wicklow	DLR CC	S. Dublin
2001	284	2064	709	540	230	821	424	427	418	1065	328	131	97
2002	218	1767	473	399	293	708	345	357	441	798	229	100	139
2003	342	1735	466	459	321	687	360	450	387	671	196	157	156
2004	234	2358	523	580	405	855	423	616	581	1180	168	204	174
2005	255	2121	519	535	368	732	378	371	405	1101	561	230	169
2006	310	2053	416	516	368	574	332	332	421	938	372	209	186
2007	309	2085	576	513	490	616	380	420	397	896	379	146	155
2008	206	1592	500	398	363	481	283	296	327	710	381	119	127
2009	127	1042	269	250	158	302	193	174	214	442	241	87	69
2010	104	664	168	169	143	200	108	142	113	281	126	67	43
2011	48	551	118	129	89	149	91	99	89	210	76	60	31
<b>TOTAL</b>	<b>2437</b>	<b>18032</b>	<b>4737</b>	<b>4488</b>	<b>3228</b>	<b>6125</b>	<b>3317</b>	<b>3684</b>	<b>3793</b>	<b>8292</b>	<b>3057</b>	<b>1510</b>	<b>1346</b>

Source: extracted from CSO 2011. Note: Figures relate to entire county area and not just portion that lies within the study area boundary.

The overall pattern of one-off housing is illustrated on **Figure 8.1.6** below.

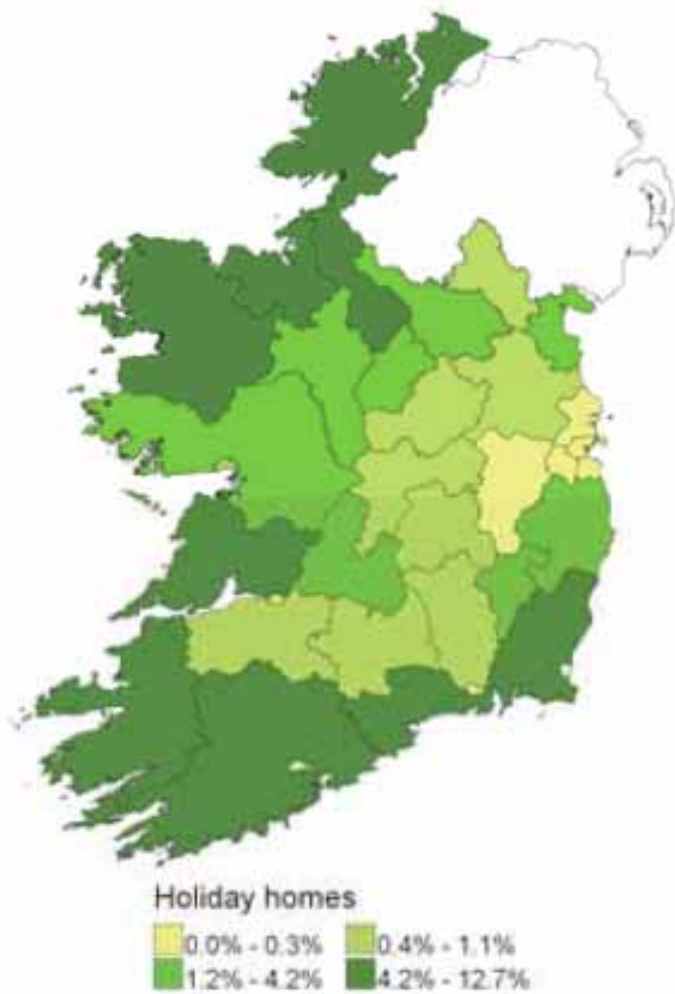


**Figure 8.1.6: One-off Housing (source: CSO)**



### 8.1.4.5 Holiday Homes

Some scenic areas of the study area are experiencing development pressures arising from second/holiday home developments. This is evident along the south-eastern and southern coastline of the study area (refer to **Figure 8.1.7**). Forty-eight percent (48%) of all vacant dwellings in Wexford were holiday homes, the highest percentage in the country.



**Figure 8.1.7: Holiday Homes (Source: CSO)**

## 8.2.4 Baseline Information – Cultural Heritage

The constraints study has been examined on a county by county basis. A general description of the landscape forms an introduction to each county, as it is these landscapes that attracted or were avoided by human occupation and ritual activity over the millennia.

### 8.2.4.1 Overview of Archaeology

The sites in the study area are discussed according to time period; a broad dating framework is used due to the volume of sites present in the study area.

**Table 8.2b: Timescales Used in the Report**

<b>Prehistoric (P)</b>	Mesolithic	c.7000–4000 BC
	Neolithic	c.4000–2400 BC
	Bronze Age	c.2400–500 BC
	Iron Age	c.500 BC–AD 400
<b>Early Medieval (EM)</b>	Early Christian (c. 5th–9th century) and Viking Age (c. 9th – 12th century)	c. 5th –12th century AD
<b>Medieval (M)</b>	High medieval (c.12th century –c. 1400) and Late medieval (c. 1400–16th century)	c.12th–16th century AD
<b>Post- Medieval (PM)</b>		c.1550–1600 to the 18th Century

A general introduction to the monument types associated with each time period is provided in **Appendix D**. The statutory recorded archaeological presence in the study area is provided in **Table 8.2c**.

**Table 8.2c: Summary Table of Statutory Archaeological Designations**

County	UNESCO World Heritage (Tentative Site)	National Monuments in State Care	Sites with Preservation Orders	Register of Historic Monuments	RMP Sites
Dublin	0	10	9	6	307
Kildare	1	20	32	45	1,650
Wicklow	1	52	70	42	2,415
Laois	0	10	5	31	1,065
Carlow	0	16	6	20	1,628

County	UNESCO World Heritage (Tentative Site)	National Monuments in State Care	Sites with Preservation Orders	Register of Historic Monuments	RMP Sites
Wexford	0	26	6	22	2,717
Kilkenny	0	43	27	34	3,550
Tipperary	1	42	16	31	3,217
Waterford	0	26	119	1	2,918
Limerick	0	0	0	0	24
Cork	0	8	6	20	2,249
Grid Link Study Area Total	2	253	296	207	21,795

\*this excludes National Monuments that might be in Local Authority ownership or on private lands for which there is no record, the majority of sites however are present in the RMP.

**Figure 8.2.1** in the main Constraints Report provides an overview of RMPs in the study area.

**Figure 8.2.2** in the main Constraints Report illustrates the World Heritage (Tentative Sites), National Monuments, Register of Historic Monuments and Preservation Orders.

**Figure 8.2.3** in the main Constraints Report shows the Record of Protected Structures within the study area.

### 8.2.4.2 Overview of Recorded Archaeology Per County

Table 8.2d provides an overview of the recorded archaeology for all counties within the study area for the Grid Link Project.

Table 8.2d: Overview of Recorded Archaeology per County

County	RMP	RMP Time Period (excluding redundant records)					NM	PO	RHM	US
		P	EM	M	PM	Misc				
Dublin	307	93	50	65	9	83	10	9	6	0
Kildare	1,650	281	149	527	21	642	20	32	0	Dun Ailinne, the Royal Site for the Kings of Leinster, is included on a Tentative List
Wicklow	2,415	343	441	671	52	751	52	70	42	Glendalough, an Early Medieval Monastic Site is included on a Tentative List
Laois	1,065	102	175	345	338	26	10	5	31	0
Carlow	1,628	323	219	415	562	27	16	6	20	0
Tipperary	3,217	231	617	1,079	119	1,094	42	16	31	Cashel, the Royal site for the Kings of Munster is included on a Tentative List

	<b>RMP</b>	<b>RMP Time Period (excluding redundant records)</b>					<b>NM</b>	<b>PO</b>	<b>RHM</b>	<b>US</b>
<b>County</b>		<b>P</b>	<b>EM</b>	<b>M</b>	<b>PM</b>	<b>Misc</b>				
Kilkenny	3,605	560	724	1,104	121	1,074	43	27	34	0
Wexford	2,717	343	457	905	47	797	26	6	22	0
Waterford	2,918	597	749	609	98	677	26	119	1	0
Limerick	24	5	1	4	0	14	0	0	0	0
Cork	2,249	490	615	432	275	360	8	6	20	0
RMP: Record of Monuments and Places		PM: Post Medieval			PO: Preservation Orders					
P: Prehistoric		Misc: Miscellaneous			RHM: Register of Historic Monuments					
EM: Early Medieval		NM: National Monument			US: UNESCO Sites					
M: Medieval										

### 8.2.4.3 Overview of Architectural Heritage

The Record of Protected Structure (RPS) datasets have proven to be difficult to compile as the record is not presented in a standardised way across each local authority and the spatial data is not available for all counties. The data does not include the RPS sites for some urban town councils. Similarly the National Inventory of Archaeological Heritage (NIAH) survey, while comprehensive, operated under a developing methodology and some of the larger house sites are not included. These however are listed in the RPS for each county. **Table 8.2e** provides an overview of the Architectural Heritage within the study area. **Figure 8.2.4** in the main Constraints Report shows the NIAH distribution within the study area and **Figure 8.2.5** depicts the location of NIAH Historic Gardens and Designated Landscapes.

**Table 8.2e: Overview of Architectural Heritage per County**

County	RPS	ACA's*	NIAH sites	NIAH International Rating	NIAH National Rating	NIAH Regional Rating	NIAH Local/Record	NIAH Garden surveys
Dublin	c.111	1	154	0	0	150	4	39
Kildare	c. 1,075	3	1,175	0	21	1,153	1	113
Wicklow	533	7	1,270	2	11	1,249	8	210
Laois	547	5	302	0	14	265	23	87
Carlow	666	10	405	0	21	284	100	87
Wexford	c. 1, 570	9	3,145	0	37	2,606	502	215
Kilkenny	1,165	13	2,159	0	63	1,960	136	196
Tipperary	965	13	1,100	2	24	1,024	50	173
Waterford	1,869	3	3,036	0	76	2,743	217	162
Limerick	2	0	5	0	0	5	0	1
Cork	266	7	2,178	1	34	2,086	57	225
Grid Link Study Area Total	c. 8,733	71	14,920	5	301	1,3525	1,098	1,508

The NIAH significance rating values are International, National, Regional, Local and Record Only. Structures which are considered to be of International, National, and Regional significance are recommended by the Minister DAHG to the relevant planning authority for inclusion in their RPS.

Notes: RPS spatial data for South Dublin, Kildare, Wexford and Carlow was unavailable. The number of sites were approximated using NIAH and paper list.

No spatial data was available for the ACAs (a list of these sites are contained in the main chapter)

Spatial data is unavailable for RPS sites in all the large urban areas e.g. Waterford, Youghal, Wicklow and Dungarvan.

Proposed ACA's for Wexford only.

\*Architectural Conservation Area

### 8.3.4 Baseline Information – Land Use

The broad settlement characteristics of the study area are set out in **Section 8.1**. This also includes details of the principal centres of population. This section of the Constraints Report broadly considers the land use and activities within the study area in terms of:

- Zoned lands;
- Unzoned lands; and
- Land uses and activities.

#### 8.3.4.1 Zoned Land

Most of the lands within the study area which are covered by city and town council areas, are subject to land use zoning for specific objectives. However, it is not a requirement that all land within a planning authority's functional area be subject to a zoning objective. The extent of zoning varies and relates *inter alia* to the function, size and role of the town and city in the settlement hierarchy (as guided by the NSS and Regional Planning Guidelines).

The primary zoning objectives evident for the zoned areas in the study area are residential, commercial, business / industry and community facilities. Some other general observations include:

- Extensive residential zoning is evident in and on the periphery of those towns and villages within commuting distance of the main cities (e.g. Portlaoise, Carlow Town and Gorey); and
- Industrial and enterprise related zonings tend to be evident on the periphery of towns and villages.

Where zonings are on the periphery or outside of the city and town boundaries they tend to relate to *inter alia* green belt, agriculture and other land uses which look to protect the rural character of the area or provide a landscape / amenity buffer between urban and rural land uses (primarily by controlling rural housing development) e.g. the green belts around the ring and county towns in County Cork and Waterford and the Rural Housing Control Zone around Cork City.

#### 8.3.4.2 Unzoned Land

As noted above, it is not a requirement that all land within a planning authority's functional area be subject to a zoning objective and the majority of land within the study area is rural and unzoned. Development activity in such an area tends to be dealt with within the development management process taking on board relevant objectives and policies in the county development plan. Other considerations for development in this area (especially residential development) include the policy framework established in section 5.3.2 of the NSS and guidance in the form of the Sustainable Rural Housing Development Guidelines (Department of the Environment, Heritage and Local Government - 2005).

### 8.3.4.3 Land Uses and Activities

The study area is characterised by a variety of land uses and activities (refer to **Figure 8.3.1 (1-4) Corine 2006, Figure 8.3.2 (1-4) Land Use Other** and **Figure 8.3.3 Marine**) in the main Constraints Report). Those considered relevant at this stage in the Grid Link Project are:

- Economic;
- Tourism and recreational land uses and activities;
- Social and community land uses and activities;
- Forestry / Woodlands;
- Quarries, mines and landfills; and
- Agriculture and food.

### 8.3.4.4 Economic

The economy of the study area is primarily based on the agricultural, industrial / manufacturing, services, tourism and marine sectors and their relevant subsectors.

Some of the key sectors are briefly described below in **Table 8.3b**.

**Table 8.3b Key Economic Sectors**

Economic Sector	Description
Major Industry (especially overseas industry):	This is mainly concentrated in electronics, precision engineering, pharmaceuticals, healthcare and internationally traded services. Many of these are IDA client companies operating from IDA sites or industrial / enterprise zoned lands primarily located within or immediately adjacent to the main settlements in the study area. Major concentrations of overseas industry are evident in the 'Gateway' cities of Cork (e.g. Ringaskiddy area) and Waterford (e.g., the Waterford Knowledge Campus) and elsewhere in the study area (e.g. Wexford, Carlow, Dungarvan and Kildare).
Agri / Food Industry:	The study area includes productive agricultural lands and is the location for some major agri / food companies. The study area is also an important producer of fruit including orchard fruit (especially in south Kilkenny, Waterford and South Tipperary) and soft fruit (especially around Enniscorthy).
Marine:	There are a number of ports and harbours located along the coastline of the study area / just outside the study area which contribute to the marine sector including port related activities (e.g. Rosslare Europort, Waterford and Cork ports) fishing (e.g. Kilmore Quay), pleasure craft (e.g. in Wexford and Waterford). <b>Figure 8.3.3</b> in the main Constraints Report provides an overview of the location of ports and marinas situated along the coastline of the study area. Ferry routes are also depicted on <b>Figure 8.3.3</b> in the main Constraints Report.



	There is also a large number of aquacultural sites within the study area in particular in the vicinity of Waterford –Wexford at Great Island, Wexford Harbour and Dungarvan ( <b>Figure 8.3.3</b> in the main Constraints Report).
Equine Industry:	Kildare has the highest percentage of thoroughbred horses in the country with the largest concentration around the Curragh, the principal training centre. Cork and Tipperary follow with 13.9% and 11.3% of the State total respectively. The South East and Mid East regions account for over 57% of all thoroughbred horses.

#### 8.3.4.5 Tourism and Recreation

**Major Tourism Attractions:** The study area has a wide range of natural, cultural and heritage assets, many of which are major tourism attractions. These can broadly be categorised as:

- Gardens, arboretums and wildlife attractions;
- Historic attractions;
- Coastal and river attractions;
- Festivals and cultural events; and
- Outdoor pursuits.

The major tourism attractions within the study area with visitor numbers in excess of 25,000 are set out in **Table 8.3c**. These can be viewed as destinations in their own right or as part of a network of similar destinations offering a visitor the opportunity to visit several locations per visit (e.g. Garden Trails of the South East, Wicklow, Kildare and the Midlands).

**Table 8.3c: Major Tourism Attractions within the Study Area and Visitor Nos. in 2011**

Attraction	Visitor Nos.(2011)
Fota Wildlife Park, Cork	390, 124
Rock of Cashel, South Tipperary	233,038
Powerscourt House and Gardens, Wicklow	207,446
Kilkenny Castle, Kilkenny	206,277
Irish National Stud and Japanese Gardens, Wicklow	114,162
The Jameson Experience, Midleton, Cork	106,000
National Sealife Centre, Wicklow	100,000
Nicholas Moss Pottery, Kilkenny	92,000
Cobh – the Queenstown Story, Cork	86,173
J F Kennedy Arboretum, Wexford	86,007
Glendalough Visitor Centre, Wicklow	80,726
Cahir Castle, Tipperary	59,822
Avondale House and Forest Park, Wicklow	52,500
Altamont Gardens, Carlow	47,514
Trabolgan Holiday Village, Cork	37,120
Woodstock Estate and Arboretum, Kilkenny	37,500
Hook Lighthouse, Wexford	33,744
Mount Usher Gardens, Wicklow	31,000
Dunmore Cave, Kilkenny	30,024
Russborough, Wicklow	30,000
Reginalds Tower, Waterford	29,368
Waterford and Suir Valley Railway, Waterford	29,000
Cashel Heritage Centre, South Tipperary	25,000
Christ Church Cathedral, Waterford	25,000

Source: Failte Ireland Visitor Attractions 2007-2011 ([www.failteireland.ie](http://www.failteireland.ie)).

In addition to these main attractions, there is also a wide variety of other cultural activities and events which attract visitors from Ireland and abroad to the study area (see also **Section 8.2** for information on cultural heritage features and **Section 8.6** for information on the natural heritage in the study area). Below is a list of some of the most well known festivals which take place within the study area. It is by no means a comprehensive list of the many regional and local festivals held throughout the study area throughout the year.

- Wexford Opera Festival (usually held in October / November);
- Kilkenny Arts Week (held in August);
- Kilkenny Comedy Festival (held in June);

- Waterford Spraoi (usually held in August);
- Electric Picnic, Laois (usually held in August);
- Cork Jazz Festival (usually held in October);
- Kilmore Quay Seafood Festival (held in July);
- National Ploughing Championship (usually held in September);
- John Barry Maritime Festival Wexford (usually held in June);
- Various food festivals (e.g. Cork, Wexford, Dublin); and
- Various horse racing events (e.g. at the Curragh).

**Coastal and River Attractions:** The study area includes a significant element of coastline and a number of major rivers, all of which provide a range of tourism facilities and potential.

The coastline within the study area extends to approximately 300km and is the location of a number of cities, towns and villages. Some of these scenic coastal locations are experiencing significant development pressure from holiday homes and holiday accommodation (refer to **Section 8.1** and **8.3**). The coastline also includes Blue Flag Beaches, Whale and Dolphin Sighting Areas and Designated Bathing Areas which are considered important resources for both locals and tourists visiting the study area (See **Figures 8.3.2** and **8.3.3** in the main Constraints Report).

The study area includes the major rivers of Barrow, Nore, Suir, Slaney and Blackwater. These have existing and potential industrial heritage, amenity corridor (as navigation and walking routes), biodiversity and fishing / angling value. See **Sections 8.5** and **8.6** for information on the natural and cultural heritage associated with these major rivers.

**Outdoor pursuits:** The study area includes a wide range of outdoor pursuit activities and related facilities including *inter alia* those relating to angling / fishing, walking / hiking, cycling, golf and equestrian. Some well known examples include *inter alia*:

- |                 |  |
|-----------------|--|
| Walking/Hiking: | <ul style="list-style-type: none"> <li>• The Wicklow Way (Wicklow);</li> <li>• The Munster Way (Waterford);</li> <li>• The Blackwater Way;</li> <li>• Slieve Blooms (Laois);</li> </ul>  |
| Golfing:        | <ul style="list-style-type: none"> <li>• Druids Glen Golf Resort (Wicklow),</li> <li>• European Club (Wicklow);</li> <li>• Mount Juliet (Kilkenny);</li> <li>• Fota Golf Course (Cork)</li> <li>• Faithlegg Golf Course (Wexford)</li> <li>• Waterford Castle Golf Course (Waterford)</li> </ul> |

- |                  |  |
|------------------|--|
| Equestrian:      | <ul style="list-style-type: none"> <li>• Gowran Park (Kilkenny)</li> <li>• Curragh Race Course (Kildare)</li> <li>• Punchestown (Kildare)</li> <li>• Naas (Kildare)</li> </ul> |
| Boating:         | <ul style="list-style-type: none"> <li>• River Barrow and Barrow Line</li> <li>• Grand Canal</li> <li>• River Slaney</li> <li>• Coastal locations</li> </ul>                   |
| Angling/Fishing: | <ul style="list-style-type: none"> <li>• River Barrow</li> <li>• River Slaney</li> <li>• Estuaries and coastline</li> </ul>  |

GAA would also be a strong influence in the study area from local community level through to national championships, with a large number of sports facilities dispersed throughout the study area.

#### 8.3.4.6 Community

Social and community infrastructure and associated land use covers a wide range of areas, from Gaeltachts to third level institutions to libraries.

**Education:** There are a number of higher level education facilities located in the study area (e.g. University College Cork, Waterford Institute of Technology and Carlow Institute of Technology). In addition Tipperary Institute has a campus in Clonmel and there are third level outreach centres at Wexford and Kilkenny. A network of primary and secondary school facilities are also located in the cities, towns and villages of the study area.

**Health:** The study area includes regional, district and specialist hospital facilities. The main facilities include Cork University Hospital, Waterford and Midland Regional Hospitals. Other district and main hospital facilities include *inter alia* Wexford, Kilkenny, Naas and Clonmel. These are supported by a range of specialist facilities (e.g. psychiatric hospitals) and community hospitals.

**Community and Recreational Facilities:** The study area supports a network of community facilities and services such as local shops, post offices, banks, childcare facilities, youth clubs, sports clubs and sporting facilities.

**Gaeltachts:** Gaeltacht na nDéise or Gaeltacht na Rinne is the only Gaeltacht area in the study area. It is located approximately 10 km west of Dungarvan (Waterford) and embraces the Parish of Rinn Ua gCuanach (Ring) and An Sean Phobal (Old Parish). It encompasses a geographical area of 62 sq km. This Gaeltacht area is depicted on **Figure 8.1.3 (4)** in the main Constraints Report.

**Table 8.3d: Geodirectory Breakdown of Property Type within the Study Area**

Local Authority	Residential	Commercial	Both	Unknown	Total
Carlow	19709	1315	2068	614	23706
Cork	36458	2099	3029	689	42275
Dun Laoghaire Rathdown	2427	99	70	26	2622
Kildare	36825	1965	2095	442	41327
Kilkenny	32846	2181	4633	728	40388
Laois	17943	1038	2002	362	21345
Limerick	82	9	24	4	119
N.Tipperary	1147	70	190	28	1435
S. Dublin	6629	97	130	78	6934
S.Tipperary	24353	1878	2812	710	29753
Waterford	44753	2850	3326	1038	51967
Wexford	52621	3059	5126	1180	61986
Wicklow	46342	2492	3256	579	52669

#### 8.3.4.7 Forestry / Woodlands

**Figure 8.3.1 (1-4)** in the main Constraints Report provides an overview of forestry within the study area as classified by Corine mapping. In addition **Figure 8.3.2 (1-4)** in the main Constraints Report provides an overview of Coillte Forestry Properties provided by Coillte in June 2012.

#### 8.3.4.8 Quarries, Landfills and Mines

**Figure 8.3.2 (1-4)** in the main Constraints Report provides details of the locations of quarries, landfills and mines within the study area. With the exception of the “Copper Coast” between Dungarvan and Tramore, the most obvious concentrations of mines are in the mid to northern section of the study area including *inter alia* Wicklow, the Kilkenny/Laois border area, and around Enniscorthy and Wexford Town. Many of these sites also have tourism and cultural heritage interest. Quarries are dispersed throughout the study area but particularly in Laois and Kilkenny and landfill sites are scattered throughout the study area with an obvious concentration in northern Kildare and western Wicklow.

#### 8.3.4.9 Agriculture and Food

The agriculture and food sectors account for a significant proportion of output and employment in the South-East Region. The CSO 2010 agricultural survey results show that the South-East has the highest number of cows and cattle per farm than any other region in the country while County Wicklow has the highest number of sheep per farm in the country. See **Figure 8.3.1 (1-4)** in the main Constraints Report for an overview of the agricultural areas within the study area as derived from the Corine database.

## 8.4.4 Baseline Information – Infrastructure and Utilities

### 8.4.4.1 Overhead Transmission and Distribution Lines

Both transmission and distribution electricity lines traverse the study area. To the north of the study area, running north eastwards through Laois and Kildare, is the most significant transmission line i.e. the Dunstown - Moneypoint 400 kV line.

There are also a number of 220 kV lines running through the study area, namely:

- Running north east along the southern coastline boundary are the Knockraha – Waterford and Great Island - Waterford 220 kV lines;
- Running north centrally through the study area are the Great Island – Kellis and Dunstown - Kellis 220 kV lines; and
- Running north along the eastern coastline are the Great Island - Lodgewood, Arklow - Lodgewood and Arklow - Carrickmines 220 kV lines.

Additional 220 kV lines are located in northern Wicklow and Kildare. These are part of the transmission network serving the Dublin area and also link the generators at Poulaphouca and Turlough Hill to the transmission network.

There are also a number of 110 kV lines in the study area, namely:

- Running north east along the southern coastline boundary, often parallel to the Knockraha – Waterford 220 kV line, are: the Dungarvan - Knockraha, Cullenagh - Dungarvan, Bulterstown – Cullenagh, Cullenagh - Waterford, Butlerstown - Killoteran, Killoteran - Waterford and two lines from Great Island - Waterford. Another line extends further eastwards linking Great Island – Wexford;
- Running south east through the southern half of the study area are the Cahir – Doon, Anner - Doon, Ballydine - Doon and Ballydine - Cullenagh 110 kV lines;
- Running north centrally through the study area are the Great Island – Kilkenny, Carlow - Kilkenny, Carlow - Kellis, Carlow - Stratford and Poolaphuca - Stratford lines; and
- Running north along the eastern coastal boundary of the study area are the Crane - Wexford, Crane - Lodgewood, Arklow - Crane, Arklow - Ballybeg, Ballybeg - Carrickmines and a double loop between Carrickmines - Fassaroe.

**Figures 8.4.2 (1-4)** in the main Constraints Report provides an overview of the high voltage transmission line network within the study area.

**Table 8.4b** sets out the approximate lengths of higher voltage transmission lines in the study area.

**Table 8.4b: Approximate Lengths of Higher Voltage Transmission Lines within the Study Area**

Voltage	Existing High Voltage Line
110 kV	893km
220 kV	661km

Voltage	Existing High Voltage Line
400 kV	67km

Source: EirGrid's Transmission Map

A series of sub-stations provide the necessary connection points for the transmission network within the study area. The 110 kV, 220 kV and 400 kV sub-stations are also depicted on **Figure 8.4.2 (1-4)** in the main Constraints Report, while **Table 8.4c** provides an overview of their location within the study area. It includes the three specified nodes for the Grid Link Project i.e. Knockraha, Great Island and Dunstown.

**Table 8.4c: Existing Sub-stations within the Study Area**

County	Existing Sub-stations
Cork	110 kV - Midleton and Barrymore 220 kV - Knockraha, Aghada, Rafeen, Glanagow and Longpoint
Waterford	110 kV - Dungarvan, Butlerstown, Killoteran and Waterford 220 kV - Cullenagh
Wexford	110 kV - Crane, Ballywater, Castledockrell and Wexford 220 kV - Great Island, Croy and Lodgewood
South Tipperary	110 kV - Doon, Anner, Ballydine and Cahir
Kilkenny	110 kV - Kilkenny
Carlow	110 kV - Carlow 220 kV - Kellis
Wicklow	110 kV - Shelton Abbey, Ballybeg and Fassaroe 220 kV - Arklow and Turlough Hill
Laois	110 kV - Portlaoise and Athy
Kildare	110 kV - Newbridge, Kilteel, Baroda and Pollaphuca 400 kV - Dunstown

Source: EirGrid's Transmission Map

EirGrid's statutory obligation is to plan and develop the grid infrastructure necessary to support Ireland's economy. A number of transmission development projects have been initiated within the study area to meet these needs. This includes *inter alia*<sup>1</sup>:

- Strengthening of the 110 kV and 220 kV networks in the study area (through uprating and upgrading existing infrastructure); and
- Expansion of the 110 kV, 220 kV and 400kV networks in the study area.

<sup>1</sup> For details of projects refer to EirGrid's Transmission Development Plan 2010 and Grid25 Implementation Programme 2011 - 2016



There are also thousands of kilometres of medium and lower voltage lines in the study area (i.e. 38 kV and below) and telephone overhead lines.

#### 8.4.4.2 Gas and Oil Pipeline Infrastructure

The gas infrastructure in Ireland comprises transmission (cross-country) and distribution (towns) networks. Both of these networks are evident in the Grid Link study area.

The Cork to Dublin gas transmission pipeline runs in a north-easterly direction through much of the study area. Connections off this pipeline serve the following towns in the study area: Cahir, Clonmel, Cashel, Ballyraggat, Kilkenny, Carlow, Athy, Naas, Kilcullen, Ballymore Eustace, Blessington, Bray, Wicklow, Rathdrum and Arklow. A spur runs south-west from near Clonmel and serves Carrick-on-Suir and Waterford. A parallel gas pipeline runs partly along the Cork to Dublin transmission pipeline from Whitegate (Cork) to north County Cork. These transmission gas pipelines operate under high pressure.

Local low-pressure distribution networks also serve towns and cities within the study area. These supply the industrial, commercial, residential and new housing sectors. These low-pressure gas distribution networks operate under a pressure of less than 7 bar.

In terms of future gas projects within the study area, An Bord Pleanála has recently granted Bord Gáis Éireann (BGE) Statutory Approval, as well as Gas Compulsory Purchase Order (CPO) (ABP Reg. Ref. PL26 DA0006) in respect of a proposal to construct a new gas supply pipeline from the existing transmission network (at Baulusk AGI, County Kilkenny) to the proposed new 430 megawatt combined cycle gas turbine (CCGT) generation station at Great Island, County Wexford (immediately adjacent to the Great Island 220 kV sub-station). The pipeline will be approximately 46 kilometres in length and will require the construction of three new Above Ground Installations (AGI) along the route.

**Figure 8.4.2 (1-4)** in the main Constraints Report provides an overview of the gas network within the study area as provided by BGE in June 2012.

#### 8.4.4.3 Water Infrastructure

The principal water infrastructure of concern at this stage of the development of a transmission network is reservoirs and drinking water sources. There are a number of these areas within the study area. The location of reservoirs has been derived from the Water Framework Directive work carried out in the east, south east and south west river basin districts and is shown on **Figure 8.4.2** in the main Constraints Report. Drinking water sources are protected areas under the Water Framework Directive. Rivers sources which fall under this category are also shown on **8.3.2** in the main Constraints Report.

Water mains are a significant consideration when OHL routes are under consideration.

#### 8.4.4.4 Roads

Four Motorways (M) partially or fully run through the study area. The two most recent significant road investments in the study area are the Dublin – Cork Motorway (M7/M8) and the Dublin – Waterford Motorway (M9), both completed in 2010. There is also a dense network of National (N) primary and secondary roads, and Regional (R) and local roads linking the major towns, villages and serving the general rural area in between. The main roads (i.e. Motorways and National Primary Roads) in the study area are summarised in **Table 8.4e**. **Figure 8.4.1 (1-4)** in the main Constraints Report provides an overview of the national road network within the study area.

**Table 8.4e: Motorways and National Primary Roads within the Study Area**

Standard of Road	Route	Linking	Extent
Motorways	M7	Dublin – Limerick / (Cork) / (Tralee)	Partially
	M8	Dublin – Cork	Fully
	M9	Dublin – Waterford	Fully
	M11	Dublin – Wexford	Fully
National Primary Roads	N7	Dublin – Limerick	Partially
	N8	(N7 from Dublin) – Portlaoise – Cork	Mostly
	N9	(N7 from Dublin) – Kilcullen – Carlow - Waterford	Fully
	N10	(N9 from Dublin) – Paulstown – Kilkenny – Ballyhale – (N9 to Waterford)	Fully
	N11	Dublin – Wexford	Fully
	N24	Limerick – Waterford	Mostly
	N25	Cork – Waterford – Rosslare Europort	Fully
	N28	Cork – Ringaskiddy	Fully
	N29	Spur off N25 east of Waterford to Belview Port	Fully
	N30	(N25 from Cork, Waterford near New Ross) – Enniscorthy – (N11 to Dublin)	Fully
	N31	(Spur off N11 at Dublin to Dún Laoghaire)	Fully
	N40	Cork South Ring Road	Fully

The National Roads Authority (NRA) through its National Roads Programme provides the framework for investment in road development. Many of the more recent road improvements were facilitated through Transport 21 (the capital investment framework under the National Development Plan through which the transport system in Ireland has / will be developed, over the period 2006 to 2015).

To date the NRA's Roads Programme has placed its strategic focus on major inter-urban (MIU) routes, specifically motorways linking the main cities. Subject to finance being available, completion of these routes and the improvement of accessing the Gateways and Hubs, County Towns and other larger settlements will remain a priority. Key future NRA road schemes within the study area at planning, tender or construction stage are set out in **Table 8.4f**<sup>2</sup>: It is noted that the status of number of other schemes is currently 'suspended'.

<sup>2</sup> As identified on the road scheme activity webpage at [www.nra.ie](http://www.nra.ie).

The more important roads projects (i.e., those likely to be prioritised in the short to medium term) within the study area are those related to the Atlantic Corridor and Euro 1 / M1, strategic European routes.

**Table 8.4f: NRA Road Scheme Proposals within the Study Area at Planning, Tender or Construction Stage**

Standard of Road	Linking	Status
Cork	N8 Dunkettle Interchange	Planning
	N22 Ballyvorney Macroon	Planning
	N25 Cork SRR Interchanges	Construction
Wexford	M11 Gorey to Enniscorthy	Planning
	N11 / Oilgate to Rosslare Harbour	Planning
	N25 New Ross Bypass	Planning
South Tipperary	N24 Pallasgreen to Cahir (Western Corridor)	Planning
Kilkenny	N25 Waterford to Glenmore	Planning
	N25 New Ross Bypass	Planning
Kildare	Motorway Service Areas Tranche	Tender
	N7 Nass Newbridge Bypass Upgrade	Planning
Wicklow	N11 Arklow to Rathnew	Tender
South Dublin	N81 Tallaght to Hollywood	Planning

Source: NRA- Road Scheme Activity ([www.nra.ie](http://www.nra.ie) accessed July 2012).

It is noted that in addition to the road proposals above, individual county councils have their own road improvement schemes and many also have strategic road objectives.

#### 8.4.4.5 Rail

Iarnród Éireann operates passenger rail services nationwide. Its InterCity services provide rail links between the main towns and cities while its suburban rail services operates between Dublin and Cork and outlying commuter locations. **Table 8.4g** indicates the rail services which currently operate within the study area. **Figure 8.4.1 (1-4)** in the main Constraints Report provides an overview of the rail network within the study area.

**Table 8.4g: Rail Services Operating within the Study Area**

Service	Route	Serving
InterCity	Dublin – Cork	Newbridge, Kildare, Monasterevin, Portarlinton, Portlaoise, Ballybrophy, Templemore, Thurles, Limerick Junction, Charleville and Mallow.

Service	Route	Serving
	Dublin – Rosslare Europort	Dun Laoghaire, Bray, Greystones, Kilcoole, Wicklow, Rathdrum, Arklow, Gorey, Enniscorthy, Wexford, and Rosslare Strand.
	Dublin – Waterford	Newbridge, Kildare, Athy, Carlow, Muine Bheag, Kilkenny and Thomastown.
	Carlow – Dublin	Athy, Kildare, Newbridge, Sallins, Hazelhatch, Adamstown, Clondalkin and Cherry Orchard
	Limerick – Waterford	Tipperary, Cahir, Clonmel and Carrick-on-Suir.
	Rosslare – Waterford	
Suburban	Dublin – Kildare	Newbridge, Sallins, Hazelhatch, Adamstown and Clondalkin
	Dublin – Arklow	
	Cork – Cobh	Rushbrooke, Carrigaloe, Fota, Glounthane and Little Island
	Cork – Mallow	
	Cork – Midleton	Carrigtwohill, Glounthuane and Little Island
Dart	Dublin - Greystones	Dun Laoghaire, Glashthule, Dalkey, Killiney, Shankill and Bray

Source: [www.irishrail.ie](http://www.irishrail.ie)

Iarnród Éireann's 2030 Rail Network Strategy Review<sup>3</sup> focuses on the future development requirements of the InterCity Network (ICN) and the regional services. It identifies investment priorities based on a detailed cost benefit analysis and indicates that future investment and service improvements are likely to be focused on linkages between the major agglomerations e.g. Dublin - Cork and Dublin - Waterford. Improvement of non-radial rail links will only be considered where transport volumes are of sufficient density. No specific major new / upgrading proposals are identified for within the study area.

Notwithstanding the review, rail proposals documented elsewhere (including the Regional Planning Guidelines and County Development Plans) and of potential relevance include the remaining stages of the Cork Suburban Rail Network i.e. Midleton – Youghal.

There are also a number of old / disused railway lines running through the study area. While the 2030 Rail Network Strategy Review considers potential new lines (assumed to also include 'reopening' of old / disused railway line) it concludes that only the Athenry-Tuam line (which is outside the study area) merits further consideration. Apart from rail proposals it should also be noted that old / disused railway lines often are the focus of other sectoral initiatives e.g. tourism initiatives. This is considered further in **Section 8.3**.

<sup>3</sup> Available at [www.irishrail.ie](http://www.irishrail.ie)

#### 8.4.4.6 Ports, Harbours and Marinas

The study area includes ports, harbours and marinas along the eastern and southern coastline. The main ones are summarised in **Table 8.4h**. These meet the needs of the marine sector freight and leisure / cruise sectors. The main ones within the study area are illustrated on **Figure 8.3.3** in the main Constraints Report.

**Table 8.4h: Major Ports and Harbours in the Study Area**

County	Port / Harbour
Cork	Cork Harbour (including Port of Cork, Passage West, Whitegate and Marino Point (disused))
	Youghal
Waterford	Waterford / Bellview Port (including Great Island
	Dungarvan
Wexford	New Ross
	Rosslare Europort (just outside the study area)
	Kilmore Quay (just outside the study area)
	Dunmore East
	Courtown
	Wexford Harbour
Wicklow	Wicklow
	Arklow
	Bray
Dun Laoghaire Rathdown	Dun Laoghaire

#### 8.4.4.7 Airports and Airfields

The study area includes one major airport. Located 9 km south of Waterford City is the South East / Waterford Regional Airport (refer to **Figure 8.4.1 (1-4)** in the main Constraints Report). It operates services between UK and some European destinations. The Irish Coast Guard also operates an air / sea rescue service from the airport. In addition there are a number of local airfields located within the study area including *inter alia* Kilkenny, Newcastle, and Weston.

It is also worth noting that Casement Baldonnell Airport is located just outside of the study area (north of the M7 / Naas Road), while Cork International Airport (the second largest airport in the State) is located 5 km south of Cork City Centre and is also just outside the study area. It provides both national and international access and connectivity from a site of approximately 248 ha.

The International Civil Aviation Organization (ICAO) sets out safe distances (both vertically and horizontally) for landing and take-off for airports, airfields / aerodromes. For health and safety

reasons, there are height restrictions relating to development, including OHL infrastructure within the flight zones of airports and airfields / aerodromes.

In addition to providing passenger, freight and private landing / taking off facilities, airports often are a focus for enterprise and industry (both existing and planned).

#### **8.4.4.8 Windfarms**

There are a number of existing wind generation developments (or windfarms) located throughout the study area. The highest output is evident in Cork (with 268 MW of connected wind generation), followed by Wexford (122 MW of connected wind generation) and Tipperary (87 MW of connected wind generation). In addition to existing wind generation, there are both contracted and non contracted offers as part of the Gate 2 and Gate 3 process.

**Figure 8.4.2 (1-4)** in the main Constraints Report identifies the point where existing and proposed generators (including windfarms) do / are proposed to connect to the transmission / distribution network. These connection points do not represent the location of the existing or the proposed windfarms themselves. While not presented in this report, the site details of existing windfarms (and proposed windfarms where the information is available) are being collected and will be used when identifying and assessing feasible route corridor options for the Grid Link Project.

#### **8.4.4.9 Defence**

The study area includes military associated sites and tactical areas. In particular, the Curragh Camp (Kildare), which is home to the Defence Forces Training Centre, is located in the north of the study area. Collin's Barracks is also located on the north side of Cork City. Other relevant locations include the Glen of the Imaal (Wicklow) tactical area.

### 8.5.4 Baseline Information – Soils, Geology and Hydrogeology

The most sensitive areas, i.e. areas of constraint, in relation to soils, geology, hydrology and hydrogeology where sensitive receptors exist are namely;

- Areas Susceptible to Peat Failure;
- Compressible & Erodible Soils;
- Geological Heritage Sites;
- Karst Areas;
- Vulnerable Aquifers; and
- Sensitive Surface Water Channels/Waterbodies.

These sensitive areas contain soils, geological features or surface and ground water receptors where any alterations during construction has the highest risk of negative impact.

Table 8.5b outlines the features which have been identified within the study area as well as a general description of the issues and the location. The locations are illustrated on **Figure 8.5.1** in the main Constraints Report.

**Table 8.5b: Key Constraints within the Study Area**

Constraint	Description	Location (approximate)
Areas Susceptible to Peat Failure	Relic landslide location	29 no. reported locations - 20 no. in south Dublin and Wicklow - 3 no. in Laois - 2 no. in Tipperary, north east of Clonmel - 2 no. in Cork - 1 no. Kilkenny - 1 no. Waterford
Areas Susceptible to Peat Failure	Areas susceptible to peat failure based on RPS qualitative susceptible mapping (input factors include ground conditions, land use, slope gradient, form and aspect, elevation, rainfall and rivers)	High risk areas identified in; - South Dublin and Wicklow - Border of Carlow and Wexford north of Templeshanbo - Tipperary, north east of Clonmel - Border of Tipperary and Waterford, north of Lismore

Constraint	Description	Location (approximate)
		- Waterford, south east of Clonmel
Compressible & Erodible Soils	Peat, alluvial deposits	Peat located mainly in; - South Dublin and Wicklow - Kildare - Laois - Tipperary - Waterford  Alluvial deposits located mainly; - Along rivers and streams with more significant deposits in; - Laois - Waterford
Geological Heritage Sites	Includes geological features such as significant/rare formations, fossilisations and karst.	See <b>Figure 8.5.2</b> in the main Constraints Report
Karst Areas	Swallow holes, depressions, springs, caves.	Karst features have been recorded in; - Laois - Kilkenny - Tipperary - Waterford - Cork
Vulnerable Aquifers	An aquifer which is considered vulnerable is one which is closer to the surface or where a low permeability drainage path exists to the aquifer.	Extreme to high vulnerable aquifers exist in all counties within the study area.
Sensitive Surface Water Channels/Waterbodies	Rivers or streams which have been designated as Special Areas of Conservation (SAC's) or Salmonid Rivers – Refer also to Biodiversity Section 8.6.	River Barrow River Nore River Suir River Slaney River Blackwater River Dargle River Vartry



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Constraint	Description	Location (approximate)
		River Aherlow Poulaphouca Reservoir

## 8.6.4 Baseline Information – Biodiversity

Ireland has designated sites and species of conservation value and/or concern in an effort to protect its biodiversity resource. Designated conservation areas are areas containing habitats or species of national or international conservation importance. There are three primary categories of designated sites for nature conservation in Ireland; Special Areas of Conservation, Special Protection Areas, and Natural Heritage Areas.

Special Areas of Conservation (SAC) are protected under the European Union (EU) Habitats Directive (92/43/EEC) and Special Protection Areas (SPA) are designated under the EU Birds Directive (2009/147/EC, codified version of 79/409/EEC as amended). These designations are of international importance and form the backbone of the Natura 2000 network. This is an EU wide network of nature protection areas with the aim of ensuring the long-term survival of Europe's most valuable and threatened species and habitats. The Habitats Directive is transposed into Irish law by S.I. No. 477 of 2011 (European Communities (Birds and Natural Habitats) Regulations 2011).

Ramsar sites are wetlands of international importance designated under the Ramsar Convention, an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. Ramsar sites are often included within SAC or SPA designations.

The basic designation for wildlife in Ireland is the Natural Heritage Area (NHA). This is an area considered important for the habitats present or which holds species of plants and animals whose habitats need protection. To date, 148 bogs have been given legal protection as NHA. In addition, there are 630 proposed NHA (pNHA), which were published on a non-statutory basis in 1995, but have not since been statutorily proposed or designated. These sites are of significance for wildlife and habitats. Prior to statutory designation, pNHA are subject to limited protection, however for the purposes of the Grid Link Project all NHA will be treated as fully protected.

In 1969, the International Union for the Conservation of Nature (IUCN) recommended that all governments agree to reserve the term 'National Park' to areas sharing defined characteristics. Six national parks have been designated by the Irish Government and one, the Wicklow Mountains National Park is within the study area.

**Tables 8.6b - 8.6d** provide a list of designated sites within the study area: SPA, SAC and NHA respectively. The location of the EU designated sites (SPA and SAC) are shown on **Figures 8.6.1 (1-4)** in the main Constraints Report while nationally protected sites (NHA and pNHA) are depicted on **Figures 8.6.2 (1-4)** in the main Constraints Report.

### 8.6.4.1 Special Protection Areas (SPA)

There are twenty SPA within the study area (Table 8.6b). SPA are designated for bird species and their habitat and are therefore considered a key constraint to the development of transmission lines. SPA within the study area are depicted on **Figures 8.6.1 (1-4)** in the main Constraints Report.

The legal basis on which SPA are selected and designated is the EU Birds Directive (79/409/EEC) which requires designation of SPA for:

- Listed rare and vulnerable bird species (Annex 1);
- Regularly occurring migratory species, such as ducks, geese and waders; and

- Wetlands, especially those of international importance, which attract large numbers of migratory birds each year (Internationally important means that 1% of the population of a species uses the site or more than 20,000 birds regularly use the site).

**Table 8.6b: Overview of Special Protection Areas (SPA) within the Study Area**

Number	Name	Description
004019	The Raven SPA	The site is of international ornithological importance as it provides crucial roosting habitat for the Wexford Harbour flock of Greenland White-fronted Geese. Of particular interest is the six wintering species which are listed on Annex I of the E.U Birds Directive i.e. Red-throated Diver, Great Northern Diver, Slavonian Grebe, Golden Plover, Bar-tailed Godwit and Greenland White fronted Geese. Little Tern a species breeding in the site is also listed on Annex I of the E.U. Birds Directive. Owing to the recognised importance of the area, the Raven Point is a statutory Nature Reserve and a Ramsar Site.
004020	Ballyteigue Burrow SPA	This Coastal site is of high ecological value for its range of good quality coastal habitats, several being listed on Annex I of the E.U Habitats Directive. It supports an internationally important number of Brent Geese and a further six species with populations of national importance. Of particular note is that two of the species, Golden Plover and Bar-tailed Godwit, are listed on Annex I of the E.U. Birds Directive. Little Tern a species breeding in the site is also listed on Annex I of the E.U. Birds Directive.  Most of the site is designated as a Nature Reserve.
004022	Ballycotton Bay SPA	Ballycotton Bay supports an excellent diversity of wintering waterfowl and has nationally important populations of nine species, of which two, Golden Plover and Bar-tailed Godwit, are listed on Annex I of the E.U. Birds Directive. Nationally important species are: Teal, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Sanderling, Bar-tailed Godwit, Curlew and Turnstone. Other species which occur in important numbers, and at times exceed the threshold for national importance, include Shelduck, Wigeon, Mallard, Oystercatcher, Dunlin, Black-tailed Godwit, Redshank and Greenshank.
004023	Ballymacoda Bay SPA	The site qualifies for international importance on the basis that it regularly supports in excess of 20,000 birds. It also qualifies for international importance for its population of Black-tailed Godwit. In addition, it supports nationally important populations of a further 15 species: Shelduck, Wigeon, Teal, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Knot, Sanderling, Dunlin, Bar-tailed Godwit, Curlew, Redshank, Greenshank and Turnstone. The presence of large flocks of Golden Plover and Bar-tailed Godwit is of particular note as these species are listed on Annex I of the E.U. Birds Directive.
004027	Tramore Backstrand	The site supports Little Egret, Golden Plover and Bar-tailed Godwit, all of which are listed on Annex I of the E.U. Birds

Number	Name	Description
	SPA	Directive.
004028	Blackwater Estuary SPA	The site supports an internationally important population of Black-tailed Godwit, and has a further eight species with nationally important populations: Shelduck, Wigeon, Golden Plover, Lapwing, Dunlin, Curlew, Redshank and Greenshank. A population of Bar-tailed Godwit is very close to the threshold for national importance.
004030	Cork Harbour SPA	Of particular note is that the site supports an internationally important population of Redshank. A further 15 species have populations of national importance, as follows: Great Crested Grebe, Cormorant, Shelduck, Wigeon, Gadwall, Teal, Pintail, Shoveler, Red-breasted Merganser, Oystercatcher, Lapwing, Dunlin, Black-tailed Godwit, Curlew and Greenshank. The Shelduck population is the largest in the country (9.6% of national total), while those of Shoveler (4.5% of total) and Pintail (4.2% of total) are also very substantial
004032	Dungarvan Harbour SPA	This site is of high ornithological importance as it supports numbers of international importance (over 20,000) of waterfowl. Two species that occur in important numbers are listed on Annex I of the E.U. Birds Directive, i.e. Bar-tailed-Godwit and Golden Plover.
004033	Bannow Bay SPA	Bannow Bay provides an excellent example of an enclosed estuarine system, with habitats generally of good quality. It is of international importance for Brent Geese and supports a further 12 species in numbers of national importance. Two of these species, Bar-tailed-Godwit and Golden Plover, are listed on Annex I of the E.U. Birds Directive.
004040	Wicklow Mountains SPA	This site is of high ornithological importance as it supports very good examples of upland and woodland bird communities. Several of the species which occur are very rare at a national level. Two species, Ring Ouzel and Red Grouse, are Red-listed and their status is of high conservation concern. Also of note is that Merlin and Peregrine are both listed on Annex I of the E.U. Birds Directive.
004063	Poulaphouca Reservoir SPA	The principal interest of the site is the Greylag Goose population, which is of international importance. A range of other wildfowl species also occurs, including Whooper Swan, a species that is listed on Annex I of the E.U. Birds Directive. The site is also notable as a winter roost for gulls, especially Lesser Black-backed Gull.
004076	Wexford Harbour & Slob SPA	This site is one of the most important ornithological sites in the country. It is of World Importance for Greenland-White fronted Goose and supports internationally important numbers of Mute Swan, Light-bellied Brent Goose, Black-tailed Godwit and Bar-tailed Godwit.  Several of the species that visit the site regularly are listed on

Number	Name	Description
		Annex I of the E.U Birds Directive i.e. Little Egret, Whooper Swan, Bewick's Swan, Greenland White-fronted Goose, Hen Harrier, Golden Plover, Bar-tailed Godwit, Ruff, Wood Sandpiper, Little Tern and Short-eared Owl.
004094	Blackwater Callows SPA	<p>The site is important as it has internationally important numbers of Whooper Swan and nationally important number of Wigeon, Teal and Black-tailed Godwit.</p> <p>The presence of Whooper Swan and Little Egret is of particular note as both these species are listed on Annex I of the E.U. Birds Directive.</p>
004118	Keeragh Islands SPA	This site is important as it has nationally important number of Cormorant.
004127	Wicklow Head SPA	This site is important as it has a well-documented seabird colony, with two species having populations of national importance (Kittiwake and Black Guillemot). The occurrence of Peregrine Falcon adds to the interest of the site.
004143	Cahore Marshes SPA	<p>This site provides a feeding area for internationally important numbers of Greenland White fronted Goose, a species listed on Annex I of the E.U Birds Directive.</p> <p>The site also supports Bewick's Swan, Whooper Swan and Golden Plover all of which are listed on Annex I of the E.U. Birds Directive.</p>
004186	The Murrough SPA	<p>The principal interest of the site is internationally important numbers of Brent Goose and nationally important numbers of Red throated Diver, Greylag Goose, Wigeon, Teal, Black headed Gull and Herring Gull all of which are listed on Annex I of the E.U. Birds Directive.</p> <p>The regular occurrence of Red-throated Diver, Little Egret, Whooper Swan, Greenland White fronted Goose, Golden Plover, Little Tern, Sandwich Tern, Short-eared Owl and Kingfisher is of note as these species are listed on Annex I of the E.U. Birds Directive.</p>
004192	Helvick Head to Ballyquin SPA	The principal interest of the site is Chough and Peregrine, both species are listed on Annex I of the E.U. Birds Directive. It also supports a range of breeding seabirds, including populations of Cormorant, Herring Gull and Kittiwake of national importance.
004193	Mid West Coast SPA	The principal interest of the site is Chough and Peregrine, both species are listed on Annex I of the E.U. Birds Directive. It also supports a range of seabirds, including populations of Cormorant and Herring Gull of national importance.
004233	River Nore SPA	The principal interest of the site is the Kingfisher population as the River Nore SPA supports a nationally important population of the species. Kingfisher is listed on Annex I of the E.U. Birds

Number	Name	Description
		Directive. Other species which occur at the site include Mute Swan, Mallard, Grey Heron, Moorhen, Snipe and Sand Martin.

#### 8.6.4.2 Special Areas of Conservation (SAC)

**Table 8.6c** below provides a list of all the SAC within the study area. There are forty three Special Areas of Conservation within the study area. SAC are designated due to the presence of rare and / or protected species known as qualifying features of the site. SAC within the study area are shown on **Figures 8.6.1 (1-4)** in the main Constraints Report.

The legal basis on which SAC are selected and designated is the EU Habitats Directive. The Directive lists certain habitats (Annex I and priority habitats) and species (Annex II) that must be protected within SAC. Irish habitats include raised bogs, blanket bogs, turloughs, sand dunes, machair (flat sandy plains on the north and west coasts), heaths, lakes, rivers, woodlands, estuaries and sea inlets. The 25 Irish species which must be afforded protection include Salmon, Otter, Freshwater Pearl Mussel, Bottlenose Dolphin and Killarney Fern. Potential impacts from transmission lines will depend on the species or habitat for which the SAC was designated.

**Table 8.6c: Special Areas of Conservation within the Study Area**

Site Code	Site Name
000077	Ballymacoda (Clonpriest And Pillmore)
000396	Pollardstown Fen
000397	Red Bog, Kildare
000404	Hugginstown Fen
000407	The Loughans
000665	Helvick Head
000668	Nier Valley Woodlands
000671	Tramore Dunes And Backstrand
000696	Ballyteige Burrow
000697	Bannow Bay
000700	Cahore Polders And Dunes
000708	Screen Hills
000713	Ballyman Glen
000714	Bray Head
000716	Carriggower Bog
000717	Deputy's Pass Nature Reserve
000719	Glen Of The Downs
000725	Knocksink Wood
000729	Buckronev-Brittis Dunes And Fen

Site Code	Site Name
000733	Vale Of Clara (Rathdrum Wood)
000764	Hook Head
000770	Blackstairs Mountains
000781	Slaney River Valley
000831	Cullahill Mountain
000849	Spahill And Clomantagh Hill
000869	Lisbigney Bog
001058	Great Island Channel
001209	Glenasmole Valley
001741	Kilmuckridge-Tinnaberna Sandhills
001757	Holdenstown Bog
001766	Magherabeg Dunes
001858	Galmoy Fen
001952	Comeragh Mountains
002122	Wicklow Mountains
002123	Ardmore Head
002137	Lower River Suir
002162	River Barrow And River Nore
002170	Blackwater River (Cork/Waterford)
002249	The Murrough Wetlands
002252	Thomastown Quarry
002256	Ballyprior Grassland
002324	Glendine Wood
002331	Mouds Bog

### 8.6.4.3 Annex I Habitats

Annex I habitats are of international conservation importance and are listed on Annex I of the EU Habitats Directive. Specific sites are required by the EU to be designated under the Habitats Directive for important habitats, for flora and fauna species or for both. Sites so designated are called Special Areas of Conservation (SAC). See **Section 8.6** (and Section 8.6.4.2 above) for further information on SAC within the study area.

It is recognised that Annex 1 Habitat can be found outside of designated SAC. Given the importance of this class of habitat under the EU Habitats Directive, as a general rule, where it is encountered it will be given the same consideration as if fully designated.

**Figure 8.6.2 (1-4)** in the main Constraints Report illustrates the potential location of Annex I habitats present within the study area. This has been taken from two sources. The first source was the SEA

Constraints Mapping prepared by EirGrid as part of the SEA for the Grid25 Implementation Programme. In that case, the Corine dataset was used to derive Annex habitat. It does not relate to any survey work and would require verification in the field. The second source was from NPWS survey data. Datasets for Nephin Releve Habitats, Woodland Habitats, Croaghaun Slievemore Habitats and MSE Habitats were received however only woodland sites were relevant to the Grid Link Study Area. Within the woodland dataset two Annex Habitats were recorded: 91A0 (Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles) and 91E0 (Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*). The NPWS dataset would represent the most accurate information available.

#### 8.6.4.4 Natural Heritage Areas (NHA) and Proposed Natural Heritage Areas (pNHA)

Natural Heritage Areas (NHA) are protected under the Wildlife Act 1976, as amended. NHA are considered important at a national level for the habitats present or specific species of flora or fauna. Prior to statutory designation, pNHA are subject to limited protection, however for the purposes of the Grid Link Project all NHA will be treated as fully protected.

There are three designated NHA within the study area as outlined in **Table 8.6d** and depicted on **Figure 8.6.2 (1-4)** in the main Constraints Report.

**Table 8.6d NHA within the Study Area**

Site Code	Name
000703	Keeragh Islands NHA
002382	Coan Bogs NHA
002388	Slievenamon Bog NHA

Source: NPWS 2012

There are a further two hundred and ten proposed Natural Heritage Areas (pNHA) within the study area. These are listed in **Appendix E** and shown on **Figure 8.6.2(1-4)** in the main Constraints Report.

#### 8.6.4.5 Important Bird Areas

Ramsar sites are wetlands of international importance designated under the Ramsar Convention, an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. There are nine Ramsar Sites within the study area and these are listed on **Table 8.6e** below. Most of the Ramsar sites within the study area are also covered by SPA designations.

**Table 8.6e Ramsar Sites within the Study Area**

Code	Name	Status
830	Ballycotton Bay	Special Protection Area
831	Ballymacoda	Special Protection Area
840	Bannow Bay	Special Protection Area
836	Blackwater Estuary	Special Protection Area



Code	Name	Status
837	Cork Harbour	Special Protection Area
839	Dungarvan Harbour	Special Protection Area
474	Pollardstown Fen	Nature Reserves
835	Tramore Backstrand	Special Protection Area
291	Wexford Wildfowl Reserve	Nature Reserves

In addition to Ramsar sites, the Important Bird Areas (IBA) Programme of BirdLife International has also been considered. This is a worldwide initiative aimed at identifying and protecting a network of critical sites for the conservation of the world's birds.

BirdWatch Ireland have been working with its European BirdLife International partners to ensure that information on important bird areas is collected and presented in a manner that allows Ireland's importance for bird conservation to be viewed. These IBAs are depicted on **Figure 8.6.2(1-4)** in the main Constraints Report.

The function of the Important Bird Area (IBA) Programme is to identify, protect and manage a network of sites that are important for the long-term viability of naturally occurring bird populations, across the geographical range of those bird species for which a site-based approach is appropriate.

#### 8.6.4.6 Important Bat Areas

Bat Conservation Ireland in association with the Northern Ireland Environment Agency and the Centre for Irish Bat Research have developed a landscape conservation guide for Irish bat species (2011).

Using an existing database of species records, collated and maintained by Bat Conservation Ireland, they have applied an analysis of the habitat and landscape associations of all species that commonly occur in Ireland namely; Common pipistrelle, Soprano Pipistrelle, Nathusius' pipistrelle, Leisler's bat, Daubenton's bat, Natterer's bat, whiskered bat, brown long-eared bat and the lesser horseshoe bat.

The geographical areas that are suitable for individual species were identified and summarised including the associations that result in these patterns. For each species, the 'core favourable area' was identified and the roosting habitat associations of each species were examined. Roosts are central to ensuring continued favourable conservation status of bats in Ireland. The roosting habitat was examined by delineating the area around roosts and comparing it with areas where roosts are not known to occur.

This landscape-based model approach identified habitat associations of all bat species that regularly occur in Ireland. These models identified core areas in which species would be expected to occur. The predictive models permitted not only informed assessment of an area's likelihood of supporting a particular bat species but also suggest reasons why species may not be present. However, it should be noted that these models should be considered broad generalisations of species' geographical occurrence. Core areas should be considered as those areas where a species is expected and every effort should be made to maintain the favourable status of that area for a species. However, areas outside core areas should not be 'discounted' as unimportant. Indeed the occurrence of the species beyond the limits of the core area may be reliant on small fragments of favourable habitat which are particularly vulnerable to environmental change. For the Constraints Stage bat survey data has been sourced from Bat Conservation Ireland and is depicted on **Figure 8.6.2(1-4)** in the main Constraints Report.

### 8.6.4.7 Freshwater Pearl Mussel (FPM)

The Freshwater Pearl Mussel (*Margaritifera margaritifera*) is a bivalve and can be up to 140mm in length with an oval-shaped heavy black shell. They are filter feeders associated with Salmonid waters, but they require higher water quality than Salmonids. They have a complex life cycle with a fish host usually required during the larval stages. In Ireland, native salmon (*Salmo salar*) and trout (*Salmo trutta*) are used as hosts. The fish provide the essential step in the mussel's life cycle and adult mussels are an indicator of good clean water. Each mussel can filter up to 50 litres of water per day.

There has been a considerable decline in this species distribution and numbers. Within the study area, *Margaritifera* is now confined to eight river systems as described in **Table 8.6f** and depicted on **Figure 8.6.3 (1-4)** in the main Constraints Report). Due to the sensitivities of the FPM, the total catchment area for the relevant rivers have been mapped as part of the constraints study as opposed to the point locations of individual populations or habitat reaches.

Freshwater pearl mussels are considered a key constraint as they are particularly sensitive to suspended solids which maybe generated during construction works. However it is noted that good management practices during construction e.g. method statements for work within these catchments, storage of spoil or materials away from water courses etc. can significantly reduce the potential for impact on the FPM.

**Table 8.6f Freshwater Pearl Mussel Populations**

Freshwater Pearl Mussel Population	SAC Site Code	SAC Site Name	River and lakes containing <i>Margaritifera</i> (list not exhaustive)
Clodiagh (Suir)	002137	Lower River Suir SAC	Clodiagh
Dereen (Slaney)	000781	Slaney River Valley SAC	Derreen
Aughavaud (Barrow)	002162	River Barrow and River Nore SAC	Aughavaud
Munster Blackwater	002170	Blackwater River (Cork/Waterford) SAC	Munster Blackwater (main channel)
Mountain (Barrow)	002162	River Barrow and River Nore SAC	Mountain, Aughnabrisky
Nore	002162	River Barrow and River Nore SAC	Nore
Licky	002170	Blackwater River (Cork/Waterford) SAC	Licky
Ballymurphy(Barrow)	002162	River Barrow and River Nore SAC	Ballymurphy

#### 8.6.4.8 Shellfish

The following shellfish growing areas (see **Figure 8.6.3 (1-4)** in the main Constraints Report) are found within the study area as delineated by the Sea-Fisheries Protection Authority (Ireland):

- Ballymacoda Bay;
- Rostellan South;
- Rostellan North;
- Wexford Harbour Outer;
- Wexford Harbour Inner;
- Waterford Harbour (Cheekpoint/Arthurstown/Creadan Head);
- Cork Great Island North Channel;
- Dungarvan Harbour; and
- Bannow Bay.

#### 8.6.4.9 Salmonid Waters

Salmonid waters are designation for the maintenance of water quality for Atlantic Salmon (also a qualifying feature for some SAC within the study area) and trout freshwater species. Legal backing was first established under the EU Directive 78/659/EEC 'On the quality of freshwaters needing protection or improvement in order to support fish life' commonly known as the Freshwater Fish Directive. This was superseded by the European Communities (Quality of Salmonid Waters) Regulations, S.I. No 293 of 1988.

The 1988 directive defines freshwaters as being waters capable of supporting Atlantic Salmon (*Salmo Salar*), Trout (*Salmo trutta*), Char (*Salvelinus*) and Whitefish (*Coregonus*) and are hereby designated as Salmonid waters. There are six designated salmonid rivers, or sections thereof, within the study area. These are described in **Table 8.6g** and depicted on **Figure 8.6.3 (1-4)** in the main Constraints Report.

The 1988 Regulation was superseded by the Water Framework Directive 2000/60/EC. This latest directive expands the scope of water protection of all waters and sets clear objectives that good status must be achieved for all European waters by 2015 and that sustainable water use is ensured throughout Europe of which Salmonid waters are included.

**Table 8.6g Overview of Designated Salmonid Waters within the Study Area**

<b>Salmonid Water</b>	<b>Designated Section within Study Area (labeling as per WFD)*</b>
River Aherlow	SE Suir Aherlow – Aherlow _Lower
River Blackwater (Munster)	SW Blackwater 190 Munster Main – Blackwater 1 Lower
River Blackwater (Munster)	SW Blackwater 190 Bride – Bride 1 Lower
River Blackwater (Munster)	SW Blackwater 190 Bride – 1 Shannon
River Blackwater (Munster)	SW Blackwater 190 Bride –Bride_ r2 Midbride_Douglas _1 Lower
River Blackwater (Munster)	SW Blackwater 190 Bride – Bride 3 Mid
River Dargle	EA Dargle 169 – Dargle 1 Lower
River Dargle	EA Dargle 169 – Dargle Trib Killough
River Dargle	EA Dargle 169 – Dargle 2 Mid
River Dargle	EA Dargle 169 – Dargle 3_Upper
River Dargle	EA Dargle 169 – Dargle Trib_ Deerpark
River Nore	SE Nore Main – Nore 3
River Nore	SE Nore Main – Ballyroan
River Nore	SE Nore Main – Nore 2
River Nore	SE Nore Main – Owveg Lower
River Slaney	SE Slaney Main – Leoh
River Slaney	SE Slaney Main – Slaney 4
River Slaney	SE Slaney Main – Slaney 3
River Slaney	SE Slaney Main – Little Slaney
River Slaney	SE Slaney Main – Slaney 2
River Slaney	SE Slaney Main – Douglas Lower
River Vartry	EA Vartry 170 – Vartry 4 Upper
River Vartry	EA Vartry 170 – Vartry 3
River Vartry	EA Vartry 170 – Vartry 2

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Salmonid Water	Designated Section within Study Area (labeling as per WFD)*
River Vartry	EA Vartry 170 – Vartry 1 Lower

\*See mapping for overlap with SAC within the study area.

#### 8.6.4.10 Nutrient Sensitive Areas

Nutrient Sensitive Areas comprise nitrate vulnerable zones designated under the Nitrates Directive (91/676/EEC) and areas designated as sensitive under the Urban Waste Water Treatment Directive (91/271/EEC). These areas are shown in **Figure 8.6.3 (1-4)** in the main Constraints Report.

## 8.7.4 Baseline Information – Water

The Water Framework Directive adopts a holistic approach to water management across all surface waters and ground waters. The characterisation and status of all water in River Basin Districts delineated under the Water Framework Directive has been implemented by the EPA and Local Authorities through the River Basin District projects. The River Basin Management Plan prepared for each of the 7 RBDs in Ireland will bring incremental improvement leading to the majority of waters reaching at least “good status” by 2027 at the latest, benefiting the whole community by providing long-term sustainable access to and use of those waters. Where waters are currently at less than good status, they must be improved until they reach good status and there must be no deterioration in the existing status of waters.

Under the Water Framework Directive (which was transposed into law in Ireland by the European Communities (Water Policy) Regulations 2003, S.I. 722 of 2003) any new modifications or development that could cause failure to achieve good status or to maintain high status will only be consented where development is considered to be of over-riding public interest and /or there are overriding benefits to human health and safety. Under Regulation 33 of the European Communities Environmental Objectives (Surface Waters) Regulations, SI 272 of 2009 it is necessary to consider alternative options for delivering these benefits and all practicable steps must be taken to mitigate adverse impact on the water body. It is therefore important that the information contained within the River Basin Management Plans and supporting documentation is fully considered in any constraints study.

The datasets from the River Basin Management Plans and supporting documentation that have been included are outlined in the following sections.

### 8.7.4.1 The Status of All Groundwaters and Surface Waters within the Study Area

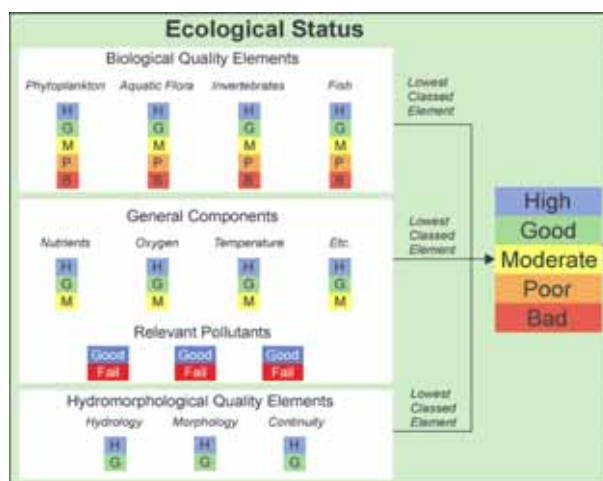
The Environmental Protection Agency has developed a new, Water Framework Directive compliant, monitoring programme to establish a coherent and comprehensive overview of water status within Ireland. This programme was specifically introduced to implement the Water Framework Directive. It builds on previous monitoring programmes providing a more comprehensive assessment of water quality and quantity. The Environmental Protection Agency has developed new biological classification systems and new standards for seven physio-chemical parameters and 62 chemical substances have also been developed. The new classification systems are more rigorous than previous systems as they measure a greater range of biological elements and pollutants. Failure of a single biological element or chemical standard can downgrade the overall status of the waters.

The final status based on the results of the completed first monitoring cycle carried out in 2007-2009 was reported in June 2011.

Details of the Water Framework Directive monitoring programme, new classification standards and the status setting process for surface and groundwaters are available in the monitoring and status background documents on the Water Framework Directive website.

#### Surface Waters - Ecological Status

The monitoring programme collects data on certain plants, insects and fish, along with supporting water quality, hydrology and morphological conditions. The results of this monitoring information are used to assign ecological status to waters. Waters are assigned one of five classes of ecological status; high, good, moderate, poor or bad as shown in the graphic below.



**Figure 8.7.2** in the main Constraints Report provides an indication of the ecological status of all surface waters in the study area.

### Surface Waters - Chemical Status

EU wide standards have been established for priority and priority hazardous substances which include certain metals, pesticides, hydrocarbons, volatiles and hormone-disrupting compounds. These standards have been transposed in Irish legislation (SI 272 of 2009). Exceedance of a standard results in a water body failing good chemical status.

**Figure 8.7.3** in the main Constraints Report provides an indication of the chemical status of surface waters in the study area

### Groundwater Status

Groundwater status does not directly assess ecology, but the classification process takes account of the ecological needs of the relevant rivers, lakes and terrestrial ecosystems that depend on contributions from groundwater. Another key component of the groundwater classification is assessment of the impact of pollution on the uses (or potential uses) of groundwater from the groundwater body, for example water supply. Threshold values have been developed by the Environmental Protection Agency for forty pollutants that are causing a risk to groundwater bodies. They include inorganic substances, metals, pesticides and organic substances. Exceedance of a relevant threshold value at a representative monitoring point triggers further investigation to confirm whether the criteria for poor groundwater chemical status are being met. If the criteria for poor chemical status are met a body or a group of bodies of groundwater is classified as being of poor chemical status.

**Figure 8.7.4** in the main Constraints Report provides an indication of the groundwater status in the study area.

### 8.7.4.2 Water Framework Directive - Register of Protected Areas

A Register of Protected Areas has been established under Article 6 of the Water Framework Directive (2000/60/EEC) for all River Basin Districts in Ireland. The different protected areas included in the register are listed in **Table 8.7b** along with the WFD definition.

In terms of the WFD register of protected areas there is some overlap between the datasets listed in **Table 8.7b** and those included in the biodiversity section, specifically, the water dependent habitats and species and therefore these have not been reproduced here. The list of the different protected areas within the study area, the relevant section where they are discussed in this report and the figure reference are provided in **Table 8.7b** below.

In addition to the protected areas identified below the FPM catchments for which sub basin management plans have been prepared under The European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009 are described above in **Sections 8.6** and illustrated on **Figure 8.6.3 (1-4)** in the main Constraints Report.

**Table 8.7b: WFD Register of Protected Areas**

Protected Area	WFD Definition	Report Reference
Drinking Waters	“all bodies of water used for abstraction of water intended for human consumption providing more than 10m <sup>3</sup> per day as an average or serving more than 50 persons” and “those bodies of water intended for such future use” (Article 7.1, 2000/60/EC).	See Figure 8.3.2 (1-4) in the main Constraints Report  Section 8.4.4.3 of Appendix A
Economically Significant Aquatic Species (Shellfish Waters)	“Areas designated for the protection of economically significant aquatic species” Annex IV 1(ii) (2000/60/EC). Shellfish Waters designated the Shellfish Waters Directive (2006/113/EC) are included.	See Figure 8.6.3 (1-4) in the main Constraints Report  Section 8.6.4.8 of Appendix A
Recreational Waters (Bathing Waters)	“Bodies of water designated as recreational water, including areas designated as bathing waters under Directive 2006/7/EC” [Bathing Waters Directive]. Annex IV 1(iii) (2000/60/EC).	Figure 8.3.2 (1-4) in the main Constraints Report  Section 8.3.4.5 of Appendix A
Nutrient Sensitive Areas	“Nutrient sensitive areas, including areas designated as Vulnerable Zones under Directive 91/676/EEC [Nitrates Directive] and areas designated as Sensitive Areas under Directive 91/271/EEC [Urban Waste Water Treatment Directive]” Annex IV 1(iv) (2000/60/EC).	See Figure 8.6.3 (1-4). in the main Constraints Report  Section 8.6.4.10 of Appendix A
Water Dependent Habitats & Species (SAC, SPA and	“Areas designated for the protection of habitats or species where the maintenance or	See Figure 8.6.1 (1-4) and Figure 8.6.3 (1-4) in the



Protected Area	WFD Definition	Report Reference
Salmonid Waters	improvement of the status of water is an important factor in their protection, including relevant Natura 2000 sites designated under Directive 92/43/EEC [Habitats Directive] and sites designated under Directive 79/409/EEC [Birds Directive]". (Annex IV 1(v), 2000/60/EC)	main Constraints Report Sections 8.6.4.1, 8.6.4.2 and 8.6.4.9 of Appendix A

### 8.7.4.3 High Status Sites

Within the study area there are 80 rivers, 3 lakes and 1 coastal water that are classified by the Environmental Protection Agency as high status. According to the 2009 Environmental Protection Agency Indicators Report the number of high quality river sites, nationally, has almost halved over the last 20 years. High quality areas include rivers, lakes and estuarine and coastal areas little affected by human activity; they are still at or near unimpacted natural conditions, supporting a naturally diverse mix of aquatic wildlife. These sites are important for supporting aquatic species which are sensitive to enrichment or siltation such as the protected, but declining, freshwater pearl mussel (*Margaritifera margaritifera*) and juvenile salmon (*Salmo salar*). The presence of high status sites along a river system can contribute significantly to the overall species diversity and recolonisation of species to rehabilitated stretches. These sites play an important part in conserving individual species and overall catchment biodiversity. The deterioration or loss of high quality and protected areas is often due to their sensitivity to land use changes in surrounding catchments, such as agriculture, forestry, peat harvesting and rural development activities. High quality areas in the study area are shown in **Figure 8.7.5** in the main Constraints Report.

### 8.7.4.4 Estuarine and Coastal

The water quality of estuarine and coastal waters is assessed using the EPA's Trophic Status Assessment which detects the occurrence of eutrophication in estuarine and nearshore waters. The trophic status of 89 water bodies from 32 estuarine and coastal areas around Ireland was assessed for the period 2007-2009. The location and classification of the individual estuarine and coastal water bodies is shown on **Figure 8.7.2** in the main Constraints Report.

As can be seen from the figure most of the waters on the south coast and east coast are eutrophic or potentially eutrophic areas.

**Table 8.7c** below provides an overview of the trophic status of each of the estuarine and coastal water bodies.

**Table 8.7c: Trophic Status of Estuarine and Coastal Waters**

Reference	Status	Location
4	Intermediate	Boyne Estuary
5	Unpolluted	Boyne Estuary Plume Zone
6	Intermediate	Rogerstown Estuary
7	Eutrophic	Broadmeadow Water
8	Potentially Eutrophic	Malahide Bay
9	Unpolluted	Northwestern Irish Sea
10	Unpolluted	Liffey Estuary Lower
11	Intermediate	Liffey Estuary Upper
12	Potentially Eutrophic	Tolka Estuary
13	Unpolluted	Dublin Bay
14	Unpolluted	South Western Irish Sea (HA10)
15	Intermediate	Broad Lough
16	Intermediate	Avoca Estuary
17	Intermediate	Upper Slaney Estuary
18	Eutrophic	Lower Slaney Estuary
19	Unpolluted	Wexford Harbour
20	Intermediate	Nore Estuary
21	Eutrophic	Upper Barrow Estuary
22	Intermediate	Barrow Nore Estuary Upper
23	Intermediate	New Ross Port
24	Potentially Eutrophic	Upper Suir Estuary
25	Eutrophic	Middle Suir Estuary
26	Intermediate	Lower Suir Estuary
27	Intermediate	Barrow Suir Nore Estuary
28	Unpolluted	Waterford Harbour
29	Eutrophic	Colligan Estuary
30	Intermediate	Dungarvan Harbour
31	Intermediate	Upper Blackwater Estuary
32	Intermediate	Lower Blackwater Estuary

33	<b>Unpolluted</b>	Youghal Bay
34	<b>Intermediate</b>	Lee (Cork) Estuary Upper
35	<b>Intermediate</b>	Lee (Cork) Estuary Lower
36	<b>Intermediate</b>	Lough Mahon
37	<b>Intermediate</b>	Harper's Island
38	<b>Intermediate</b>	Owenacurra Estuary
39	<b>Potentially Euthrophic</b>	North Channel Great Island
40	<b>Intermediate</b>	Glashaboy Estuary
41	<b>Intermediate</b>	Cork Harbour
42	<b>Intermediate</b>	Outer Cork Harbour

Source Water Quality in Ireland 2007-2009).

<b>KEY</b>	<b>Intermediate</b>	<b>Euthrophic</b>	<b>Unpolluted</b>	<b>Potentially Euthrophic</b>
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#### 8.7.4.5 Pressure Data Sets

The following pressure datasets used during the preparation of the River Basin Management Plans have also been identified for the study areas and are presented on **Figure 8.7.6** in the main Constraints Report:

- Abstractions;
- Points Sources;
- Trade discharges licensed by the EPA (IPPC);
- Trade discharge licensed by Local Authorities (Section 4);
- Waste Water Treatment Works;
- Water Treatment Plants;
- Quarries;
- Mines;
- Forestry; and
- Aquaculture.

### 8.7.4.6 Flooding

The EU Directive on the Assessment and Management of Flood Risks [2007/60/EC] came into force in November 2007, and sets out a best-practice framework for flood risk management. It aims to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. The requirements of the 'Floods' Directive include:

- a Preliminary Flood Risk Assessment (PFRA), to be completed by the end of 2011, that shall identify areas of potentially significant flood risk based on available or readily-derivable information;
- the production of flood hazard and risk maps for the areas identified under the PFRA;
- the preparation of Flood Risk Management Plans (FRMPs) at a catchment or river basin scale, setting out measures aimed at achieving objectives for the management of flood risks within the areas identified under the PFRA.

This process is underway for the east, southeast and south west River Basin districts and the final plans are anticipated by 2015. As the plans are only in preparation at this stage, the Grid Link Project constraints mapping cannot incorporate this information however, the project team will keep in regular contact with the relevant authorities to ensure that any available information is appropriately taken into consideration as the project progresses. In the interim, OPW flood plain mapping has been included on **Figure 8.7.7 (1-4)** in the main Constraints Report.

## 8.8.4 Baseline Information – Landscape and Visual

### 8.8.4.1 Overview

The County Development Plans listed in **Appendix C** were reviewed with regards to potential landscape and visual constraints. **Table 8.8b** below provides an overview of the information relevant to landscape and visual available for each county as described in the relevant county development plans. Full details of this baseline landscape information are provided in **Appendix F1 – F15**. For the purposes of the Constraints Report only Protected Scenic Routes, Views and Prospects, High Amenity Areas, Sensitivity zonings and landscape values were mapped (See **Figures 8.8A-8.80** in **Appendix G**). Table 8.8b below also provides a summary of the constraints mapping undertaken for each county and the relevant Appendix reference.

**Table 8.8b Mapping of Landscape for Constraints Stage**

Local Authority	Data Mapped for Constraints Purposes	Figure (contained Appendix G)	Ref in	Appendix Ref
South Dublin	Protected Views and Prospects	8.8A(1)		F1
	Dublin Mountains Zone (H) High Amenity Areas (G)	8.8A(2)		
	Landscape Character Areas	Review as part of Stage 1, to be mapped during Stage 2		
Dun Laoghaire	Protected Views and Prospects High Amenity Areas	8.8B(1)		F2
	Landscape Character Areas	Review as part of Stage 1, to be mapped during Stage 2		
County Kildare	Protected Scenic Routes and Viewpoints Hilltop Views	8.8C(1)		F3
	Landscape Sensitivity Areas	8.8C(2)		
	Landscape Character Areas	Review as part of Stage 1, to be mapped during Stage 2		
County Wicklow	Protected Views and Prospects	8.8D (1)		F4

Local Authority	Data Mapped for Constraints Purposes	Figure (contained Appendix G)	Ref in	Appendix Ref
	Amenity Areas, Areas of Special Amenity & Areas of Outstanding Natural Beauty	8.8D (2)		
	Landscape Character Areas	Review as part of Stage 1, to be mapped during Stage 2		
County Laois	Protected Views and Prospects	8.8E (1)		F5
	Landscape Character Areas	Review as part of Stage 1, to be mapped during Stage 2		
County Limerick	Protected Scenic Views and Prospects	8.8F(1)		F6
	Landscape Character Areas	Review as part of Stage 1, to be mapped during Stage 2		
County Carlow	Protected Views and Prospects	8.8G(1)		F7
	Landscape Character Areas	Review as part of Stage 1, to be mapped during Stage 2		
County Tipperary North	Protected Views and Prospects	8.8H(1)		F8
	Amenity Areas & Landscape Areas	8.8H(2)		
	Landscape Character Area	Review as part of Stage 1, to be mapped during Stage 2		
County Tipperary	Protected Scenic Routes,	8.8I(1)		F9

Local Authority	Data Mapped for Constraints Purposes	Figure (contained Appendix G)	Ref in	Appendix Ref
South	Views and Prospects			
	Primary amenity areas Secondary amenity areas	8.8I(2)		
	Landscape Character Areas	Review as part of Stage 1, to be mapped during Stage 2		
County Kilkenny	Protected Scenic Views	8.8J(1)		F10
	Landscape Policy Protection Areas	8.8J(2)		
	Areas of High Amenity	8.8J(3)		
	Mount Juliet Estate Zoning	8.8J(4)		
	Landscape Character Areas	Review as part of Stage 1, to be mapped during Stage 2		
County Wexford	No Views and Prospects Listed or mapped. Landscapes of Greater Sensitivity Mapped	8.8K(1)		F11
	Landscape Character Units and Features	Review as part of Stage 1, to be mapped during Stage 2		
County Waterford	Protected Scenic Routes and Views Visually Vulnerable Routes Sensitivity Areas	8.8L(1)		F12
County Cork	Protected Scenic Routes & Scenic Landscapes	8.8M(1)		F13
	Landscape Character Types	8.8M(2)		
	Landscape Character Type Importance	8.8M(3)		

Local Authority	Data Mapped for Constraints Purposes	Figure (contained Appendix G)	Ref in	Appendix Ref
	Landscape Character Types Value	8.8M(4)		
	Landscape Character Areas	Review as part of Stage 1, to be mapped during Stage 2		
Cork City	Protected Views and prospects	8.8N(1-7)		F14
	Areas of Special Landscape Value & Landscape Preservation Zones	8.8N(8)		
	Landscape Character Areas	Review as part of Stage 1, to be mapped during Stage 21		
Waterford City	No zonings or scenic routes available/identified in Waterford City – It is however proposed to designate the corridors of the River Suir. Therefore as part of this Constraints Report RPS has mapped the Corridor of the River Suir.	8.80 (1) Corridor of the River Suir		F15
	No Landscape Character Assessment prepared	N/a for Stage 1		

#### 8.8.4.1 Landscape Character

The Landscape Character areas/types identified by each County Council have been reviewed to provide an understanding of the existing landscape character within the study area.

A description of the landscape character areas/types, sensitivities and relevant policies with regards to development for each county are provided in **Appendix F1-F15**. This information will be used during Stage 2 Evaluation of Options and Stage 3/4 Detailed Design and EIA.

#### 8.8.4.2 Views and Prospects

The counties within the study area contain a number of views, prospects and scenic routes which merit protection because of their inherent quality. These are listed within the various County Development



Plans within the study area and provide a basis for decision making and policy formation for developments in the landscape.

**Appendix F1 –F15** lists the views, prospects and scenic routes and accompanying policy with regard to same for each county where available. **Table 8.8b** above provides an overview of the mapping undertaken for constraints stage with regards to scenic routes, views and prospects. These maps are contained with **Appendix G**.

#### **8.8.4.3 Areas of High Amenity**

Areas of High Amenity are zoned through the County Development Plans in most counties. These areas consist of landscapes of special value where inappropriate development would contribute to a significant diminution of the landscape setting of the County. The areas adjacent to High Amenity Areas are also sensitive landscapes as development in these areas may affect directly or indirectly the quality of the High Amenity Areas.

**Table 8.8b** provides an overview of the mapping undertaken for counties which have designated Areas of High Amenity or Sensitivity within the study area. Full details are described in **Appendix F1-F15**. Some counties did not designate areas of High Amenity and therefore sensitivity mapping, protected landscapes etc have been mapped, where available (refer to **Table 8.8b** and the figures contained within **Appendix G**).

Areas of High Amenity or Sensitivity will inform Stage 2 Evaluation of Options and Stage 3/4 Detailed Design and EIA.

#### **8.8.4.4 SEA of Grid 25 Implementation Programme Mapping**

Landscape Constraints and Opportunity Rating mapping was prepared as part of the SEA for Grid25 Implementation Programme and provides an indication of the areas that are most sensitive from a landscape perspective to the construction of electricity transmission infrastructure.

The mapping combines Visual Sensitivity Mapping (as identified from the natural landcover types in the Corine dataset) and Topographical Mapping and shows landscape constraints and opportunities at a national level. This mapping will be used, where appropriate, to inform Stage 2 Evaluation of Options and Stage 3/4 Detailed Design and EIA.

#### **8.8.4.5 Garden and Demesnes**

There are 1,508 NIAH Historic Garden and Designed Landscape sites located in the study area Survey (See **Section 8.2** of the main Constraints Report and **Appendix D**). These sites have been mapped on **Figure 8.2.5** in the main Constraints Report and will be used to inform the next stages of the project.

#### **8.8.4.6 Walking and Cycling Routes**

A review of walking and cycling routes within each county was also undertaken. These are described in **Section 8.4** and mapped on **Figure 8.4.1 (1-4)** in the main Constraints Report.