ENVIROPLAN CONSULTING
LIMITED

July '25

Title

APPROPRIATE ASSESSMENT SCREENING REPORT

Development Description

"*Upgrade works of local road L3412 and ancillary development works which will provide access to the IDA Ireland land bank at Kilmurry, Slieverue and Gorteen, Belview, Co. Kilkenny. The proposal will provide an upgrade of local road L3412 from the existing eastern IDA Ireland roundabout to the new IDA Ireland land bank at Kilmurray and will tie back into the existing L3412 to the west via a new roundabout. The upgrade will be taken online on the existing road and offline on adjoining land.*
The works will consist of the following indicative items:

- *Widening and realignment of the existing road,*
- *Construction of cycle tracks, footpaths*
- *Construction of new roundabout*
- *Construction of a new culvert at the existing watercourse*
- *Drainage works incorporating SuDS and interceptors*
- *Landscaping including amendments to existing screening berm*
- *Disposal of roadworks material*
- *Ancillary road works including public lighting, signs, road markings*
- *Construction of a new watermain*
- *All associated site works*
- *Provision of ducting to facilitate future extension of various services.*"

Location

Kilmurry, Slieverue and Gorteen, Belview, Co. Kilkenny

Applicants

Kilkenny County Council

Prepared by:

Edel Hardiman (B.Sc) in consultation with
James O' Donnell (BA, MRUP, Dip APM)

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APPENDICES

Note: The scope of this report is to provide the necessary information to the competent authority, to assess whether the proposed development alone and in combination with other projects, could have significant effects on Natura 2000 sites in the area in view of the sites conservation objectives, in accordance with Article 6 of the Habitats Directive, and does not purport to be an ecological assessment of the subject site.

1 INTRODUCTION

This Appropriate Assessment Screening Report has been prepared by Edel Hardiman (B.Sc) in consultation with James O'Donnell, Planning Consultant (MA, MRUP, Dip APM) on behalf of Kilkenny County Council who are applying for planning permission for the "*Upgrade works of local road L3412 and ancillary development works which will provide access to the IDA Ireland land bank at Kilmurry, Slieverue and Gorteen, Belview, Co. Kilkenny. The proposal will provide an upgrade of local road L3412 from the existing eastern IDA Ireland roundabout to the new IDA Ireland land bank at Kilmurray and will tie back into the existing L3412 to the west via a new roundabout. The upgrade will be taken online on the existing road and offline on adjoining land.*

The works will consist of the following indicative items:

- *Widening and realignment of the existing road,*
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- *Provision of ducting to facilitate future extension of various services*."

Edel Hardiman is a qualified ecologist and has obtained a Bachelor's degree in Environmental Science (BSc Hons) at the University of Galway. Edel has completed Appropriate Assessment Screening Reports, Natura Impact Statements, Ecological Impact Assessments, Bat Survey Reports and Environmental Impact Assessment Screening Reports for a wide range of public and private sector projects. She has conducted Bird Surveys and Bat Surveys in the Republic of Ireland. She is a registered member of CIEEM.

James O' Donnell is a qualified Town Planner and Project Manager with over 25 years planning experience in both the public and private sector in the west of Ireland, including 6 years experience as a local authority planning officer. James has particular experience in the project management and delivery of a wide range of complex planning applications requiring environmental and ecological assessment, in accordance with the requirements of the EU Habitats Directive and EIA Directives.

The site for the proposed road realignment lies 1.2 kilometers to the north of the Lower River Suir SAC and 2.9 kilometers west of the River Barrow and River Nore SAC, which has been designated under the EU Habitats Directive & Birds Directive, and so it is necessary that the potential impacts of the proposed works be assessed by the competent authority, in accordance with Article 6 of the Habitats Directive. This report provides the information necessary for the competent authority to complete an Appropriate Assessment of the potential impacts of the proposed works on sites of European importance in the area. This report has also had regard to the provisions of the March 2021 publication entitled *"OPR Practice Note PN01- Appropriate Assessment Screening for Development Management."*

Table 1.1: Step One: Description of the project/proposal and local site characteristics

Brief description of the project plan	"*Upgrade works of local road L3412 and ancillary development works which will provide access to the IDA Ireland land bank at Kilmurry, Slieverue and Gorteen, Belview, Co. Kilkenny. The proposal will provide an upgrade of local road L3412 from the existing eastern IDA Ireland roundabout to the new IDA Ireland land bank at Kilmurray and will tie back into the existing L3412 to the west via a new roundabout. The upgrade will be taken online on the existing road and offline on adjoining land.* *The works will consist of the following indicative items:* • *Widening and realignment of the existing road,* • *Construction of cycle tracks, footpaths* • *Construction of new roundabout* • *Construction of a new culvert at the existing watercourse* • *Drainage works incorporating SuDS and interceptors* • *Landscaping including amendments to existing screening berm* • *Disposal of roadworks material* • *Ancillary road works including public lighting, signs, road markings* • *Construction of a new watermain* • *All associated site works* • *Provision of ducting to facilitate future extension of various services."*
Brief description of site characteristics	The proposed road realigned is along the existing L3412, which is east of Waterford city and south of the Slieverue settlement. The IDA Science & Technology Park is to the south of this road with several manufacturing companies in this area including Tirlán Ingredients and Kilkenny Cheese. The Waterford City Waste Water Treatment Plant is to the south of this area. The Luffany_010 River waterbody, which is to the west of this manufacturing area flows south into the River Suir.

1.1 LEGISLATIVE BACKGROUND

1.1.1 EU Nature Conservation Legislation and Natura 2000 Sites.

There are three main types of designation for nature conservation in Ireland: Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Natural Heritage Areas (NHAs). NHAs are designated under the Irish Wildlife Act 1976 (amended 2000). SACs and SPAs are designated under European legislation, the EU Habitats Directive 92/43/EEC (transposed into Irish law in the European Union (Natural Habitats) Regulations, 1997 as amended in 1998 and 2005) and the EU Birds Directive 79/409/EEC, respectively. These European designated sites (SACs and SPAs) are also known as Natura 2000 sites. This means that they are part of the Natura 2000 Network, a network of important ecological sites across the European Union.

Sites are designated on the basis of the presence of certain 'Qualifying Features', i.e. the habitats listed under Annex I and the species listed under Annex II of the EU Habitats Directive.

Once a site is designated as a SAC/SPA and publicly advertised it is legally protected and becomes a proposed candidate SAC (pcSAC) or proposed candidate SPA (pcSPA). A three-month period follows during which landowners may lodge an objection to the designation. Details of each proposed SAC and proposed SPA are then given to the EU Commission, and thereafter the site is called a "candidate SAC" or "candidate SPA". Once the sites are approved by the commission, they are formally designated by the Minister.

1.1.2 Appropriate Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites

Due to the proximity of the proposed development site to a candidate Special Area of Conservation, also known as a Natura 2000 site, an Appropriate Assessment may be required under the Habitats Directive 92/43/EEC, Article 6(3) and (4), Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites. Such assessments are required where it is identified that a proposed plan or project could have significant impact on a Natura 2000 site. Articles 6(3) and (4) of the Directive, state the following;

6.3 'Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to Appropriate Assessment of its implications for the site in view of the site's conservation objectives... the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned…..'

6.4 'If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest… the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected...'

2 METHODOLOGY

The screening exercise will be conducted in line with the recommendations and protocol set out in the Guidance from the Commission (EC, 2021). This protocol involves a four-stage process to complete an Appropriate Assessment. At each stage, the findings of certain issues and tests will determine whether the next stage in the process is required.

2.1.1 Appropriate Assessment Stages

The four stages in the Appropriate Assessment process are outlined below:

Stage 1: Screening

This step consists of examining the likely potential impacts of a project or plan, alone or in combination with other projects, upon a Natura 2000 site or sites, and considers whether these impacts may be considered significant. If no significant impacts are foreseen, then a 'finding of no significant effects' (FONSE) statement is issued to the appropriate authority, and the process is complete. If the effects are considered significant or their significance is unknown, then the process moves on to Stage 2.

Stage 2: Appropriate Assessment

Where the screening process has identified potential impacts which are considered significant or unknown, this process examines these potential impacts in detail, in relation to the conservation interests of the Natura 2000 site or sites. Mitigation measures may be suggested to reduce the likelihood or severity of these impacts. If the impacts are still considered to be significant or unknown after this stage is complete, then alternative solutions must be considered (Stage 3).

Stage 3: Assessment of Alternative Solutions

If the potential impacts are still considered to be significant or unknown after the Appropriate Assessment stage, then alternative ways of implementing the project are considered at this stage. If no alternative solutions are possible, then it is considered whether the project or plan may go ahead regardless, if imperative reasons of overriding public interest (IROPI) are found.

Stage 4: Imperative Reasons of Overriding Public Interest (IROPI)

If significant negative impacts on the Natura 2000 site are unavoidable, and no alternative solutions may be found, then this stage involves the consideration of whether the project or plan may go ahead despite these effects, for 'imperative reasons of overriding public interest' (IROPI).

The results of a Stage 1 (Screening) Exercise are detailed in **Section 3** of this report.

3 STAGE 1: SCREENING FOR APPROPRIATE ASSESSMENT

3.1 DESCRIPTION OF THE PLAN OR PROJECT

The proposed development involves the "*Upgrade works of local road L3412 and ancillary development works which will provide access to the IDA Ireland land bank at Kilmurry, Slieverue and Gorteen, Belview, Co. Kilkenny. The proposal will provide an upgrade of local road L3412 from the existing eastern IDA Ireland roundabout to the new IDA Ireland land bank at Kilmurray and will tie back into the existing L3412 to the west via a new roundabout. The upgrade will be taken online on the existing road and offline on adjoining land.*

The works will consist of the following indicative items:

- *Widening and realignment of the existing road,*
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- *Construction of a new watermain*
- *All associated site works*
- *Provision of ducting to facilitate future extension of various services*."

A Site Layout Plan is included as **Appendix A** to this report.

3.2 DESCRIPTION OF THE EXISTING ENVIRONMENT

3.2.1 Site Location in Relation to Natura 2000 Sites

The proposed road realignment along the existing L3412 is in Kilmurry, Slieverue and Gorteen, Belview, Co. Kilkenny (Grid Ref: Easting: 664328.63, Northing: 613331.64). The Luffany_010 River flows through the proposed road realignment (see **Figure 3.1** below). The road realignment lies 1.2 kilometers to the north of the Lower River Suir SAC (see **Figure 3.2** below) and 2.9 kilometers west of the River Barrow and River Nore SAC (see **Figure 3.3** below).

All Natura 2000 sites within a 15km buffer of the proposed development are listed in **Table 3.1** and **Figure 3.4**.

Table 3.1: Step Two: Identification of relevant Natura 2000 sites using Source-Pathway-Receptor Model and Compilation of information on QI and Conservation Objectives

European Site (Code)	List of Qualifying Interest/Special Conservation Interest	Distance from the proposed development (km)	Receptor/Connection	Screen In – Yes/No
Lower River Suir SAC Site code: 002137	QIs - 6 Habitats and 8 Species https://www.npws.ie/protected-sites/sac/002137	1.2 km	Indirect impacts cannot be ruled out for this Natura 2000 site during the construction phase. **Construction Phase:** **Direct Impacts:** The application site lies completely outside of this SAC, therefore direct impacts are not predicted during construction phase. **Indirect Impacts:** The Luffany_010 River waterbody flows through the site. Therefore, indirect impacts/effects cannot be ruled out during the construction phase of development due to potential silt-laden surface water run-off potentially resulting in water quality deterioration in the Lower River Suir SAC. Therefore, indirect impacts on this SAC cannot be ruled out during the construction phase of this development, in the absence of mitigation measures. **Operational Phase:** **Direct Impacts:** The application site lies completely outside of this SAC, therefore direct impacts are not predicted during the operational phase. **Indirect Impacts:** Indirect impacts can be ruled out during the operational phase of this development. Surface water runoff will be treated via a proposed Class 1 bypass petrol interceptor and attenuation tank to the east of the road and the west of the road. A Class 1 bypass petrol interceptor and attenuation pond is proposed by the center of the road. These systems will treat storm water runoff to ensure no hydrocarbons could potentially impact the river waterbody. Therefore, no impacts are predicted in this regard. Given the nature of the proposed development, foul water treatment is not required. Therefore, no impacts are predicted in this regard. Considering these factors, no long-term indirect impacts are predicted on this SAC.	Yes

River Barrow and River Nore SAC Site code: 002162	QIs – 12 Habitats and 10 Species https://www.npws.ie/protected-sites/sac/002162	2.9 km	Indirect impacts cannot be ruled out for this Natura 2000 site during the construction phase. **Construction Phase:** **Direct Impacts:** The application site lies completely outside of this SAC, therefore direct impacts are not predicted during construction phase. **Indirect Impacts:** The Luffany_010 River waterbody flows through the site. Therefore, indirect impacts/effects cannot be ruled out during the construction phase of development due to potential silt-laden surface water run-off potentially resulting in water quality deterioration in the Lower River Suir SAC, and subsequently the River Barrow and River Nore SAC as these Natura 2000 sites are hydrologically linked. Therefore, indirect impacts on this SAC cannot be ruled out during the construction phase of this development, in the absence of mitigation measures. **Operational Phase:** **Direct Impacts:** The application site lies completely outside of this SAC, therefore direct impacts are not predicted during the operational phase. **Indirect Impacts:** Indirect impacts can be ruled out during the operational phase of this development. Surface water runoff will be treated via a proposed Class 1 bypass petrol interceptor and attenuation tank to the east of the road and the west of the road. A Class 1 bypass petrol interceptor and attenuation pond is proposed by the center of the road. These systems will treat storm water runoff to ensure no hydrocarbons could potentially impact the river waterbody. Therefore, no impacts are predicted in this regard. Given the nature of the proposed development, foul water treatment is not required. Therefore, no impacts are predicted in this regard. Considering these factors, no long-term indirect impacts are predicted on this SAC.	Yes
Tramore Dunes and Backstrand SAC Site code: 000671	QIs – 9 Habitats https://www.npws.ie/protected-sites/sac/000671	10.9 km	No direct/ indirect impacts predicted due to the lack of identifiable ecological and hydrological connections and the significant distance from the application site.	No

Bannow Bay SAC Site code: 000697	QIs – 11 Habitats https://www.npws.ie/protected-sites/sac/000697	14.6 km	No direct/ indirect impacts predicted due to the lack of identifiable ecological and hydrological connections and the significant distance from the application site.	No
Tramore Back Strand SPA Site code: 004027	QIs – 9 Species https://www.npws.ie/protected-sites/spa/004027	10.9 km	No direct/ indirect impacts predicted due to the lack of identifiable ecological and hydrological connections and the significant distance from the application site.	No

The Lower River Suir SAC and the River Barrow and River Nore SAC have been screened in.

The Luffany_010 River waterbody flows through the site. Therefore, indirect impacts/effects cannot be ruled out during the construction phase of development due to potential silt-laden surface water run-off potentially resulting in water quality deterioration in the Lower River Suir SAC, and subsequently the River Barrow and River Nore SAC as these Natura 2000 sites are hydrologically linked. Therefore, indirect impacts on this SAC cannot be ruled out during the construction phase of this development, in the absence of mitigation measures.

No other Natura 2000 site has been screened in either during construction phase or operational phase due to the significant distance and lack of identifiable connector/ receptor pathways.

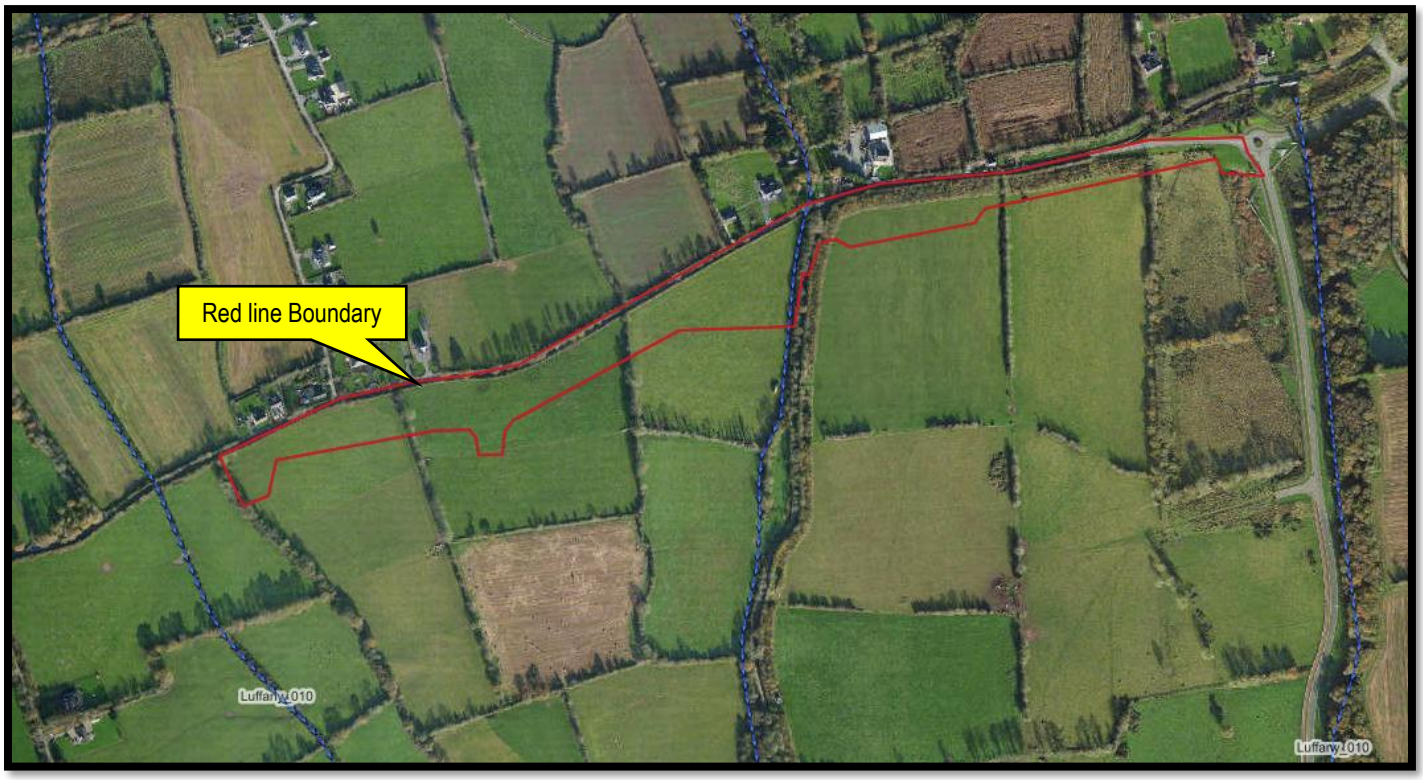


Figure 3.1: The red line boundary for the proposed road realignment in relation to the Luffany_010 River

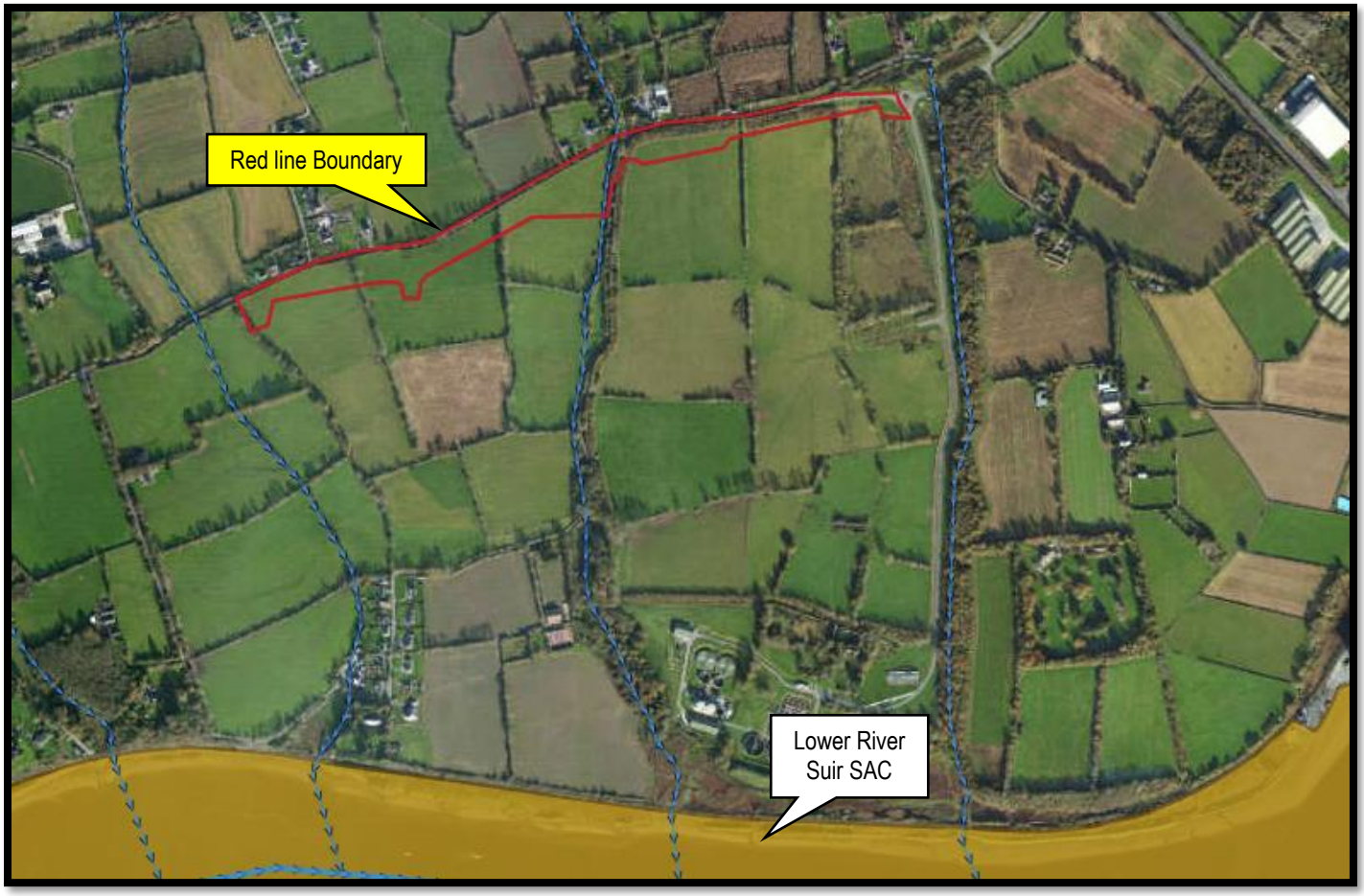


Figure 3.2: Site Location in relation to Lower River Suir SAC

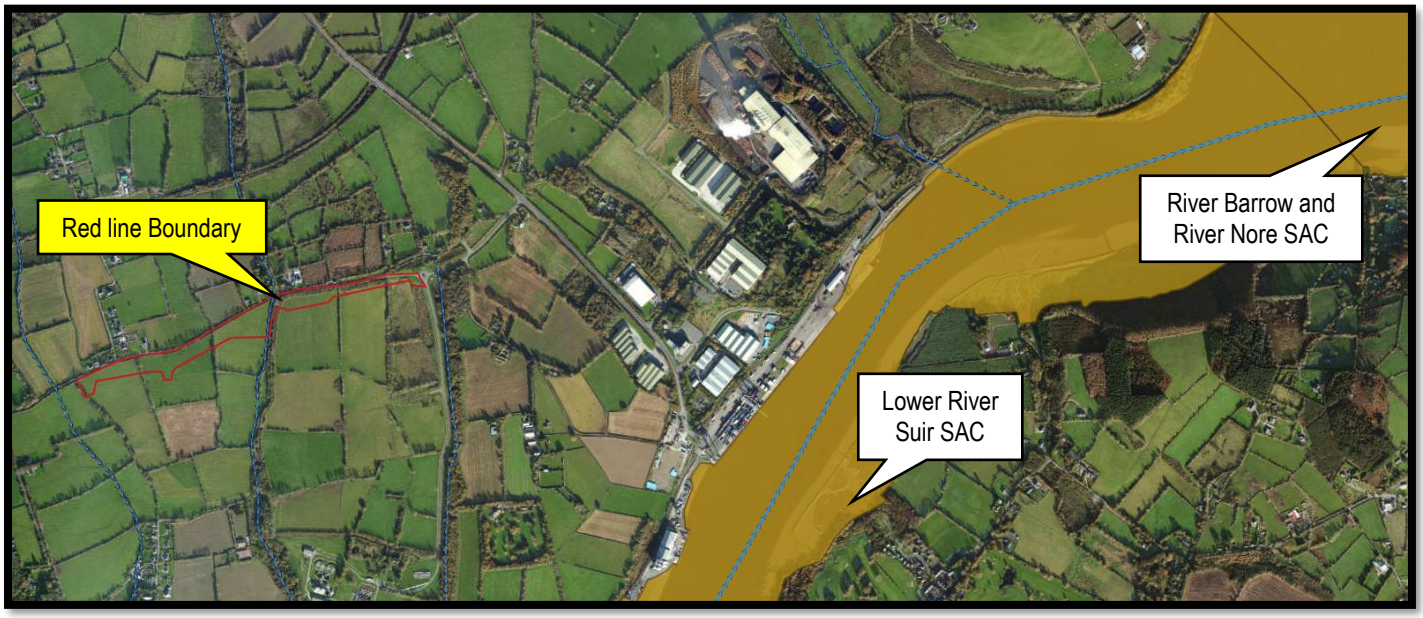


Figure 3.3: Site Location in Relation to the Lower River Suir SAC and River Barrow and River Nore SAC

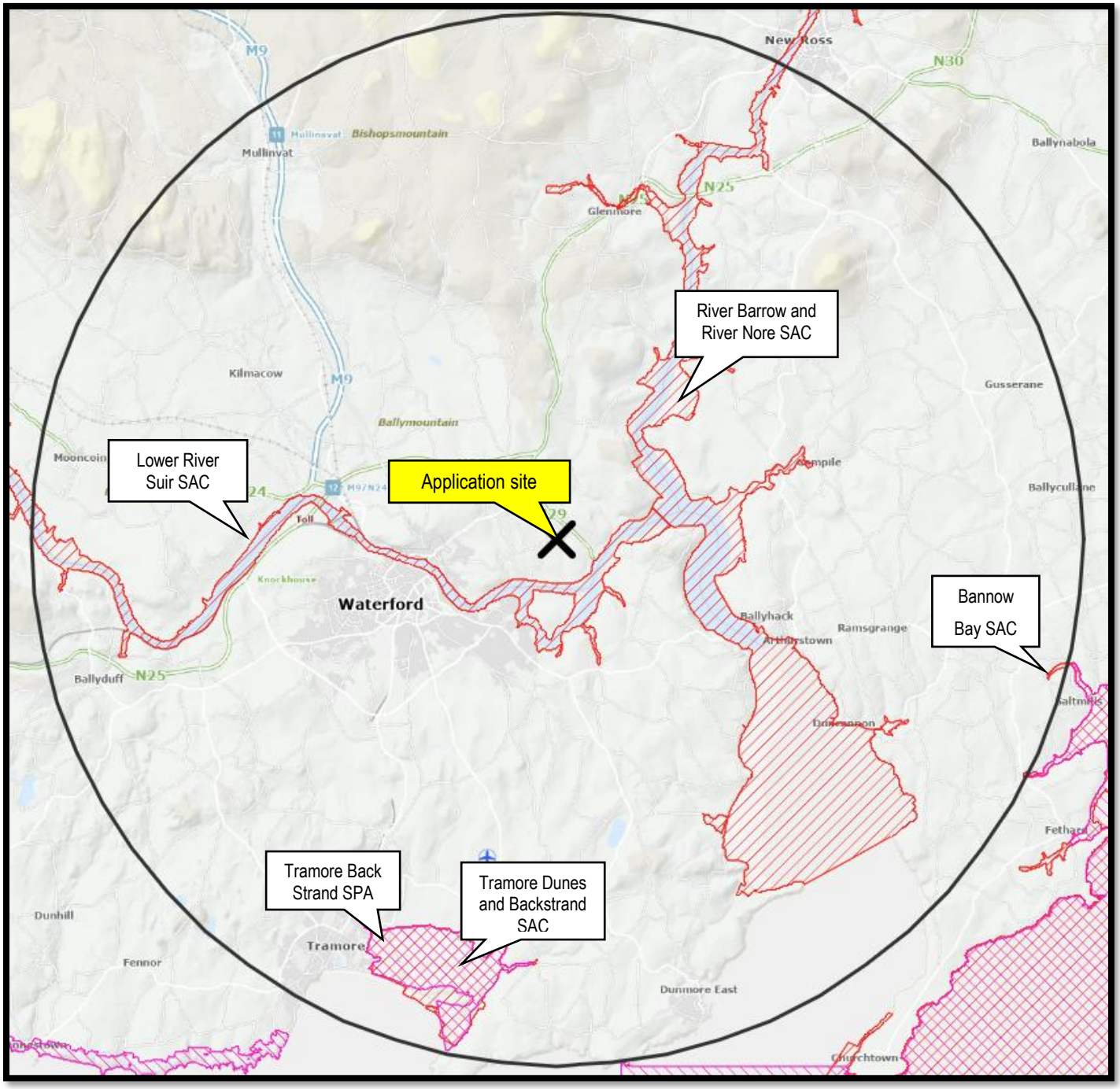


Figure 3.4: 15km Buffer Surrounding Site

4 BRIEF DESCRIPTION OF THE NATURA 2000 SITES WHICH MAY BE AFFECTED

Qualifying Features

Natura 2000 sites are designated on the presence of certain habitats and species which are afforded protection under the Birds and Habitats Directives. These habitats and species are regarded as 'qualifying features' of the Natura 2000 sites. The following section provides details on the qualifying features of the Natura 2000 site in question – Lower River Suir SAC and River Barrow and River Nore SAC. The NPWS site synopses for the Lower River Suir SAC and River Barrow and River Nore SAC are given as Appendix B and Appendix C of this report, respectively.

Table 4.1 Lower River Suir SAC Habitat Information

Habitat code	Habitat name	Cover (ha)	Representativity
1330	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	142	A
3260	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	71	C
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	71	B
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	71	A
91E0	Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae*)	497	A
91J0	*Taxus baccata* woods of the British Isles	71	B

Table 4.2 River Barrow and River Nore SAC Habitat Information

Habitat code	Habitat name	Cover (ha)	Representativity
1130	Estuaries	3856.3599	A
1140	Mudflats and sandflats not covered by seawater at low tide	925.6891	B
1170	Reefs	123.73	A
1310	Salicornia and other annuals colonising mud and sand	0.0274	C
1330	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	34.7475	A
1410	Mediterranean salt meadows (*Juncetalia maritimi*)	0.1182	A
3260	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	123.73	A
4030	European dry heaths	123.73	A
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	123.73	B
7220	Petrifying springs with tufa formation (*Cratoneurion*)	123.73	B
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	75.0851	A
91E0	Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae*)	110.0709	A

For species, a value is given for 'Population Significance'. This value is based on the relative density or size of the population of that species within the Natura 2000 site with that of the national population. Population Significance is ranked on a scale from A to D where A - 100>=p>15%, B - 15>=p>2%, C - 2>=p>0% and D - Non-significant population. The qualifying species found in the Lower River Suir SAC and River Barrow and River Nore SAC Natura 2000 sites are outlined in Table 4.3 and 4.4 below.

Table 4.3 Lower River Suir SAC Species Information

Species code	Latin name	English name	Population significance
1029	*Margaritifera margaritifera*	Freshwater Pearl Mussel	C
1092	*Austropotamobius pallipes*	White-clawed Crayfish	C
1095	*Petromyzon marinus*	Sea Lamprey	C
1096	*Lampetra planeri*	Brook Lamprey	C
1099	*Lampetra fluviatilis*	European River Lamprey	C
1103	*Alosa fallax fallax*	Twaite Shad	C
1106	*Salmo Salar*	Atlantic Salmon	C
1355	*Lutra lutra*	Otter	C

Table 4.4 River Barrow and River Nore SAC Species Information

Species code	Latin name	English name	Population significance
1016	*Vertigo moulinsiana*	Desmoulin's Whorl Snail	**B**
1029	*Margaritifera margaritifera*	Freshwater Pearl Mussel	C
1092	*Austropotamobius pallipes*	White-clawed Crayfish	C
1095	*Petromyzon marinus*	Sea Lamprey	C
1096	*Lampetra planeri*	Brook Lamprey	C
1099	*Lampetra fluviatilis*	European River Lamprey	C
1103	*Alosa fallax fallax*	Twaite Shad	B
1106	*Salmo Salar*	Atlantic Salmon	C
1355	*Lutra lutra*	Otter	C

Potential Pressures and Threats to the Natura 2000 Sites

The European Nature Information System (EUNIS) website contains data on all Natura 2000 sites, including details of the main threats to and pressures on their qualifying features. Potential threats to and pressures on the qualifying features of the Lower River Suir SAC and River Barrow and River Nore SAC Natura 2000 sites are listed in Table 4.5 and 4.6 below.

Table 4.5 Potential Pressures and Threats to the Lower River Suir SAC Natura 2000 Site

Activity	Location	Intensity	Influence
Fertilisation	Outside	High	Negative
Urbanised areas, human habitation	Both	High	Negative
Discharges	Both	High	Negative
Pollution to surface waters (limnic, terrestrial, marine & brackish)	Both	High	Negative
Dykes and flooding defense in inland water systems	Inside	High	Negative
Cultivation	Inside	Low	Negative
Sylviculture, forestry	Outside	Low	Negative
Port areas	Both	Low	Negative
Invasive non-native species	Inside	Low	Negative

Reclamation of land from sea, estuary or marsh	Inside	Low	Negative
Landfill, land reclamation and drying out, general	Both	Medium	Negative

Table 4.6 Potential Pressures and Threats to the River Barrow and River Nore SAC Natura 2000 Site

Activity	Location	Intensity	Influence
Agricultural intensification	Both	High	Negative
Pollution to surface waters (limnic, terrestrial, marine & brackish)	Both	High	Negative
Modifying structures of inland water courses	Inside	High	Negative
Dykes and flooding defense in inland water systems	Inside	High	Negative
Erosion	Inside	High	Negative
Removal of hedges and copses or scrub	Inside	Low	Negative
Sand and gravel quarries	Both	Low	Negative
Port areas	Inside	Low	Negative
Industrial or commercial areas	Outside	Low	Negative
Intensive fish farming, intensification	Inside	Low	Negative
Netting	Inside	Low	Negative
Leisure fishing	Inside	Low	Negative
Intensive cattle grazing	Inside	Medium	Negative
Forest and Plantation management & use	Both	Medium	Negative
Use of fertilizers (forestry)	Both	Medium	Negative
Forestry activities not referred to above	Both	Medium	Negative
Peat extraction	Outside	Medium	Negative
Fishing and harvesting aquatic ressources	Outside	Medium	Negative
Invasive non-native species	Inside	Medium	Negative
Human induced changes in hydraulic conditions	Both	Medium	Negative
Dredging/ removal of limnic sediments	Inside	Medium	Negative
Water abstractions from surface waters	Inside	Medium	Negative
Reduction in migration/ migration barriers	Inside	Medium	Negative
Changes in abiotic conditions	Inside	Medium	Negative

Conservation Objectives of the Natura 2000 Sites

Once a site has been designated as a Natura site, a management plan should be put together for the site which sets out the Conservation Objectives for the site. Every effort should then be made to ensure that these objectives are fulfilled, in order to prevent potential impacts to the qualifying features of the site and maintain as far as possible their favourable conservation status.

European and national legislation places a collective obligation on Ireland and its citizens to maintain at favourable conservation status sites designated as Special Areas of Conservation and Special Protection Areas. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

Favourable conservation status of a habitat is achieved when: its natural range, and area it covers within that range, is stable or increasing, and the ecological factors that are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when: population data on the species concerned indicate that it is maintaining itself, and the natural range of the species is neither being reduced or likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Site-Specific Conservation Objectives for Lower River Suir SAC and River Barrow and River Nore SAC have been published**.** Qualifying interests and objectives (bulleted) are listed below.

Lower River Suir SAC

[1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae)*

- Area stable or increasing, subject to natural processes, including erosion and succession. For the sub-site (Little Island) and potential areas mapped: 33.43ha.
- No decline or change in habitat distribution, subject to natural processes.
- Maintain natural circulation of sediments and organic matter, without any physical obstructions.
- Maintain creek and pan structure, subject to natural processes, including erosion and succession.
- Maintain natural tidal regime.
- Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.
- Maintain structural variation within sward.
- Maintain more than 90% of the area outside of creeks vegetated.
- Maintain range of subcommunities with typical species listed in McCorry and Ryle (2009).
- No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1% where it is known to occur.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1410] Mediterranean salt meadows (*Juncetalia maritimi*)

- Area stable or increasing, subject to natural processes, including erosion and succession.
- No decline or change in habitat distribution, subject to natural processes.
- Maintain natural circulation of sediments and organic matter, without any physical obstructions.
- Maintain creek and pan structure, subject to natural processes, including erosion and succession.
- Maintain natural tidal regime.
- Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.
- Maintain structural variation in the sward.
- Maintain more than 90% of the area outside of creeks vegetated.
- Maintain range of subcommunities with characteristic species listed in McCorry and Ryle (2009).
- No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1% where it is already known to occur.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation

- Area stable or increasing, subject to natural processes.
- No decline, subject to natural processes.
- Maintain appropriate hydrological regimes.
- Maintain appropriate hydrological regime.
- Maintain natural tidal regime.
- Maintain appropriate substratum particle size range, quantity and quality, subject to natural processes.
- Maintain appropriate water quality to support the natural structure and functioning of the habitat.
- Maintain typical species in good condition, including appropriate distribution and abundance.
- Maintain floodplain connectivity necessary to support the typical species and vegetation composition of the habitat.
- Maintain marginal fringing habitats that support the typical species and vegetation composition of the habitat.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[6430] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels

- Area stable or increasing, subject to natural processes.
- No decline, subject to natural processes.
- Maintain appropriate hydrological regime.
- At least three positive indicator species present.
- Cover of positive indicator species at least 40%.
- Cover of non-native species not more than 1%.
- Cover of negative indicator species not more than 33%.
- Cover of scrub, bracken (*Pteridium aquilinum*) and heath not more than 5%.
- Herb height at least 50cm.
- Cover of bare soil not more than 10%.
- Area of the habitat showing signs of serious grazing or disturbance less than 20m².

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[91A0] Old sessile oak woods with Ilex and Blechnum in the British Isles

- Area stable or increasing, subject to natural processes, at least 29.3ha for sites surveyed.
- No decline.
- Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and “small” woods at least 3ha in size.
- Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semimature trees and shrubs; and well-developed herb layer.
- Maintain diversity and extent of community types.
- Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy.
- At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter.
- No decline in veteran trees.
- No decline in indicators of local distinctiveness.

- No decline. Native tree cover not less than 95%.
- A variety of typical native species present, depending on woodland type, including oak (*Quercus petraea*) and birch (*Betula pubescens*).
- Negative indicator species, particularly non-native invasive species, absent or under control.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)

- Area stable or increasing, subject to natural processes, at least 32.9ha for sites surveyed.
- No decline.
- Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and “small” woods at least 3ha in size.
- Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semimature trees and shrubs; and well-developed herb layer.
- Maintain diversity and extent of community types.
- Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy.
- Appropriate hydrological regime necessary for maintenance of alluvial vegetation.
- At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder (*Alnus glutinosa*)).
- No decline in veteran trees.
- No decline in indicators of local distinctiveness.
- No decline. Native tree cover not less than 95%.
- A variety of typical native species present, depending on woodland type, including alder (*Alnus glutinosa*), willows (*Salix spp.*), oak (*Quercus spp.*), ash (*Fraxinus excelsior*) and birch (*Betula pubescens*).
- Negative indicator species, particularly non-native invasive species, absent or under control.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[91J0] *Taxus baccata woods* of the British Isles

- Area stable or increasing, subject to natural processes.
- No decline.
- Area stable or increasing.
- Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semimature trees and shrubs; and herb and bryophyte layer.
- Maintain diversity and extent of community types.
- Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy.
- At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter.
- No decline in veteran trees.
- No decline in indicators of local distinctiveness.
- No decline. Native tree cover not less than 95%.
- A variety of typical native species present, including yew (*Taxus baccata*) and ash (*Fraxinus excelsior*).
- Negative indicator species, particularly non-native invasive species, absent or under control

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*)

- Restore distribution to 10.4km.
- Restore population to at least 10,000 adult mussels.
- Restore to at least 20% of each population no more than 65mm in length; and at least 5% of each population no more than 30mm in length.
- No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in distribution.
- Restore suitable habitat in more than 8.8km in the Clodiagh system and any additional stretches necessary for salmonid spawning.
- Restore condition of suitable habitat.
- Restore water quality - macroinvertebrates: EQR greater than 0.90 (Q4-5 or Q5); phytobenthos: EQR greater than 0.93.
- Restore substratum quality - filamentous algae: absent or trace (less than 5%); macrophytes: absent or trace (less than 5%).
- Restore substratum quality - stable cobble and gravel substrate with very little fine material; no artificially elevated levels of fine sediment.
- Restore to no more than 20% decline from water column to 5cm depth in substrate.
- Maintain appropriate hydrological regime.
- Maintain sufficient juvenile salmonids to host glochidial larvae.
- Restore the area and condition of fringing habitats necessary to support the population.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1092] White-clawed Crayfish (*Austropotamobius pallipes*)

- No reduction from baseline.
- Juveniles and/or females with eggs in all occupied tributaries.
- No alien crayfish species.
- No instances of disease.
- At least Q3-4 at all sites sampled by EPA.
- No reduction in habitat heterogeneity or habitat quality.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1095] Sea Lamprey (*Petromyzon marinus*)

- Greater than 75% of main stem length of rivers accessible from estuary.
- At least three age/size groups present.
- Juvenile density at least 1/m².

- No decline in extent and distribution of spawning beds.
- More than 50% of sample sites positive.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1096] Brook Lamprey (*Lampetra planeri*)

- Access to all water courses down to first order streams.
- At least three age/size groups of brook/river lamprey present.
- Mean catchment juvenile density of brook/river lamprey at least 2/m².
- No decline in extent and distribution of spawning beds.
- More than 50% of sample sites positive.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1099] River Lamprey (*Lampetra fluviatilis*)

- Access to all water courses down to first order streams.
- At least three age/size groups of river/brook lamprey present.
- Mean catchment juvenile density of brook/river lamprey at least 2/m².
- No decline in extent and distribution of spawning beds.
- More than 50% of sample sites positive.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1103] Twaite Shad (*Alosa fallax fallax*)

- Greater than 75% of main stem length of rivers accessible from estuary.
- More than one age class present.
- No decline in extent and distribution of spawning habitats.
- No lower than 5mg/l.
- Maintain stable gravel substrate with very little fine material, free of filamentous algal (macroalgae) growth and macrophyte (rooted higher plants) growth.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1106] Salmon (*Salmo salar*)

- 100% of river channels down to second order accessible from estuary.
- Conservation limit (CL) for each system consistently exceeded.

- Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minutes sampling.
- No significant decline.
- No decline in number and distribution of spawning redds due to anthropogenic causes.
- At least Q4 at all sites sampled by EPA.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1355] Otter (*Lutra lutra*)

- No significant decline in distribution.
- No significant decline. Area mapped and calculated as 116.17ha above high water mark (HWM) and 726.61ha along river banks.
- No significant decline. Area mapped and calculated as 712.27ha.
- No significant decline. Length mapped and calculated as 382.31km.
- No significant decline in couching sites and holts.
- No significant decline in fish biomass available.
- No significant increase in barriers to connectivity.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

River Barrow and River Nore SAC

[1016] Desmoulin's whorl snail (*Vertigo moulinsiana*)

- No decline in occupied sites. Two known sites: Borris Bridge, Co. Carlow S711503; Boston Bridge, Kilnaseer S338774, Co. Laois.
- At least 5 adults snails in at least 50% of samples.
- Adult snails present in at least 60% of samples per site.
- Minimum of 1ha of suitable habitat per site.
- 90% of samples in habitat classes I and II as defined in Moorkens & Killeen (2011).
- 90% of samples in moisture class 3-4 as defined in Moorkens & Killeen (2011).

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1029] Freshwater pearl mussel (*Margaritifera margaritifera*)

- The status of the freshwater pearl mussel (*Margaritifera margaritifera*) as a qualifying Annex II species for the River Barrow and River Nore SAC is currently under review. The outcome of this review will determine whether a site-specific conservation objective is set for this species. Please note that the Nore freshwater pearl mussel (*Margaritifera durrovensis*) remains a qualifying species for this SAC. This document contains a conservation objective for the latter species.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1092] White-clawed crayfish (*Austropotamobius pallipes*)

- No reduction from baseline.
- Juveniles and/or females with eggs in at least 50% of positive samples.
- No alien crayfish species.
- No instances of disease.
- At least Q3-4 at all sites sampled by EPA.
- No decline in heterogeneity or habitat quality.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1095] Sea lamprey (*Petromyzon marinus*)

- Greater than 75% of main stem length of rivers accessible from estuary.
- At least three age/size groups present.
- Juvenile density at least 1/m².
- No decline in extent and distribution of spawning beds.
- More than 50% of sample sites positive.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1096] Brook lamprey (*Lampetra planeri*)

- Access to all watercourses down to first order streams.
- At least three age/size groups of brook/river lamprey present.
- Mean catchment juvenile density of brook/river lamprey at least 2/m².
- No decline in extent and distribution of spawning beds.
- More than 50% of sample sites positive.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1099] River lamprey (*Lampetra fluviatilis*)

- Greater than 75% of main stem and major tributaries down to second order accessible from estuary.
- At least three age/size groups of river/brook lamprey present.
- Mean catchment juvenile density of brook/river lamprey at least 2/m².
- No decline in extent and distribution of spawning beds.
- More than 50% of sample sites positive.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1103] Twaite shad (*Alosa fallax*)

- Greater than 75% of main stem length of rivers accessible from estuary.
- More than one age class present.
- No decline in extent and distribution of spawning habitats.
- No lower than 5mg/l.
- Maintain stable gravel substrate with very little fine material, free of filamentous algal (macroalgae) growth and macrophyte (rooted higher plants) growth.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1106] Atlantic salmon (*Salmo salar*) (only in fresh water)

- 100% of river channels down to second order accessible from estuary.
- Conservation Limit (CL) for each system consistently exceeded.
- Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 min sampling.
- No significant decline in out-migrating smolt abundance.
- No decline in number and distribution of spawning redds due to anthropogenic causes.
- At least Q4 at all sites sampled by EPA.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1130] Estuaries

- The permanent habitat area is stable or increasing, subject to natural processes.
- The following sediment communities should be maintained in a natural condition: Muddy estuarine community complex; Sand to muddy fine sand community complex; Fine sand with *Fabulina fabula* community.
- Maintain the natural extent of the *Sabellaria alveolata* reef, subject to natural process.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of

development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1140] Mudflats and sandflats not covered by seawater at low tide

- The permanent habitat area is stable or increasing, subject to natural processes.
- The following sediment communities should be maintained in a natural condition: Muddy estuarine community complex; Sand to muddy fine sand community complex.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1310] Salicornia and other annuals colonizing mud and sand

- Area stable or increasing, subject to natural processes, including erosion and succession. For the one sub- site mapped: Ringville - 0.03ha.
- No decline, subject to natural processes.
- Maintain or where necessary restore natural circulation of sediments and organic matter, without any physical obstructions.
- Maintain natural tidal regime.
- Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession.
- Maintain range of saltmarsh habitat zonations including transitional zones, subject to natural processes including erosion and succession.
- Maintain structural variation within sward.
- Maintain more than 90% of area outside creeks vegetated.
- Maintain range of sub- communities with typical species listed in Saltmarsh Monitoring Project (McCorry & Ryle, 2009).
- No significant expansion of Spartina. No new sites for this species and an annual spread of less than 1% where it is already known to occur.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

- Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Dunbrody Abbey - 1.25ha, Killowen - 2.59ha, Rochestown - 17.50ha, Ringville - 6.70ha.
- No decline, subject to natural processes.
- Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions.
- Maintain natural tidal regime.
- Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession.
- Maintain range of saltmarsh habitat zonations including transitional zones, subject to natural processes including erosion and succession.

- Maintain structural variation within sward.
- Maintain more than 90% of area outside creeks vegetated.
- Maintain range of sub- communities with typical species listed in Saltmarsh Monitoring Project (McCorry & Ryle, 2009).
- No significant expansion of Spartina. No new sites for this species and an annual spread of less than 1% where it is already known to occur.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1355] Otter (*Lutra lutra*)

- No significant decline in distribution.
- No significant decline. Area mapped and calculated as 122.8ha above high water mark (HWM); 1136.0ha along river banks / around ponds.
- No significant decline. Area mapped and calculated as 857.7ha.
- No significant decline. Length mapped and calculated as 616.6km.
- No significant decline. Area mapped and calculated as 2.6ha.
- No significant decline in couching sites and holts.
- No significant decline in fish biomass available.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1410] Mediterranean salt meadows (*Juncetalia maritimi*)

- Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Dunbrody Abbey - 0.08ha, Rochestown - 0.04ha, Ringville - 6.70ha.
- No decline, subject to natural processes.
- Maintain or where necessary restore natural circulation of sediments and organic matter, without any physical obstructions.
- Maintain natural tidal regime.
- Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession.
- Maintain range of saltmarsh habitat zonations including transitional zones, subject to natural processes including erosion and succession.
- Maintain structural variation within sward.
- Maintain more than 90% of area outside creeks vegetated.
- Maintain range of sub- communities with typical species listed in Saltmarsh Monitoring Project (McCorry & Ryle, 2009).
- No significant expansion of Spartina. No new sites for this species and an annual spread of less than 1% where it is already known to occur.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts

cannot be ruled out during the construction phase.

[1421] Killarney fern (*Trichomanes speciosum*)

- No decline. Three locations known, with three colonies of gametophyte and one sporophyte colony.
- Maintain at least three colonies of gametophyte, and at least one sporophyte colony of over 35 fronds.
- At least one of the locations to have a population structure comprising sporophyte, unfurling fronds, 'juvenile' sporophyte and gametophyte generations.
- No loss of suitable habitat, such as shaded rock crevices, caves or gullies in or near to, known colonies. No loss of woodland canopy at or near to known locations.
- Maintain hydrological conditions at the locations so that all colonies are in dripping or damp seeping habitats, and water is visible at all locations.
- No increase. Presence of dessicated sporophyte fronds or gametophyte mats indicates conditions are unsuitable.
- No changes due to anthropogenic impacts.
- Absent or under control.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[1990] Nore freshwater pearl mussel (*Margaritifera durrovensis*)

- Maintain at 15.5km.
- Restore to 5,000 adult mussels.
- Restore to at least 20% of population no more than 65mm in length; and at least 5% of population no more than 30mm in length.
- No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in distribution.
- Restore suitable habitat in length of river corresponding to distribution target (15.5km; see map 7) and any additional stretches necessary for salmonid spawning.
- Restore water quality- macroinvertebrates: EQR greater than 0.90; phytobenthos: EQR greater than 0.93.
- Restore substratum quality- filamentous algae: absent or trace (<5%).
- Restore substratum quality- stable cobble and gravel substrate with very little fine material; no artificially elevated levels of fine sediment.
- Restore to no more than 20% decline from water column to 5cm depth in substrate.
- Restore appropriate hydrological regimes.
- Maintain sufficient juvenile salmonids to host glochidial larvae.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation

- No decline, subject to natural processes.
- Area stable or increasing, subject to natural processes.
- Maintain appropriate hydrological regimes.

- The groundwater flow to the habitat should be permanent and sufficient to maintain tufa formation.
- The substratum should be dominated by large particles and free from fine sediments.
- The groundwater and surface water should have sufficient concentrations of minerals to allow deposition and persistence of tufa deposits.
- The concentration of suspended solids in the water column should be sufficiently low to prevent excessive deposition of fine sediments.
- The concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition.
- Typical species of the relevant habitat sub-type should be present and in good condition.
- The area of active floodplain at and upstream of the habitat should be maintained.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[4030] European dry heaths

- No decline from current habitat distribution, subject to natural processes.
- Area stable or increasing, subject to natural processes. Habitat area is not known but estimated as less than 400ha of the area of the SAC, occurring in dispersed locations.
- No significant change in soil nutrient status, subject to natural processes. No increase or decrease in area of natural rock outcrop.
- Cover of characteristic sub- shrub indicator species at least 25%: gorse (*Ulex europaeus*) and where rocky outcrops occur bilberry (*Vaccinium myrtillus*) and woodrush (*Luzula sylvatica*). Some rock outcrops support English stonecrop (Sedum anglicum), sheep's bit (*Jasione montana*) and wild madder (*Rubia peregrina*) as well as important moss and lichen assemblages.
- Cover of senescent gorse less than 50%.
- Long shoots of bilberry with signs of browsing collectively less than 33%.
- Cover of scattered native trees and shrub less than 20%.
- Number of positive indicator species at least 2 e.g. gorse and associated dry heath/ acid grassland flora.
- Cover of positive indicator species at least 60%. This should include plant species characterisitic of dry heath in this SAC including gorse, bilberry and associated acid grassland flora.
- Number of bryophyte or non- crustose lichen species present at least 2.
- Cover of bracken less than 10%.
- Cover of agricultural weed species (negative indicator species) less than 1%.
- Cover of non-native species less than 1%.
- No decline in distribution or population sizes of rare, threatened or scarce species, including Greater Broomrape (*Orobanche rapum-genistae*) and the legally protected clustered clover (*Trifolium glomeratum*).
- Cover of disturbed bare ground less than 10% (but if peat soil less than 5%).
- No signs of burning within sensitive areas.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[6430] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels

- No decline, subject to natural processes.
- Area stable or increasing, subject to natural processes.
- Maintain appropriate hydrological regimes.
- 30-70% of sward is between 40 and 150cm in height.
- Broadleaf herb component of vegetation between 40 and 90%.
- At least 5 positive indicator species present.
- Negative indicator species, particularly non-native invasive species, absent or under control- NB Indian balsam (*Impatiens glandulifera*), monkeyflower (*Mimulus guttatus*), Japanese knotweed (*Fallopia japonica*) and giant hogweed (*Heracleum mantegazzianum*).

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[7220] Petrifying springs with tufa formation (*Cratoneurion*)

- Area stable or increasing, subject to natural processes.
- No decline.
- Maintain appropriate hydrological regimes.
- Maintain oligotrophic and calcareous conditions.
- Maintain typical species.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[91A0] Old sessile oak woods with Ilex and Blechnum in the British Isles

- Area stable or increasing, subject to natural processes, at least 85.08ha for sub-sites surveyed.
- No decline in habitat distribution.
- Area stable of increasing. Where topographically possible, "large" woods at least 25ha in size and “small” woods at least 3ha in size.
- Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semi- mature trees and shrubs; and well-developed herb layer.
- Maintain diversity and extent of community types.
- Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy.
- At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter.
- No decline in veteran trees.
- No decline in indicators of local disctinctiveness.
- No decline. Native tree cover not less than 95%.
- A variety of typical native species present, depending on woodland type, including oak (*Quercus petraea*) and birch (*Betula pubescens*).
- Negative indicator species, particularly non-native invasive species, absent or under control.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially

impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

[91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)

- Area stable or increasing, subject to natural processes, at least 181.54ha for sites surveyed.
- No decline in habitat distribution.
- Area stable of increasing. Where topographically possible, "large" woods at least 25ha in size and “small” woods at least 3ha in size.
- Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semi- mature trees and shrubs; and well-developed herb layer.
- Maintain diversity and extent of community types.
- Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy.
- Appropriate hydrological regime necessary for maintenance of alluvial vegetation.
- At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder).
- No decline in veteran trees.
- No decline in indicators of local disctinctiveness.
- No decline. Native tree cover not less than 95%.
- A variety of typical native species present, depending on woodland type, including ash (*Fraxinus excelsior*) alder (*Alnus glutinosa*), willows (*Salix spp*) and locally, oak (*Quercus robur*).
- Negative indicator species, particularly non-native invasive species, absent or under control.

Predicted Impacts – Indirect impacts/effects cannot be ruled out on this QI during the construction phase of development. During the construction phase, works could indirectly result in surface water runoff pollutants potentially impacting the Luffany_010 River Waterbody which is a hydrological connection to the Lower River Suir SAC and subsequently the River Barrow and River Nore SAC. Therefore, in the absence of mitigation measures, indirect impacts cannot be ruled out during the construction phase.

5 SOILS, GEOLOGY & HYDROGEOLOGY

5.1 GEOLOGY

The Geological Survey of Ireland (GSI) website was consulted for available geological / hydrological information. The site is underlain with well drained fine loamy drift with sillceous stones. Subsoil in the area is classed as Alluvium undifferentiated. The groundwater vulnerability in the area is moderate to high. Vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease at which groundwater may be contaminated by human activities.

5.2 WATERBODIES

Table 5.1 details information gleaned from catchments.ie on the water status of the Waterford groundwater waterbody. This concludes that the Waterford ground waterbody is of good status.

Waterford Groundwater Waterbody Information	
Name	Waterford
Code	IE_SE_G_149
Catchments	15 Nore 16 Suir 17 Colligan-Mahon
Longitude	52.233856
Latitude	-7.3257912
Cycle 1 RBD	South Eastern
Local Authority	Waterford City & County Council
Waterbody Category	Groundwater
WFD Risk	Not at Risk
Protected Area	N/A
High Status Objective	No
Heavily Modified	N/A
Artificial	N/A
Area (km^2)	N/A
Length (km)	N/A
Transboundary	No
Canal	No
GW 2016-2021 Overall Groundwater Status	Good

Table 5.2 details information gleaned from catchments.ie on the water status of the Luffany_010 river waterbody. This concludes that the Luffany_010 river waterbody is of moderate status.

Luffany_010 River Waterbody Information	
Name	Luffany_010
Code	IE_SE_16L680750
Subcatchments	16_29 Blackwater[Kilmacow]_SC_010
Catchments	16 Suir
Longitude	-7.0634776
Latitude	52.2844288
Cycle 1 RBD	South Eastern
Local Authority	Kilkenny County Council
Waterbody Category	River
WFD Risk	Review
Protected Area	Yes
High Status Objective	No
Heavily Modified	Unknown
Artificial	Unknown
Area (km^2)	N/A
Length (km)	17.01
Transboundary	No
Canal	No
SW 2016 - 2021 Overall Ecological Status or Potential	Moderate

5.3 FLOOD RISK

There is no identifiable flood risk within the red line boundary for the proposed road development (https://www.floodinfo.ie/map/floodmaps/#).

6 OTHER PLANS AND PROJECTS IN THE AREA

It is a requirement of the Appropriate Assessment process to consider the 'in combination' effects of the proposed development with other plans and projects in the area. **Table 6.1** below gives details of the other plans and projects in the area which may be affecting the Natura 2000 sites.

Table 6.1: Other Plans and Projects Affecting the Natura 2000 Sites

Name of Plan or Project	Key policies/issues/objectives directly related to the relevant Natura 2000 sites	Potential cumulative or in-combination effects on the relevant Natura 2000 sites
Kilkenny City & County Development Plan 2021-2027	Designated Sites, Habitats and Species - Policies and Objectives, Natural Heritage and Biodiversity Policies and Objectives, Natural Water Systems Polices	Positive Impact
River Basin Management Plan for Ireland 2022 - 2027	The River Basin Management Plan for Ireland sets out a number of objectives and measures for all national water bodies which aim: (1) to prevent the deterioration of water bodies and to protect, enhance and restore them with the aim of achieving at least good status and (2) to achieve compliance with the requirements for designated protected areas.	Positive impact
NPWS Conservation Management Plans	Site-Specific Conservation objectives have been published for Lower River Suir SAC and River Barrow and River Nore SAC Natura 2000 sites, and its aims and objectives are outlined from Page **16** to **29** above.	Positive impacts
Inland Fisheries Ireland (IFI) Corporate Plan 2021-2025	Goals: To protect, manage and conserve Ireland's inland fisheries and sea angling resources and to maximize their sustainability and natural biodiversity. To play a leadership role in achieving our climate action and biodiversity goals	Positive impact
Planning Applications in the area	A search was carried out on Kilkenny County Council's online planning query system on the 8th of April 2025. It was ascertained that the following local planning applications have been granted within a 300m radius of the site in the past 5 years, which are listed below. **Pl Ref –** 2360046 **Development Description –** *"for the proposed erection of a Security Cabin on site comprised of Security Office, Canteen and WC together with Treatment Plant and associated Polishing Filter and all associated site works and ancillary services on site."* **Grant Date –** 06/02/2024 **Pl Ref –** 20920 **Development Description –** "*for (1) Permission for Retention of the following, (a) the erection of a concrete kerbing on site, (b) the revision of fencing layout from that previous granted under Planning reg No's P15/251 and P17/79 consisting of the removal of the palisade Fencing from the kerbing on top of the sloped sections of ground and the replacing of the Stout Timber fencing with a Palisade Security fence to provide the necessary Security on site and (c) Retention and Completion of the creation of a concrete covered compound (a part of the site which was granted Permission under Planning Reg No. 17/79) for the storage of palletised bagged fertiliser on site, and also for (2) Permission for the proposed installation of Surface Water drainage and Attenuation to cater for the new compound area on site"* **Grant Date –** 23/02/2021	Neutral Impact

7 SCREENING MATRIX FOR APPROPRIATE ASSESSMENT IN LINE WITH EU COMMISSION GUIDANCE

Having established the extent of the proposed project and the details of the Natura 2000 sites, a screening assessment for possible impacts can be generated. This section follows the format of the Screening Matrix provided in Annex 2 of the following document;

"Assessment of plans and projects significantly affecting Natura 2000 sites- Methodology guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, European Commission, 2001".

Table 7.1: Step Three: Assessment of Likely Significant Effects

(a) Identify all potential direct and indirect impacts that may have an effect on the conservation objective of a European site taking into account the size/scale of the project under the following headings:	
Impacts:	Possible significance of Impacts (Duration/Magnitude)
Construction Phase (Examples) • Vegetation Clearance • Demolition • Surface water runoff from excavation/infill • Dust, noise, vibration • Lighting disturbance • Impact on groundwater • Storage of excavation/construction materials • Access to site • Pests	Indirect impacts cannot be ruled out on the Lower River Suir SAC and the River Barrow and River Nore SAC during the construction phase. The Luffany_010 River waterbody flows through the site. Therefore, indirect impacts/effects cannot be ruled out during the construction phase of development due to potential silt-laden surface water run-off potentially resulting in water quality deterioration in the Lower River Suir SAC, and subsequently the River Barrow and River Nore SAC as these Natura 2000 sites are hydrologically linked.
Operation Phase (Examples) • Direct emissions to air and water • Surface water runoff containing contaminant/sediment • Lighting Disturbance • Noise/vibration • Changes to water/groundwater due to drainage/abstraction • Presence of people, vehicles and activities • Physical presence of structures (collision risks) • Potential for accidents/incidents	No impacts are predicted during the operational phase. Surface water runoff will be treated via a proposed Class 1 bypass petrol interceptor and attenuation tank to the east of the road and the west of the road. A Class 1 bypass petrol interceptor and attenuation pond is proposed by the center of the road. These systems will treat storm water runoff to ensure no hydrocarbons could potentially impact the river waterbody. Therefore, no impacts are predicted in this regard. Given the nature of the proposed development, foul water treatment is not required. Therefore, no impacts are predicted in this regard.
In combination/ other:	No likely significant in-combination effects are identified.
(b) Describe any likely changes to the European site:	
Examples of the type of changes to give consideration to include: • Reduction/fragmentation of habitat • Disturbance to QI species • Habitat/species fragmentation • Reduction/fragmentation in species density • Changes in key indicators of conservation status value • Changes to areas of sensitivity/threats to QI • Interference with the key relationships that define the structure or ecological function of the site	Indirect impacts cannot be ruled out on the Lower River Suir SAC and the River Barrow and River Nore SAC during the construction phase. The Luffany_010 River waterbody flows through the site. Therefore, indirect impacts/effects cannot be ruled out during the construction phase of development due to potential silt-laden surface water run-off potentially resulting in water quality deterioration in the Lower River Suir SAC, and subsequently the River Barrow and River Nore SAC as these Natura 2000 sites are hydrologically linked.

(c) Are 'mitigation' measures necessary to reach a conclusion that likely significant effects can be ruled out at screening?
☒ Yes ☐ No

The findings of the screening matrix are summarized in **Table 7.2** below.

Table 7.2 Stage 1 - Screening Matrix for the Proposed Development

Brief Description of the Project or Plan

Location: The proposed road realignment along the existing L3412 which is in Kilmurry, Slieverue and Gorteen, Belview, Co. Kilkenny (Grid Ref: Easting: 664328.63, Northing: 613331.64).

Distance from Designated Site: The site for the proposed road realignment lies 1.2 kilometers to the north of the Lower River Suir SAC and 2.9 kilometers west of the River Barrow and River Nore SAC.

Brief Description of the Project: Planning permission is being sought for the "*Upgrade works of local road L3412 and ancillary development works which will provide access to the IDA Ireland land bank at Kilmurry, Slieverue and Gorteen, Belview, Co. Kilkenny. The proposal will provide an upgrade of local road L3412 from the existing eastern IDA Ireland roundabout to the new IDA Ireland land bank at Kilmurray and will tie back into the existing L3412 to the west via a new roundabout. The upgrade will be taken online on the existing road and offline on adjoining land.*
The works will consist of the following indicative items:

- *Widening and realignment of the existing road,*
- *Construction of cycle tracks, footpaths*
- *Construction of new roundabout*
- *Construction of a new culvert at the existing watercourse*
- *Drainage works incorporating SuDS and interceptors*
- *Landscaping including amendments to existing screening berm*
- *Disposal of roadworks material*
- *Ancillary road works including public lighting, signs, road markings*
- *Construction of a new watermain*
- *All associated site works*
- *Provision of ducting to facilitate future extension of various services.*"

A Site Layout Plan for the proposed development is included as **Appendix A** to this report.

Brief Description of the Natura 2000 Site

Site Designation Status: The Lower River Suir SAC and River Barrow and River Nore SAC are designated under the EU Habitats Directive (92/43/EEC).

Qualifying Features

The Lower River Suir SAC is of conservation significance due to the presence of six habitats listed under Annex I of the EU Habitats Directive and eight species listed under Annex II of the same directive. The River Barrow and River Nore SAC is of conservation significance due to the presence of twelve habitats listed under Annex I of the EU Habitats Directive and ten species listed under Annex II of the same directive.

Qualifying Habitats
Lower River Suir SAC

- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]
- Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]
- Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-*Padion, Alnion incanae, Salicion albae*) [91E0]
- *Taxus baccata* woods of the British Isles [91J0]

River Barrow and River Nore SAC

- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Reefs [1170]
- Salicornia and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]
- European dry heaths [4030]
- Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]
- Petrifying springs with tufa formation (*Cratoneurion*) [7220]
- Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]

Qualifying Species

Lower River Suir SAC

- *Margaritifera margaritifera (*Freshwater Pearl Mussel*) [1029]*
- *Austropotamobius pallipes (*White-clawed Crayfish*) [1092]*
- *Petromyzon marinus (*Sea Lamprey*) [1095]*
- *Lampetra planeri (*Brook Lamprey*) [1096]*
- *Lampetra fluviatilis (*River Lamprey*) [1099]*
- *Alosa fallax fallax (*Twaite Shad*) [1103]*
- *Salmo salar (*Salmon*) [1106]*
- *Lutra lutra (*Otter*) [1355]*

River Barrow and River Nore SAC

- *Vertigo moulinsiana* (Desmoulin's Whorl Snail) [1016]
- *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029]
- *Austropotamobius pallipes* (White-clawed Crayfish) [1092]
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra planeri* (Brook Lamprey) [1096]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Alosa fallax fallax* (Twaite Shad) [1103]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]
- *Trichomanes speciosum* (Killarney Fern) [1421]

(EU Habitats Directive 92/43/EEC).

Habitats and Species of Interest

Full details of the site are found in the Lower River Suir SAC and River Barrow and River Nore SAC Site Synopses included as **Appendix B** and **Appendix C** to this report.

Unit Size:

Lower River Suir SAC: Area [ha]: 7096.91, Marine [%]: 15.21
River Barrow and River Nore SAC: Area [ha]: 12367.76, Marine [%]: 30.9

ASSESSMENT CRITERIA

Describe the individual elements of the project likely to give rise to impacts on the Natura 2000 site.

Impacts on the Lower River Suir SAC and River Barrow and River Nore SAC during the construction phase cannot be ruled out. Given the potential for surface water runoff, indirect impacts on the Lower River Suir SAC and River Barrow and River Nore SAC cannot be ruled out during the construction phase of this development, in the absence of mitigation measures.

Describe any likely direct, indirect or secondary impacts of the project on the Natura 2000 site by virtue of the following;

- **Size and Scale**
  The application site comprises an overall area of 5.5 ha. The proposed road length will be 1227m. Since the works will be located entirely outside the designated area, it is not expected that the development will have any significant impact (direct, indirect or secondary in nature) on the Natura 2000 site in this regard.

- **Land-Take**
  The proposed works will be entirely located outside the designated site and so there will be no impacts in this regard.

- **Distance from Natura 2000 site or key features of the site**
  The site for the proposed road realignment lies 1.2 kilometres to the north of the Lower River Suir SAC and 2.9 kilometres west of the River Barrow and River Nore SAC.

- **Resource Requirements**
  It is not expected that the proposed development will have any significant impact (direct, indirect or secondary in nature) on the designated sites in this regard.

- **Emissions**
  Surface water runoff will be treated via a proposed Class 1 bypass petrol interceptor and attenuation tank to the east of the road and the west of the road. A Class 1 bypass petrol interceptor and attenuation pond is proposed by the center of the road. These systems will treat storm water runoff to ensure no hydrocarbons could potentially impact the river waterbody. Therefore, no impacts are predicted in this regard.

  Given the nature of the proposed development, foul water treatment is not required. Therefore, no impacts are predicted in this regard.

- **Excavation Requirements**
  No impacts are expected on the Natura 2000 site in this regard.

- **Transportation Requirements**
  During the construction phase of the proposed development, there will be a slight increase in the volume of traffic in the area for a short time. It is not expected that this slight increase will result in direct, indirect or secondary impacts on the Natura 2000 site.

- **Duration of construction, operation, decommissioning**
  The construction phase of the proposed development will last approximately 18 months. It is expected that the development will remain in use for at least 50 years. Neither the operation nor the eventual decommissioning of the proposed development is likely to result in direct, indirect or secondary impacts on the Natura 2000 sites.

Describe any likely changes to the site arising as a result of the following;

- **Reduction of Habitat**
  There will be no changes in this respect.

Disturbance to Key Species

- There no identifiable suitable habitats for key species on site. There will be no changes in this respect.

- **Habitat or Species Fragmentation**
  There will be no changes in this respect.

- **Reduction in species density**
  There will be no changes in this respect.

- **Changes in key indicators of conservation value**
  There will be no changes in this respect.

- **Climate change**
  There will be no changes in this respect.

Describe any likely impacts on the Natura 2000 site as a whole in terms of the following;

- **Interference with key relationships that define the structure and function of the site**

  No potential impacts which are likely to interfere with the key relationships that define the structure or function of the site are expected.

Provide Indicators of significance as a result of the identification of effects set out above in terms of the following;

- **Loss**
  No loss is expected.

- **Fragmentation**
  No fragmentation is expected.

- **Disruption**
  No disruption is expected.

- **Disturbance**
  No disturbance is expected.

- **Change to key elements of the site**
  No change is expected.

Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.

It is not considered that the proposed development will have any significant direct impact on the Lower River Suir SAC and River Barrow and River Nore SAC in combination with the other plans or projects in the area (outlined in Section 6 of this report). Indirect impacts on the Lower River Suir SAC and River Barrow and River Nore SAC during the construction phase cannot be ruled out due to the potential surface water runoff contamination during construction activities as there is a stream bisecting the site.

8 CONCLUSIONS

Planning is being sought for the "*Upgrade works of local road L3412 and ancillary development works which will provide access to the IDA Ireland land bank at Kilmurry, Slieverue and Gorteen, Belview, Co. Kilkenny. The proposal will provide an upgrade of local road L3412 from the existing eastern IDA Ireland roundabout to the new IDA Ireland land bank at Kilmurray and will tie back into the existing L3412 to the west via a new roundabout. The upgrade will be taken online on the existing road and offline on adjoining land.*

The works will consist of the following indicative items:

- *Widening and realignment of the existing road,*
- *Construction of cycle tracks, footpaths*
- *Construction of new roundabout*
- *Construction of a new culvert at the existing watercourse*
- *Drainage works incorporating SuDS and interceptors*
- *Landscaping including amendments to existing screening berm*
- *Disposal of roadworks material*
- *Ancillary road works including public lighting, signs, road markings*
- *Construction of a new watermain*
- *All associated site works*
- *Provision of ducting to facilitate future extension of various services"* in Kilmurry, Slieverue and Gorteen, Belview, Co. Kilkenny (Grid Ref: Easting: 664328.63, Northing: 613331.64). A Site Layout Plan for the proposed development is included as **Appendix A** to this report. The screening exercise examined impacts on the Lower River Suir SAC and River Barrow and River Nore SAC Natura 2000 sites.

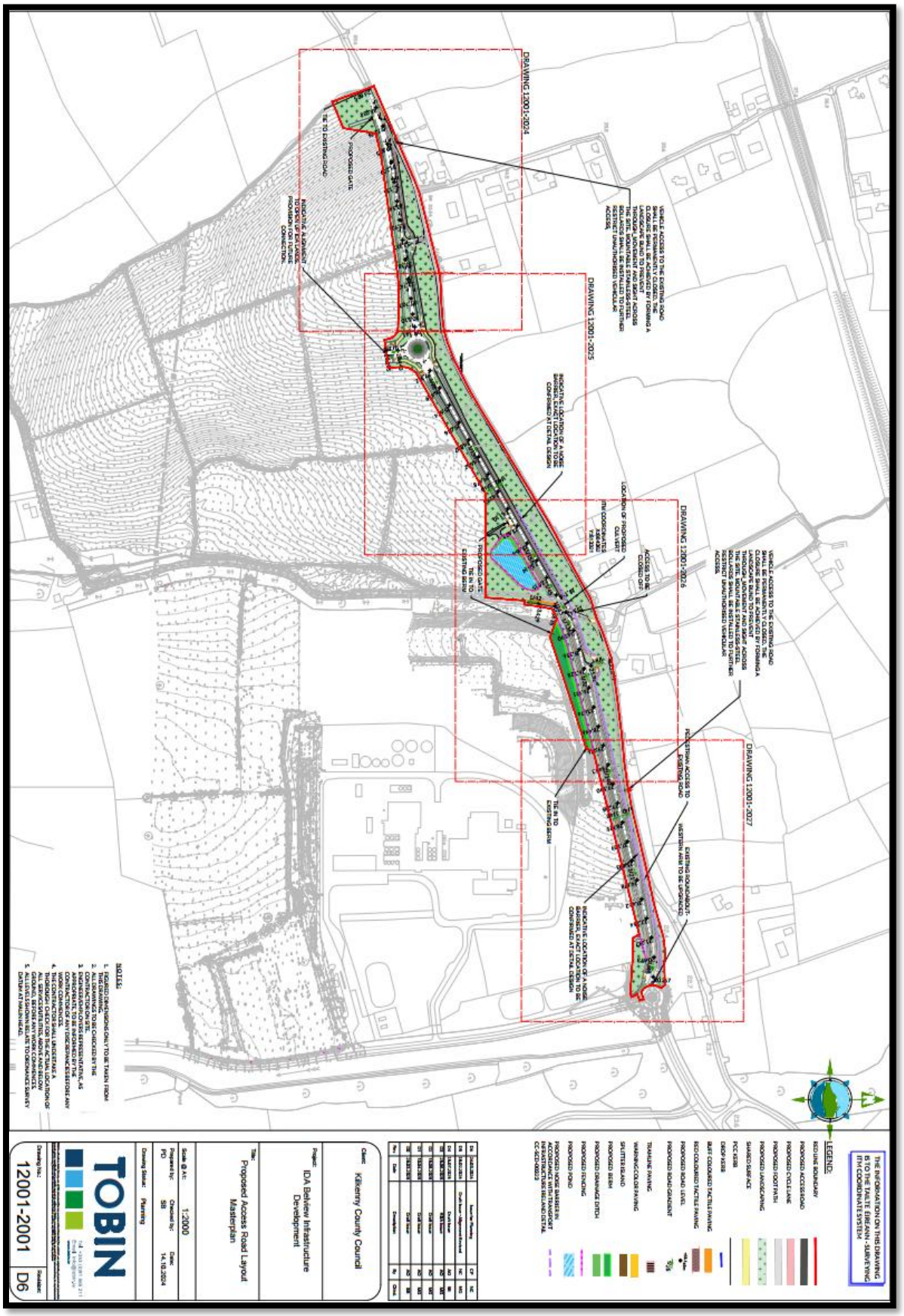
Construction phase activities could indirectly impact the Lower River Suir SAC and River Barrow and River Nore SAC. There is a stream flowing through the site. Therefore, indirect impacts/effects cannot be ruled out during the construction phase of development due to potential silt-laden surface water run-off entering the stream. This may result in water quality deterioration in the Lower River Suir SAC and River Barrow and River Nore SAC.

Surface water runoff will be treated via a proposed Class 1 bypass petrol interceptor and attenuation tank to the east of the road and the west of the road. A Class 1 bypass petrol interceptor and attenuation pond is proposed by the center of the road. These systems will treat storm water runoff to ensure no hydrocarbons could potentially impact the river waterbody. Therefore, no impacts are predicted in this regard.

Given the nature of the proposed development, foul water treatment is not required. Therefore, no impacts are predicted in this regard.

Therefore, the conclusion of this screening exercise is that significant effects are expected on the qualifying interests or conservation objectives of the surrounding Natura 2000 sites, as a result of the proposed development in question, alone or in combination with the other plans and projects in the area, and therefore that a **Natura Impact Statement is required** in this case.

APPENDIX A- Proposed Site Layout



APPENDIX B

NPWS Site Synopses for Lower River Suir SAC

Site Name: Lower River Suir SAC
Site Code: 002137

Lower River Suir SAC consists of the freshwater stretches of the River Suir immediately south of Thurles, the tidal stretches as far as the confluence with the Barrow/Nore immediately east of Cheekpoint in Co. Waterford, and many tributaries including the Clodiagh in Co. Waterford, the Lingaun, Anner, Nier, Tar, Aherlow, Multeen and Clodiagh in Co. Tipperary. The Suir and its tributaries flow through the counties of Tipperary, Kilkenny and Waterford.

Upstream of Waterford city, the swinging meanders of the Suir criss-cross the Devonian sandstone rim of hard rocks no less than three times as they leave the limestone-floored downfold below Carrick-on-Suir. In the vicinity of Carrick-on-Suir the river follows the limestone floor of the Carrick Syncline. Upstream of Clonmel the river and its tributaries traverse Upper Palaeozoic Rocks, mainly the Lower Carboniferous Visean and Tournaisian. The freshwater stretches of the Clodiagh River in Co. Waterford traverse Silurian rocks, through narrow bands of Old Red Sandstone and Lower Avonian Shales, before reaching the carboniferous limestone close to its confluence with the Suir. The Aherlow River flows through a Carboniferous limestone valley, with outcrops of Old Red Sandstone forming the Galtee Mountains to the south and the Slievenamuck range to the north. Glacial deposits of sands and gravels are common along the valley bottom, flanking the present-day river course.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): [1330] Atlantic Salt Meadows [3260] Floating River Vegetation [6430] Hydrophilous Tall Herb Communities [91A0] Old Oak Woodlands [91E0] Alluvial Forests* [91J0] Yew Woodlands* [1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*) [1092] White-clawed Crayfish (*Austropotamobius pallipes*) [1095] Sea Lamprey (*Petromyzon marinus*) [1096] Brook Lamprey (*Lampetra planeri*) [1099] River Lamprey (*Lampetra fluviatilis*) [1103] Twaite Shad (*Alosa fallax*) [1106] Atlantic Salmon (*Salmo salar*) [1355] Otter (*Lutra lutra*).

Alluvial wet woodland is a declining habitat type in Europe as a result of drainage and reclamation. The best examples of this type of woodland in the site are found on the islands just below Carrick-on-Suir and at Fiddown Island. Species occurring here include Almond Willow (*Salix triandra*), White Willow (*S. alba*), Rusty Willow (*S. cinerea subsp. oleifolia*), Osier (*S. viminalis*), with Yellow Iris (*Iris pseudacorus*), Hemlock Water-dropwort (*Oenanthe crocata*), Wild Angelica (*Angelica sylvestris*), Pendulous Sedge (*Carex pendula*), Meadowsweet (*Filipendula ulmaria*) and Common Valerian (*Valeriana officinalis*). The terrain is littered with dead trunks and branches and intersected with small channels which carry small streams to the river. The bryophyte and lichen floras appear to be rich. A small plot is currently being coppiced

and managed by the National Parks and Wildlife Service. In the drier areas species such as Ash (*Fraxinus excelsior*), Hazel (*Corylus avellana*), Hawthorn (*Crataegus monogyna*) and Blackthorn (*Prunus spinosa*) occur.

Eutrophic tall herb vegetation occurs in association with the various areas of alluvial forest and elsewhere where the floodplain of the river is intact. Characteristic species of the habitat include Meadowsweet, Purple Loosestrife (*Lythrum salicaria*), Marsh Ragwort (*Senecio aquaticus*), Ground Ivy (*Glechoma hederacea*) and Hedge Bindweed (*Calystegia sepium*).

Old oak woodlands are also of importance at the site. The best examples are seen in Portlaw Wood which lies on both sides of the Clodiagh River. On the south-facing side the stand is more open and the oaks (mainly Pedunculate Oak, *Quercus robur*) are well grown and spreading. Ivy (*Hedera helix*) and Bramble (*Rubus fruticosus agg*.) are common on the ground, indicating relatively high light conditions. Oak regeneration is dense, varying in age from 0-40 years and Holly (*Ilex aquifolium*) is fairly common but mostly quite young. Across the valley, by contrast, the trees are much more closely spaced and though taller, are poorly grown on average. There are no clearings; large oaks extend to the boundary wall. In the darker conditions, Ivy is much rarer and Holly much more frequent, forming a closed canopy in places. Oak regeneration is uncommon since there are as yet few natural clearings. The shallowness of the soil on the north-facing slope probably contributes to the poor tree growth there. The acid nature of the substrate has induced a 'mountain' type oakwood community to develop. The site is quite species-rich throughout, including an abundance of mosses, liverworts and lichens. The rare lichen Lobaria pulmonaria, an indicator of ancient woodlands, is found here.

Inchinsquillib Wood consists of three small separate sloping blocks of woodland in a valley cut by the young Multeen River and its tributaries through acidic Old Red Sandstone and Silurian rocks. Two blocks, both with an eastern aspect, located to the north of the road, are predominantly of Sessile Oak (*Quercus petraea*) and Hazel, with Downy Birch (*Betula pubescens*), Ash and Holly. The ground flora is quite mixed with, for example, Wood-sedge (*Carex sylvatica*), Bluebell (*Hyacinthoides non-scripta*), Primrose (*Primula vulgaris*), Wood-sorrel (*Oxalis acetosella*), Pignut (*Conopodium majus*) and Hard Fern (*Blechnum spicant*). The base poor nature of the underlying rock is to some extent masked by the overlying drift. The third block, to the south of the road, and with a northern aspect, is a similar although less mature mixture of Sessile Oak, Birch and Holly. Here the influence of the drift is more marked, with the occurrence of Wood Anemone (*Anemone nemorosa*) amongst the ground flora.

Two stands of Yew (*Taxus baccata*) woods, a rare habitat in Ireland and the E.U., occur within the site. These are on limestone ridges at Shanbally and Cahir Park. Both are in woods planted with non-native species, including conifers. However, the area at Cahir Park is fairly substantial in size and includes some relatively undisturbed patches of wood and some very old trees. Regeneration of the Yew trees is mostly poor, due to competition from species such as Sycamore (*Acer pseudoplatanus*) and, at Shanbally, due to heavy grazing by goats. Other native species which occur with the Yew trees include Ash, Pedunculate Oak, Hazel and Spindle (Euonymus europaeus). Future prospects for these Yew woods are good as the sites are proposed for restoration under a Coillte E.U. LIFE programme.

Floating river vegetation is evident in the freshwater stretches of the River Suir and along many of its tributaries. Typical species found include Canadian Pondweed (*Elodea canadensis*), water-milfoils (*Myriophyllum spp*.), Fennel Pondweed (*Potamogeton pectinatus*), Curled Pondweed (*P. crispus*), Perfoliate Pondweed (*P. perfoliatus*), Pond Water-crowfoot (*Ranunculus peltatus*), other crowfoots (*Ranunculus spp*.) and the moss *Fontinalis antipyretica*. At a couple of locations along the river Opposite-leaved Pondweed (*Groenlandia densa*) occurs. This species is protected under the Flora (Protection) Order, 2022.

The Aherlow River is fast flowing and mostly follows a natural unmodified river channel. Submerged vegetation includes the aquatic moss *Fontinalis antipyretica* and Stream Water-crowfoot (*R. pencillatus*), while shallow areas support species such as Reed Canary-grass (*Phalaris arundinacea*), Brooklime (*Veronica beccabunga*) and Water Mint (*Mentha aquatica*). The river bank is fringed in places with Alder (*Alnus glutinosa*) and willows (*Salix spp*.).

The Multeen River is fast flowing, mostly gravel-bottomed and appears to follow a natural unmodified river channel. Water-crowfoots occur in abundance and the aquatic moss Fontinalis antipyretica is also common. In sheltered shallows, species such as Water-cress (*Nasturtium officinale*) and water-starworts (*Callitriche spp*.) occur. The river channel is fringed for most of its length with Alder, Willow and a narrow strip of marshy vegetation.

Salt meadows occur below Waterford City in old meadows where the embankment is absent, or has been breached, and along the tidal stretches of some of the inflowing rivers below Little Island. There are very narrow, non-continuous bands of this habitat along both banks. More extensive areas are also seen along the south bank at Ballynakill, the east side of Little Island, and in three large salt meadows between Ballynakill and Cheekpoint. The Atlantic sub-type occurs, with an extensive species list which includes Red Fescue (*Festuca rubra*), oraches (*Atriplex spp*.), Sea Aster (*Aster tripolium*), Sea Couch (*Elymus pycnanthus*), frequent Sea Milkwort (*Glaux maritima*), occasional Wild Celery (*Apium graveolens*), Parsley Water-dropwort (*Oenanthe lachenalii*), English Scurvygrass (*Cochlearia anglica*) and Sea Arrowgrass (*Triglochin maritima*).Common Cord-grass (*Spartina anglica*), is rather frequent along the main channel edge and up the internal channels. The legally protected (Flora (Protection) Order, 2022) Meadow Barley (*Hordeum secalinum*) grows at the landward transition of the saltmarsh.

Other habitats at the site include wet and dry grassland, marsh, reedswamp, improved grassland, coniferous plantations, deciduous woodland, scrub, tidal river, stony shore and mudflats. The most dominant habitat adjoining the river is improved grassland, although there are wet fields with species such as Yellow Iris, Meadowsweet, rushes (*Juncus spp*.), Meadow Buttercup (*Ranunculus acris*) and Cuckooflower (*Cardamine pratensis*).

Cabragh marshes, just below Thurles, lie in a low-lying tributary valley into which the main river floods in winter. Here there is an extensive area of Common Reed (*Phragmites australis*) with associated marshland and peaty fen. The transition between vegetation types is often well displayed. A number of wetland plants of interest occur, in particular the Narrow-leaved Bulrush (*Typha angustifolia*), Bottle Sedge (*Carex rostrata*) and Blunt-flowered Rush (*Juncus*

subnodulosus). The marsh is naturally eutrophic but it has also the nutritional legacy of the former sugar factory which discharged into it through a number of holding lagoons, now removed. Production is high, which is seen in the size of such species as Celery-leaved Buttercup (*Ranunculus sceleratus*), as well as in the reeds themselves.

Throughout the Lower River Suir site are small areas of woodland other than those described above. These tend to be a mixture of native and non-native species, although there are some areas of semi-natural wet woodland with species such as Ash and willow. Cahir Park Woodlands is a narrow tract of mixed deciduous woodland lying on the flat-lying floodplain of the River Suir. This estate woodland was planted over one hundred years ago and it contains a large component of exotic tree species. However, due to original planting and natural regeneration there is now a good mix of native and exotic species. About 5 km north-west of Cashel, Ardmayle pond is a long, possibly artificial water body running parallel to the River Suir. It is partly shaded by planted Lime (*Tilia hybrids*), Sycamore and the native Alder. Growing beneath the trees are shade tolerant species such as Remote sedge (*Carex remota*).

The site is of particular conservation interest for the presence of a number of Annex II animal species, including Freshwater Pearl Mussel (both *Margaritifera margaritifera* and *M. margaritifera subsp. durrovensis* occur), White-clawed Crayfish, Salmon, Twaite Shad (*Alosa fallax fallax*), three species of Lampreys - Sea Lamprey, Brook Lamprey and River Lamprey, and Otter. This is one of only three known spawning grounds in the country for Twaite Shad.

The site also supports populations of several other animal species. Those which are listed in the Irish Red Data Book include Daubenton's Bat, Nattererer's Bat, Pipistrelle Bat, Pine Marten, Badger, Irish Hare, Smelt and Common Frog. Breeding stocks of Carp are found in Kilsheelan Lake. This is one of only two lakes in the country which is known to have supported breeding Carp. Carp require unusually high summer water temperatures to breed in Ireland. As the site is therefore unusual in this regard, it may also support interesting invertebrate populations.

Parts of the site have also been identified as of ornithological importance for a number of Annex I (E.U. Birds Directive) bird species, including Greenland Whitefronted Goose (10), Golden Plover (1,490), Whooper Swan (7) and Kingfisher. Figures given in brackets are the average maximum counts from four count areas within the site for the three winters 1994-1997. Wintering populations of migratory birds use the site. Flocks are seen in Coolfinn Marsh and also along the reedbeds and saltmarsh areas of the Suir. Coolfinn supports nationally important numbers of Greylag Goose on a regular basis, with numbers between 600 and 700 recorded. Other species occurring include Mallard (21), Teal (159), Wigeon (26), Tufted Duck (60), Pintail (4), Pochard (2), Little Grebe (2), Black-tailed Godwit (20), Oystercatcher (16), Lapwing (993), Dunlin (101), Curlew (195), Redshank (28), Greenshank (4) and Green Sandpiper (1). Nationally important numbers of Lapwing (2,750) were recorded at Faithlegg in the winter of 1996/97. In Cabragh marshes there is abundant food for surface feeding wildfowl which total approximately 1,000 in winter. Widgeon, Teal and Mallard are numerous, and the latter has a large breeding population, with up to 400 in summer. In addition, less frequent species like Shoveler and Pintail occur and there are records for both Whooper and Bewick's swans. Kingfisher, a species that is listed on Annex I of the E.U. Birds Directive, occurs along some of the many tributaries throughout the site.

Land use at the site consists mainly of agricultural activities including grazing, silage production, fertilising and land reclamation. The grassland is intensively managed and the rivers are therefore vulnerable to pollution from run-off of fertilisers and slurry. Arable crops are also grown. Fishing is a main tourist attraction on stretches of the Suir and some of its tributaries, and there are a number of Angler Associations, some with a number of beats. Fishing stands and styles have been erected in places. Both commercial and leisure fishing takes place on the rivers. The Aherlow River is a designated Salmonid Water under the E.U. Freshwater Fish Directive. Other recreational activities such as boating, golfing and walking are also popular. Several industrial developments, which discharge into the river, border the site including three dairy related operations and a tannery.

The Lower River Suir contains excellent examples of a number of Annex I habitats, including the priority habitats alluvial forest and Yew woodland. The site also supports populations of several important animals species, some listed on Annex II of the Habitats Directive or listed in the Irish Red Data Book. The presence of two legally protected plants (Flora (Protection) Order, 2022) and the ornithological importance of the site adds further to the ecological interest and importance.

APPENDIX C

NPWS Site Synopses for River Barrow and River Nore SAC

Site Name: River Barrow and River Nore SAC
Site Code: 002162

This site consists of the freshwater stretches of the Barrow and Nore River catchments as far upstream as the Slieve Bloom Mountains, and it also includes the tidal elements and estuary as far downstream as Creadun Head in Waterford. The site passes through eight counties – Offaly, Kildare, Laois, Carlow, Kilkenny, Tipperary, Wexford and Waterford. Major towns along the edge of the site include Mountmellick, Portarlington, Monasterevin, Stradbally, Athy, Carlow, Leighlinbridge, Graiguenamanagh, New Ross, Inistioge, Thomastown, Callan, Bennettsbridge, Kilkenny and Durrow. The larger of the many tributaries include the Lerr, Fushoge, Mountain, Aughavaud, Owenass, Boherbaun and Stradbally Rivers of the Barrow, and the Delour, Dinin, Erkina, Owveg, Munster, Arrigle and King's Rivers on the Nore.

Both rivers rise in the Old Red Sandstone of the Slieve Bloom Mountains before passing through a band of Carboniferous shales and sandstones. The Nore, for a large part of its course, traverses limestone plains and then Old Red Sandstone for a short stretch below Thomastown. Before joining the Barrow it runs over intrusive rocks poor in silica. The upper reaches of the Barrow also run through limestone. The middle reaches and many of the eastern tributaries, sourced in the Blackstairs Mountains, run through Leinster Granite. The southern end, like the Nore runs over intrusive rocks poor in silica. Waterford Harbour is a deep valley excavated by glacial floodwaters when the sea level was lower than today. The coast shelves quite rapidly along much of the shore.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): [1130] Estuaries [1140] Tidal Mudflats and Sandflats [1170] Reefs [1310] Salicornia Mud [1330] Atlantic Salt Meadows [1410] Mediterranean Salt Meadows [3260] Floating River Vegetation [4030] Dry Heath [6430] Hydrophilous Tall Herb Communities [7220] Petrifying Springs* [91A0] Old Oak Woodlands [91E0] Alluvial Forests* [1016] Desmoulin's Whorl Snail (Vertigo moulinsiana) [1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*) [1092] White-clawed Crayfish (*Austropotamobius pallipes*) [1095] Sea Lamprey (*Petromyzon marinus*) [1096] Brook Lamprey (*Lampetra planeri*) [1099] River Lamprey (*Lampetra fluviatilis*) [1103] Twaite Shad (*Alosa fallax*) [1106] Atlantic Salmon (*Salmo salar*) [1355] Otter (*Lutra lutra*) [1421] Killarney Fern (*Trichomanes speciosum*).

Good examples of alluvial forest (a priority habitat on Annex I of the E.U. Habitats Directive) are seen at Rathsnagadan, Murphy's of the River, in Abbeyleix estate and along other shorter stretches of both the tidal and freshwater elements of the site. Typical species seen include Almond Willow (*Salix triandra*), White Willow (*S. alba*), Rusty Willow (*S. cinerea subsp. oleifolia*), Crack Willow (*S. fragilis*) and Osier (*S. viminalis*), along with Iris (*Iris pseudacorus*), Hemlock Water-dropwort (*Oenanthe crocata*), Wild Angelica (*Angelica sylvestris*), Thin-spiked Wood-sedge (*Carex strigosa*), Pendulous Sedge (*C. pendula*), Meadowsweet (*Filipendula ulmaria*), Common Valerian (*Valeriana officinalis*) and the Red Data Book species Nettle-leaved Bellflower (*Campanula trachelium*).

A good example of petrifying springs with tufa formations occurs at Dysart Wood along the Nore. This is a rare habitat in Ireland and one listed with priority status on Annex I of the E.U. Habitats Directive. These hard water springs are characterised by lime encrustations, often associated with small waterfalls. A rich bryophyte flora is typical of the habitat and two diagnostic species, *Palustriella commutata* and *Eucladium verticillatum*, have been recorded.

The best examples of old oak woodlands are seen in the ancient Park Hill woodland in the estate at Abbeyleix; at Kyleadohir, on the Delour, Forest Wood House, Kylecorragh and Brownstown Woods on the Nore; and at Cloghristic Wood, Drummond Wood and Borris Demesne on the Barrow, though other patches occur throughout the site. Abbeyleix Woods is a large tract of mixed deciduous woodland which is one of the only remaining true ancient woodlands in Ireland. Historical records show that Park Hill has been continuously wooded since the 16th century and has the most complete written record of any woodland in the country. It supports a variety of woodland habitats and an exceptional diversity of species including 22 native trees, 44 bryophytes and 92 lichens. It also contains eight indicator species of ancient woodlands. Park Hill is also the site of two rare plants, Nettle-leaved Bellflower and the moss Leucodon sciuroides. The rare Myxomycete fungus, Licea minima has been recorded from woodland at Abbeyleix.

Oak woodland covers parts of the valley side south of Woodstock and is well developed at Brownsford where the Nore takes several sharp bends. The steep valley side is covered by oak (*Quercus spp.*), Holly (*Ilex aquifolium*), Hazel (*Corylus avellana*) and Downy Birch (*Betula pubescens*), with some Beech (*Fagus sylvatica*) and Ash (*Fraxinus excelsior*). All the

trees are regenerating through a cover of Bramble (*Rubus fruticosus agg*.), Foxglove (*Digitalis purpurea*), Great Wood-rush (*Luzula sylvatica*) and Broad Buckler-fern (*Dryopteris dilatata*).

On the steeply sloping banks of the River Nore, about 5 km west of New Ross, in Co. Kilkenny, Kylecorragh Woods form a prominent feature in the landscape. This is an excellent example of relatively undisturbed, relict oak woodland with a very good tree canopy. The wood is quite damp and there is a rich and varied ground flora. At Brownstown, a small, mature oak dominated woodland occurs on a steep slope. There is younger woodland to the north and east of it. Regeneration throughout is evident. The understorey is similar to the woods at Brownsford. The ground flora of this woodland is developed on acidic, brown earth type soil and comprises a thick carpet of Bilberry (*Vaccinium myrtillus*), Heather (*Calluna vulgaris*), Hard Fern (*Blechnum spicant*), Common Cow-wheat (*Melampyrum pratense*) and Bracken (*Pteridium aquilinum*).

Borris Demesne contains a very good example of a semi-natural broadleaved woodland in very good condition. There is quite a high degree of natural regeneration of oak and Ash through the woodland. At the northern end of the estate oak species predominate. Drummond Wood, also on the Barrow, consists of three blocks of deciduous woods situated on steep slopes above the river. The deciduous trees are mostly oak species. The woods have a well-established understorey of Holly, and the herb layer is varied, with Bramble abundant. The whitebeam *Sorbus devoniensis* has also been recorded here.

Eutrophic tall herb vegetation occurs in association with the various areas of alluvial forest and elsewhere where the floodplain of the river is intact. Characteristic species of the habitat include Meadowsweet, Purple Loosestrife (*Lythrum salicaria*), Marsh Ragwort (*Senecio aquaticus*), Ground Ivy (*Glechoma hederacea*) and Hedge Bindweed (*Calystegia sepium*). Indian Balsam (*Impatiens glandulifera*), an introduced and invasive species, is abundant in places.

Floating river vegetation is well represented in the Barrow and in the many tributaries of the site. In the Barrow the species found include water-starworts (*Callitriche spp*.), Canadian Pondweed (*Elodea canadensis*), Bulbous Rush (*Juncus bulbosus*), water-milfoils (*Myriophyllum spp*.), the pondweed Potamogeton x nitens, Broad-leaved Pondweed (*P. natans*), Fennel Pondweed (*P. pectinatus*), Perfoliated Pondweed (*P. perfoliatus*) and crowfoots (*Ranunculus spp*.). The water quality of the Barrow has improved since the vegetation survey was carried out (EPA, 1996).

Dry heath at the site occurs in pockets along the steep valley sides of the rivers especially in the Barrow Valley and along the Barrow tributaries where they occur in the foothills of the Blackstairs Mountains. The dry heath vegetation along the slopes of the river bank consists of Bracken and Gorse (*Ulex europaeus*) with patches of acidic grassland vegetation. Additional typical species include Heath Bedstraw (*Galium saxatile*), Foxglove, Common Sorrel (*Rumex acetosa*) and Creeping Bent (*Agrostis stolonifera*). On the steep slopes above New Ross the Red Data Book species Greater Broomrape (*Orobanche rapum-genistae*) has been recorded. Where rocky outcrops are shown on the maps Bilberry and Great Wood-rush are present. At Ballyhack a small area of dry heath is interspersed with patches of lowland dry grassland.

These support a number of clover species, including the legally protected Clustered Clover (*Trifolium glomeratum*) - a species known from only one other site in Ireland. This grassland community is especially well developed on the west side of the mud-capped walls by the road. On the east of the cliffs a group of rock-dwelling species occur, i.e. English Stonecrop (*Sedum anglicum*), Sheep's-bit (*Jasione montana*) and Wild Madder (*Rubia peregrina*). These rocks also support good lichen and moss assemblages with *Ramalina subfarinacea* and *Hedwigia ciliata*.

Dry heath at the site generally grades into wet woodland or wet swamp vegetation lower down the slopes on the river bank. Close to the Blackstairs Mountains, in the foothills associated with the Aughnabrisky, Aughavaud and Mountain Rivers there are small patches of wet heath dominated by Purple Moor-grass (*Molinia caerulea*) with Heather, Tormentil (*Potentilla erecta*), Carnation Sedge (*Carex panicea*) and Bell Heather (*Erica cinerea*).

Salt meadows occur at the southern section of the site in old meadows where the embankment has been breached, along the tidal stretches of in-flowing rivers below Stokestown House, in a narrow band on the channel side of Common Reed (*Phragmites australis*) beds and in narrow fragmented strips along the open shoreline. In the larger areas of salt meadow, notably at Carrickcloney, Ballinlaw Ferry and Rochestown on the west bank; Fisherstown, Alderton and Great Island to Dunbrody on the east bank, the Atlantic and Mediterranean sub types are generally intermixed. At the upper edge of the salt meadow in the narrow ecotonal areas bordering the grasslands where there is significant percolation of salt water, the legally protected species Borrer's Saltmarsh-grass (*Puccinellia fasciculata*) and Meadow Barley (*Hordeum secalinum*) are found. The very rare and also legally protected Divided Sedge (*Carex divisa*) is also found. Sea Rush (*Juncus maritimus*) is also present. Other plants recorded and associated with salt meadows include Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Sea Couch (*Elymus pycnanthus*), Spear-leaved Orache (*Atriplex prostrata*), Lesser Sea-spurrey (*Spergularia marina*), Sea Arrowgrass (*Triglochin maritima*) and Sea Plantain (*Plantago maritima*).

Glassworts (*Salicornia spp*.) and other annuals colonising mud and sand are found in the creeks of the saltmarshes and at the seaward edges of them. The habitat also occurs in small amounts on some stretches of the shore free of stones.

The estuary and the other E.U. Habitats Directive Annex I habitats within it form a large component of the site. Extensive areas of intertidal flats, comprised of substrates ranging from fine, silty mud to coarse sand with pebbles/stones are present. Good quality intertidal sand and mudflats have developed on a linear shelf on the western side of Waterford Harbour, extending for over 6 km from north to south between Passage East and Creadaun Head, and in places are over 1 km wide. The sediments are mostly firm sands, though grade into muddy sands towards the upper shore. They have a typical macro-invertebrate fauna, characterised by polychaetes and bivalves. Common species include *Arenicola marina, Nephtys hombergii, Scoloplos armiger, Lanice conchilega* and *Cerastoderma edule*. An extensive area of honey-comb worm biogenic reef occurs adjacent to Duncannon, Co. Wexford on the eastern shore of the estuary. It is formed by the polychaete worm *Sabellaria alveolata*. This intertidal *Sabellaria alveolata* reef is formed as a sheet of interlocking tubes over a considerable area of exposed bedrock. This polychaete species constructs tubes, composed of aggregated sand grains, in tightly packed masses with a distinctive honeycomb-like appearance. These can be up to 25cm proud of the

substrate and form hummocks, sheets or more massive formations. A range of species are reported from these reefs including: *Enteromorpha sp.; Ulva sp.; Fucus vesiculosus; Fucus serratus; Polysiphonia sp.; Chondrus crispus; Palmaria palmate; Coralinus officialis; Nemertea sp.; Actinia equine; Patella vulgate; Littorina littorea; Littorina obtusata* and *Mytilus edulis*.

The western shore of the harbour is generally stony and backed by low cliffs of glacial drift. At Woodstown there is a sandy beach, now much influenced by recreation pressure and erosion. Behind it a lagoonal marsh has been impounded which runs westwards from Gaultiere Lodge along the course of a slow stream. An extensive reedbed occurs here. At the edges is a tall fen dominated by sedges (*Carex spp*.), Meadowsweet, willowherbs (*Epilobium spp*.) and rushes (*Juncus spp.*). Wet woodland also occurs.

The dunes which fringe the strand at Duncannon are dominated by Marram (*Ammophila arenaria*) towards the sea. Other species present include Wild Clary/Sage (*Salvia verbenaca*), a rare Red Data Book species. The rocks around Duncannon ford have a rich flora of seaweeds typical of a moderately exposed shore and the cliffs themselves support a number of coastal species on ledges, including Thrift, Rock Samphire (*Crithmum maritimum*) and Buck's-horn Plantain (*Plantago coronopus*).

Other habitats which occur throughout the site include wet grassland, marsh, reedswamp, improved grassland, arable land, quarries, coniferous plantations, deciduous woodland, scrub and ponds.

Seventeen Red Data Book plant species have been recorded within the site, most in the recent past. These are Killarney Fern (*Trichomanes speciosum*), Divided Sedge, Clustered Clover, Basil Thyme (*Acinos arvensis*), Red Hemp-nettle (*Galeopsis angustifolia*), Borrer's Saltmarsh-grass, Meadow Barley, Opposite-leaved Pondweed (*Groenlandia densa*), Meadow Saffron/Autumn Crocus (*Colchicum autumnale*), Wild Clary/Sage, Nettle-leaved Bellflower, Saw-wort (*Serratula tinctoria*), Bird Cherry (*Prunus padus*), Blue Fleabane (*Erigeron acer*), Fly Orchid (*Ophrys insectifera*), Ivy Broomrape (*Orobanche hederae*) and Greater Broomrape. Of these, the first nine are protected under the Flora (Protection) Order, 2015. Divided Sedge was thought to be extinct but has been found in a few locations in the site since 1990. In addition plants which do not have a very wide distribution in the country are found in the site including Thin-spiked Wood-sedge, Field Garlic (*Allium oleraceum*) and Summer Snowflake. Six rare lichens, indicators of ancient woodland, are found including *Lobaria laetevirens* and *L. pulmonaria*. The rare moss *Leucodon sciuroides* also occurs.

The site is very important for the presence of a number of E.U. Habitats Directive Annex II animal species including Freshwater Pearl Mussel (*Margaritifera margaritifera*), White-clawed Crayfish, Salmon, Twaite Shad, three lamprey species – Sea Lamprey, Brook Lamprey and River Lamprey, the tiny whorl snail *Vertigo moulinsiana* and Otter. This is one of only a handful of spawning grounds in the country for Twaite Shad. The freshwater stretches of the River Nore main channel is a designated salmonid river. The Barrow/Nore is mainly a grilse fishery though spring salmon fishing is

good in the vicinity of Thomastown and Inistioge on the Nore. The upper stretches of the Barrow and Nore, particularly the Owenass River, are very important for spawning.

The site supports many other important animal species. Those which are listed in the Irish Red Data Book include Daubenton's Bat, Badger, Irish Hare and Common Frog. The rare Red Data Book fish species Smelt (Osmerus eperlanus) occurs in estuarine stretches of the site. In addition to the Freshwater Pearl Mussel, the site also supports two other freshwater mussel species, *Anodonta anatina* and *A. cygnea*.

Three rare invertebrates have been recorded in alluvial woodland at Murphy's of the River. These are: *Neoascia obliqua* (Order Diptera: Syrphidae), *Tetanocera freyi* (Order Diptera: Sciomyzidae) and *Dictya umbrarum* (Order Diptera: Sciomyzidae). The rare invertebrate, *Mitostoma chrysomelas* (Order Arachnida), occurs in the old oak woodland at Abbeyleix and only two other sites in the country. Two flies (Order Diptera) *Chrysogaster virescens* and *Hybomitra muhlfeldi* also occur at this woodland.

The site is of ornithological importance for a number of E.U. Birds Directive Annex I species, including Greenland White-fronted Goose, Whooper Swan, Bewick's Swan, Bar-tailed Godwit, Peregrine and Kingfisher. Nationally important numbers of Golden Plover and Bar-tailed Godwit are found during the winter. Wintering flocks of migratory birds are seen in Shanahoe Marsh and the Curragh and Goul Marsh, both in Co. Laois, and also along the Barrow Estuary in Waterford Harbour. There is also an extensive autumnal roosting site in the reedbeds of the Barrow Estuary used by Swallows before they leave the country. The old oak woodland at Abbeyleix has a typical bird fauna including Jay, Long-eared Owl and Raven. The reedbed at Woodstown supports populations of typical waterbirds including Mallard, Snipe, Sedge Warbler and Water Rail.

Land use at the site consists mainly of agricultural activities – mostly intensive in nature and principally grazing and silage production. Slurry is spread over much of the area. Arable crops are also grown. The spreading of slurry and fertiliser poses a threat to the water quality of the salmonid river and to the populations of E.U. Habitats Directive Annex II animal species within the site. Many of the woodlands along the rivers belong to old estates and support many non-native species. Little active woodland management occurs. Fishing is a main tourist attraction along stretches of the main rivers and their tributaries and there are a number of Angler Associations, some with a number of beats. Fishing stands and styles have been erected in places. Both commercial and leisure fishing takes place on the rivers. There is net fishing in the estuary and a mussel bed also. Other recreational activities such as boating, golfing and walking, particularly along the Barrow towpath, are also popular. There is a golf course on the banks of the Nore at Mount Juliet and GAA pitches on the banks at Inistioge and Thomastown. There are active and disused sand and gravel pits throughout the site. Several industrial developments, which discharge into the river, border the site. New Ross is an important shipping port. Shipping to and from Waterford and Belview ports also passes through the estuary.

The main threats to the site and current damaging activities include high inputs of nutrients into the river system from agricultural run-off and several sewage plants, over-grazing within the woodland areas, and invasion by non-native species, for example Cherry Laurel (*Prunus laurocerasus*) and Rhododendron (*Rhododendron ponticum*). The water quality of the site remains vulnerable. Good quality water is necessary to maintain the populations of the Annex II animal species listed above. Good quality is dependent on controlling fertilisation of the grasslands, particularly along the Nore. It also requires that sewage be properly treated before discharge. Drainage activities in the catchment can lead to flash floods which can damage the many Annex II species present. Capital and maintenance dredging within the lower reaches of the system pose a threat to migrating fish species such as lamprey and shad. Land reclamation also poses a threat to the salt meadows and the populations of legally protected species therein.

Overall, the site is of considerable conservation significance for the occurrence of good examples of habitats and of populations of plant and animal species that are listed on Annexes I and II of the E.U. Habitats Directive. Furthermore it is of high conservation value for the populations of bird species that use it. The occurrence of several Red Data Book plant species including three rare plants in the salt meadows add further interest to this site.