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APPROPRIATE ASSESSMENT

STAGE 1 SCREENING

STARRUS ECO HOLDINGS LTD,

BALLYBEG

LITTLETON

COUNTY TIPPERARY

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Prepared For: -

Starrus Eco Holdings Ltd
Ballybeg
Littleton
County Tipperary

Prepared By: -

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April 2020

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Project	Stage 1 Screening Assessment Acorn Recycling			
Client	Starrus Eco Holding Limited			
Report No.	Date	Status	Prepared By	Reviewed By
1	04/03/2020	Initial Draft	Billy Hamilton BSc MA	Jim O'Callaghan MSc
		Draft Rev A		
	14/04/2020	Final		

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TABLE OF CONTENTS

PAGE

1. INTRODUCTION 1

1.1 PROJECT SITE 1
1.2 RELEVANT REGULATIONS & GUIDANCE 1
1.3 METHODOLOGY 2

2. DESCRIPTION OF PROJECT 3

2.1 SITE LOCATION 3
2.2 ENVIRONMENTAL SETTING 3
2.2.1 Hydrology 3
2.2.2 Geology & Hydrogeology 3
2.3 SURROUNDING LAND USE 3
2.4 SITE LAYOUT 3
2.5 SITE DRAINAGE 8
2.6 PROCESSES 8
2.7 ENVIRONMENTAL EMISSIONS & CONTROLS 8
2.8 SAFETY AND HAZARD CONTROL 9

3. NATURA 2000 SITES 11

3.1 LOWER RIVER SUIR SAC 13
3.2 RIVER BARROW AND RIVER NORE SAC 13

4. LIKELY EFFECTS 15

4.1 DIRECT EFFECTS 15
4.2 INDIRECT EFFECTS 15
4.3 ASSESSMENT OF EFFECTS 15

5. SCREENING CONCLUSION & STATEMENT 16

5.1 CONCLUSION 16
5.2 STATEMENT 16

APPENDIX 1 Site Synopsis: Lower River Suir SAC

APPENDIX 2 Site Synopsis: River Barrow and River Nore SAC

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1. INTRODUCTION

1.1 Project Site

Starrus Eco Holdings Ltd, trading as Acorn Recycling Ltd operates its composting facility in Ballybeg, County Tipperary under planning permission granted by Tipperary County Council and an Industrial Emissions Licence (Licence No: W0249-01) issued by the Environmental Protection Agency (the Agency) and an approval from the Department of Agriculture Forestry and the Marine under the European Union (Animal By-Products) Regulations (Comp 45).

The planning permission and EPA licence limit the annual waste acceptance rate to 45,000 tonnes and confines the biological treatment processes to composting. It is proposed to increase the annual waste intake to ca 80,000 tonnes. This will involve the extension of the composting building to provide additional primary, pasteurising and secondary processing capacity.

The development will involve land take to construct the extension; alterations to the surface water drainage and firewater storage systems and an augmentation of the odour abatement system. The development requires planning permission and a revision of the EPA licence.

1.2 Relevant Regulations & Guidance

The European Union (EU) Habitats Directive (92/43/EC) and the EU Birds Directive (2009/147/EC) identify designated areas (Special Areas of Conservation (SAC) and Special Protection Areas (SPA) respectively), are collectively known as European Sites and otherwise as Natura 2000 Sites.

The Habitats Directive, which is implemented under the European Communities Birds and Natural Habitats) Regulations 2011 (S.I. No 477 of 2011), requires an "appropriate assessment" of the potential impacts any proposed development that may have an impact on the conservation objectives of any Natura 2000 site.

Article 6(3) of the Directive stipulates that *any plan or project not directly connected with or necessary to the management of a Natura 2000 site, but likely to have a significant effect thereon…shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives.*

Guidance documents issued by Department of Environment, Heritage and Local Government (DEHLG) and the National Parks and Wildlife Services (NPWS) recommend that the assessment be completed in a series of Stages, which comprise:

Stage 1: Screening

The purpose of this Stage is to determine, on the basis of a preliminary assessment and objective criteria, whether a plan or project, alone and in combination with other plans or projects, could have significant effects on a Natura 2000 site in respect of the site's conservation objectives.

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Stage 2: Appropriate Assessment

This Stage is required if the Stage 1 Screening exercise identifies that the project is likely to have a significant impacts on a Natura 2000 site.

Stage 3: Assessment of Alternative Solutions.

If Stage 2 determines that the project will have an adverse impact upon the integrity of a Natura 2000 site, despite the implementation of mitigation measures, it must be objectively concluded that no alternative solutions exist before the plan can proceed.

Stage 4: Compensatory Measures:

Where no alternative solutions are feasible and where adverse impacts remain but imperative reasons of overriding public interest require the implementation of a project an assessment of compensatory measures that will effectively offset the damage to the Natura 2000 Site is required.

1.3 Methodology

The Screening Assessment was based on the nature and scale of the proposed development. It followed the guidance presented The DEHLG (2009, revised February 2010) Appropriate Assessment of Plans and Projects in Ireland and the NPWS (2010) Circular NPW 1/10 & PSSP 2/10 Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. The information sources included

- National Parks & Wildlife Service (NPWS) - www.npws.ie
- Environmental Protection Agency (EPA) – www.epa.ie
- National Biodiversity Data Centre – www.biodiversityireland.ie
- South Tipperary County Development Plan 2009 2015 As Varied (2017)
- North Tipperary County Development Plan 2010-2016 As Varied (2017).

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2. DESCRIPTION OF PROJECT

2.1 Site Location

The site is located in a rural setting 2 kilometres south-east the village of Littleton (Figure 2.1). It is accessed by the L4101 local road.

2.2 Environmental Setting

2.2.1 Hydrology

The regional drainage pattern is shown on Figure 2.2. The site is in the catchment of the Ballyley River which is approximately 120 m to the south. The Ballyley River flows from east to west and becomes the Breagagh River, which then flows north east, discharging into the Drish River approximately 7.1 km to the north west of the site. The Drish River joins the River Suir a further 680 m west of this point. There are several drainage ditches around the site that discharge into the Ballyley River.

2.2.2 Geology & Hydrogeology

The subsoils underlying the majority of the site comprise cut peat, which is approximately 1 m thick and is underlain by boulder clay, followed by sandy gravel and finally gravel. The depth to bedrock, which comprises a dark, shaly, limestone, is between 7.6 and 10.15 m. The bedrock is a Locally Important Aquifer that is productive only in local zones (Ll). The aquifer vulnerability rating for the site is Moderate. The local direction of groundwater flow is expected to be southerly direction, generally in the same direction as the topography.

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2.3 Surrounding Land Use

The surrounding land use is shown on Figure 2.3. The site is bounded on to the west, north and east by willow plantations and to the south by farm land. The majority of the land surrounding the property comprises cutaway bog beyond which are worked bogs to the north east and south.

The village of Littleton, the closest population centre, is approximately 2 km to the north-west. The R639 (formerly the N8) is 2.4 km and M8 motorway is 3.2 km to the north-west. The closest residential properties are on the L4101 local road, 300 m to the east and 432 m to the north-west respectively.

2.4 Site Layout

The existing site occupies 3.2 ha and the layout is shown on Drawing No. 18-173-200. It comprises the composting building (4,800 m^2), odour control unit (1,240 m^2) to the south of the building, a portakabin (office (60 m^2) in the north of the site, a fire water reservoir lagoon in the north-east corner, a firewater retention lagoon in the north-west and paved yards and unpaved access roads.

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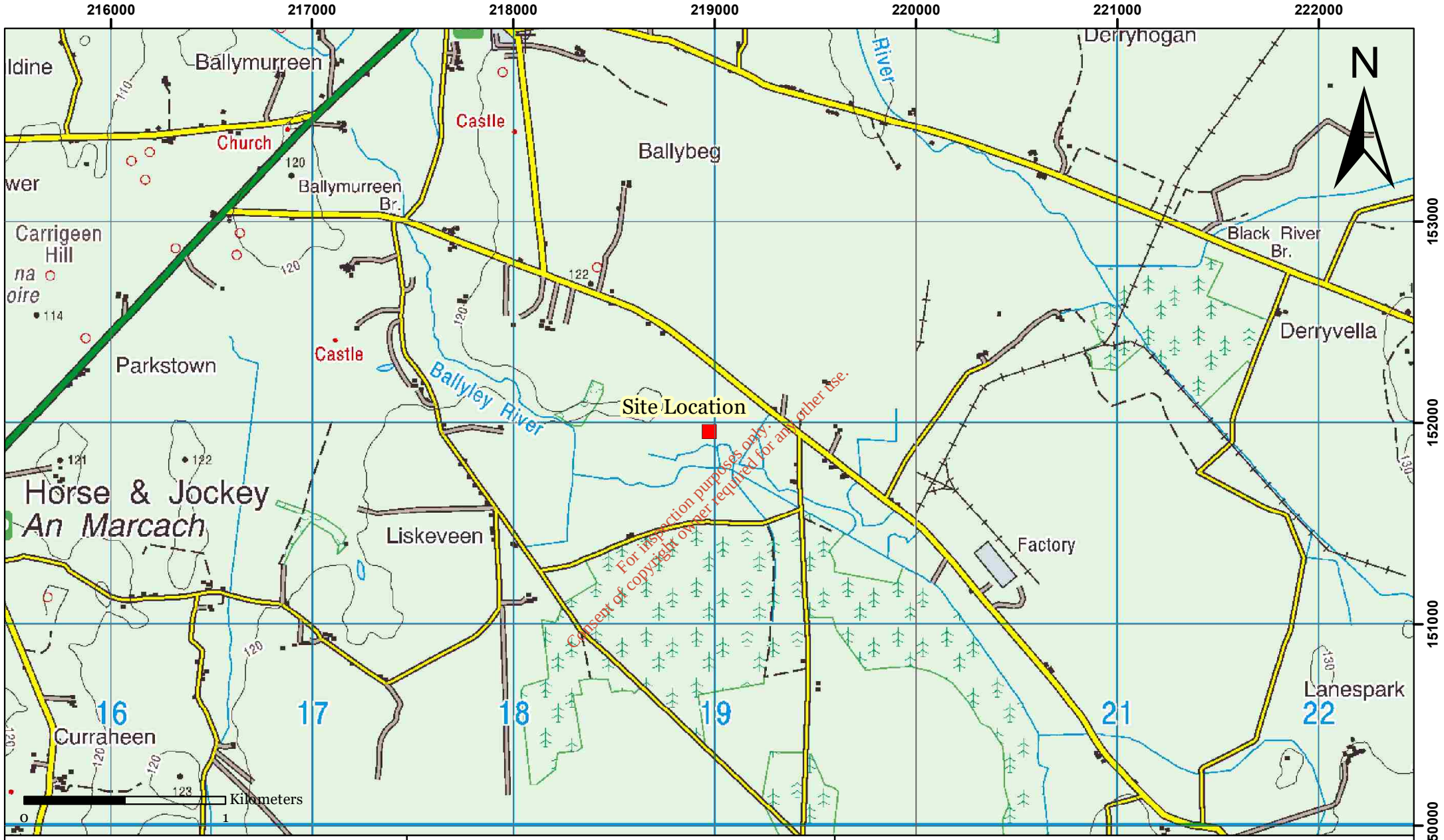

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CLIENT
Acorn Recycling

TITLE
Site Location

Details:
Site Location

Figure 2.1

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Regional Drainage Pattern

Details:
Site Location
Rivers

Figure 2.2

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CLIENT	Project	FIGURE No.
Starrus Eco Holdings Limited	Acorn Recycling EIAR	2.3
TITLE		RFV.
Surrounding Landuse within 500 m radius		A

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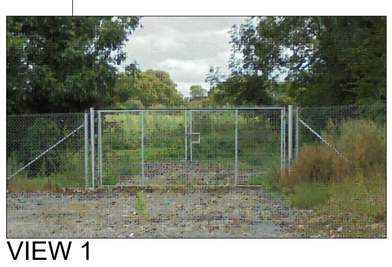
EXISTING ROAD ENTRANCE TO FACILITY 1:500



VIEW 1
VIEW OF EXISTING FENCE
NOT TO SCALE

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EXISTING SITE LAYOUT PLAN 1:500
SITE AREA BOUND IN RED: 3.58 HECTARES

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Client
ACORN RECYCLING LTD.

Project Title
EXTENSION OF RECYCLING PLANT AT ACORN RECYCLING, BALLYBEG, LITTLETON, THURLES, CO. TIPPERARY

Drawing Title
EXISTING SITE LAYOUT PLAN

Drawn By	Date	Scale
S.H		1:500 @ A1
Revision	**Drwg. Status**	**Drwg. No.**
	DRAFT	18-173-200

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2.5 Site Drainage

Rain water run-off from the northern section of the compost building and the paved northern yard discharges to a field drain at the northern site boundary via a silt trap and oil interceptor. The drain flows to the west and joins an unnamed tributary stream of the Ballyley River, which joins the river approximately 750 m west of the site. There is a shut off valve upstream of the discharge point. In the event of an incident that has the potential to affect the quality of the run-off, for example a fuel spill, the shut off valve is closed and the run-off diverted to the existing firewater retention pond in the north-west corner of the site.

Roof water from the southern section of the compost building discharges directly to a drain along the western site boundary, which flows to the south to join the Ballyley River.

There is no connection to the municipal foul sewer. Sanitary wastewater from the staff welfare facilities is collected in an underground holding tank. The contents are transferred to the waste intake area and mixed with the incoming waste and then composted.

2.6 Processes

All waste acceptance, processing and storage is carried out inside the compost building. The building is divided into a primary processing area which includes aerated composting bays and a screening plant; an Animal By-Product pasteurisation area and secondary processing area including finished product storage.

All incoming wastes are received in the primary processing area. The wastes are mixed with a bulking agent (wood chip) and then placed in compost bays. The bays have an aerated floor through which air is forced to facilitate the composting process. The temperature level is monitored to ensure optimal conditions are maintained

Once the initial treatment stage has been completed, the materials are removed from the bays, screened to remove oversized materials and then placed in the pasteurisation bay where a temperature of 70°C is achieved. The materials are then moved to the secondary processing area and placed in maturation bays. Once the maturation process has been completed the finished product is stored inside the building before being sent off site.

2.7 Environmental Emissions & Monitoring

Actual and potential emissions associated with the site activities include contaminated rainwater run-off, clean rainwater, vehicle exhausts, dust, noise and odours. The current EPA licence specifies the control measures that must be implemented to ensure the emissions do not cause pollution. It also requires monitoring of the emissions to air and surface water, a noise survey and groundwater monitoring, with all the results reported to the EPA.

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2.8 Safety and Hazard Control

SEHL has an Accident Prevention Policy and Safety Statement that takes account of the waste processes and ensures that all staff are given appropriate training for their roles. SEHL has prepared an Emergency Response Procedure and ensures all staff are properly trained.

2.9 Proposed Development

The proposed layout is shown on drawing No. 18-173-300. Extensions will be constructed at the eastern and western elevations of the compost building, which will increase the overall site to 3.58 ha. The western extension (1,982m^2) will be used for waste intake and primary processing. The existing waste intake entrance will be blocked up and replaced by two (2 No.) new entrances at the north western elevation of the extension. Canopies will be provided at both doors.

The eastern extension (4,010 m^2) will be used for secondary processing. Two additional ABP pasteurising bays will be constructed between the existing primary processing area and the eastern extension.

The construction of the western extension requires the relocation of the existing firewater retention lagoon and the security fence west of the building. It will also result in the loss of 2,307m^2 of the willow plantation. The lagoon (403 m^2) will be moved to south-west corner of the building and the security fence will relocated to the west of a new gravel access path.

The construction of the eastern extension requires the removal of an external stairs, the relocation of the condensate storage tank bund and the security fence, and the loss of the grassed area (ca 900m^2) and ca 5,720m^2 of the willow plantation. The condensate bund will be moved to the south and the fence will be relocated to the east of a new gravel access path. A new firewater reservoir (327 m^2) will be constructed to the east of the existing one.

The expansion of the processing capacity will increase the volumes of odorous air that will have to be extracted from the building and treated in the biofilters. This will require an extension (ca 300 m^2) to the biofilter and the replacement of the bio-filter media.

The only change to the emissions will be an increase in the volume of rain water run-off due to the additional impermeable areas.

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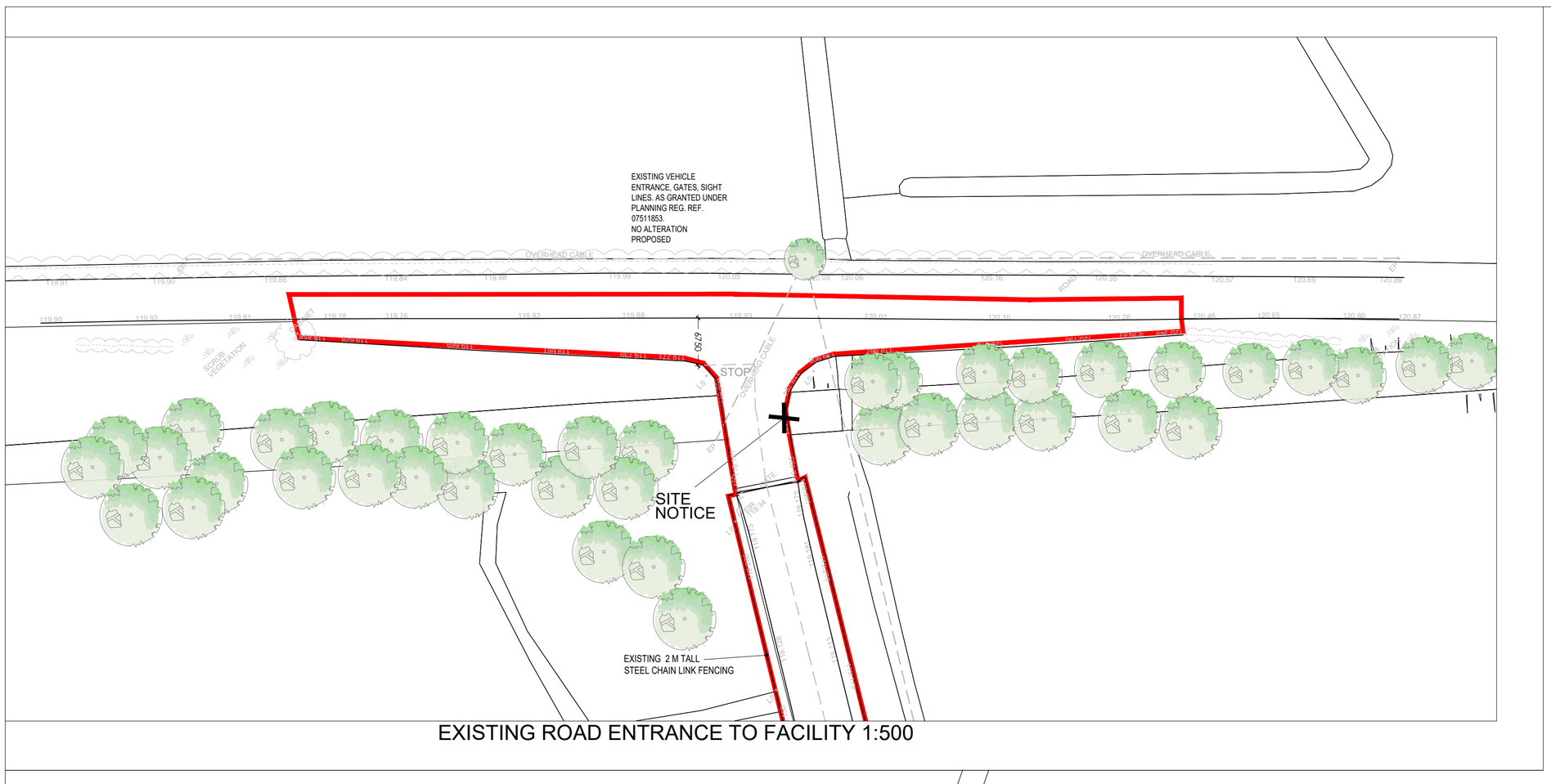

EXISTING ROAD ENTRANCE TO FACILITY 1:500

- SITE BOUNDARY
- GREEN AREA
- EXISTING CONCRETE YARD
- EXISTING GRAVEL DRIVE
- NEW GRAVEL DRIVE
- EXISTING BIO-FILTER
- WILLOW PLANTED AREA
- EXISTING TREES
- PROPOSED TREES

PROPOSED SITE LAYOUT PLAN 1:500
SITE AREA BOUND IN RED: 3.58 HECTARES

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Client
ACORN RECYCLING

Project Title
EXTENSION OF RECYCLING PLANT AT ACORN RECYCLING, BALLYBEG, LITTLETON, THURLES, CO. TIPPERARY

Drawing Title
PROPOSED SITE LAYOUT PLAN

Drawn By	Date	Scale
S.H	02.10.2019	1:500 @ A1
Revision	**Drwg. Status**	**Drwg. No.**
	DRAFT	18-173-300

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3. NATURA 2000 SITES

SACs are selected for the conservation and protection of habitats listed on Annex I and species (other than birds) listed on Annex II of the Habitats Directive, and their habitats. The habitats listed in Annex I require special conservation measures. SPAs are selected for the conservation and protection of bird species listed on Annex I of the Birds Directive and regularly occurring migratory species, and their habitats, particularly wetlands. The selected habitats and species are termed Qualifying Interests.

A statement of Conservation Objectives is prepared for each designated site which identifies the qualifying interests or conservation features. The Conservation Objectives are intended to ensure that the relevant habitats and species present on a site are maintained, and where necessary restored, at a Favourable Conservation Status.

Favourable Conservation Status of a habitat, as defined in 2011 Birds and Natural Habitats Regulations, is when:

- Its natural range, and area it covers within that range, are stable or increasing,
- The specific structure and functions which 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

Conservation Status of a species is when:

- The Favourable population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats,
- The natural range of the species is neither being reduced nor is 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.

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There are two Natura 2000 sites within 15 km of the site, as listed in Table 3.1 and shown on Figure 3.1; the Lower River Suir SAC, which is approximately than 8.3 km to the west, and the River Barrow and River Nore SAC, which is 12.5 km to the east.

Table 3.1. Natura 2000 Sites within 15 km of the Acorn Recycling Site

Site	Code	Distance
Lower River Suir SAC	002137	8.3 km
River Barrow and River Nore SAC	002162	12.5 km

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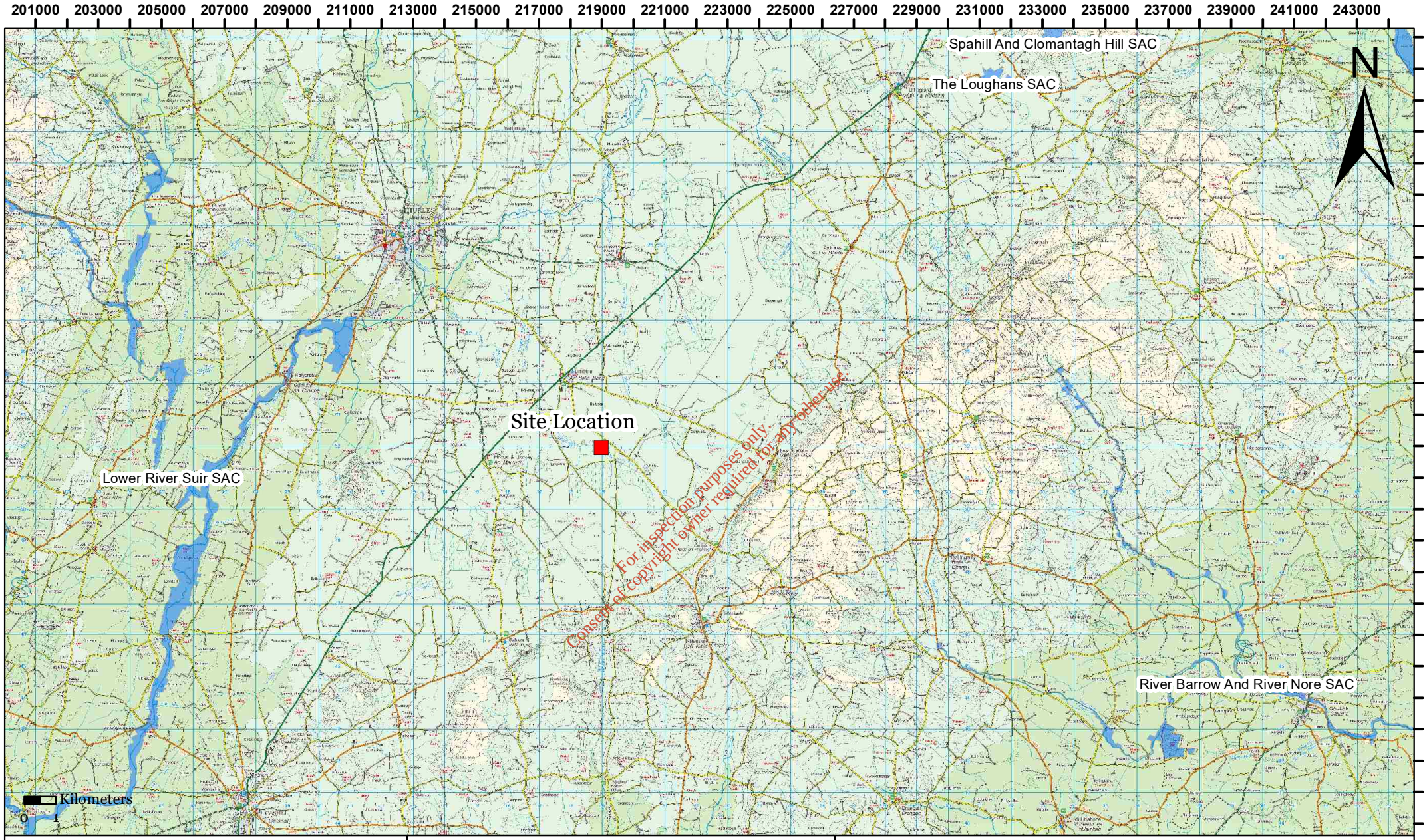

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CLIENT

Acorn Recycling

TITLE

Natura 2000 Sites

Details:

- Site Location
- SAC

Figure 3.1

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3.1 Lower River Suir SAC

Qualifying Interests

The Lower River Suir SAC contains a high diversity of habitats and plant communities, including seven habitats and eight species listed on Annex I of the E.U. Habitats Directive. The habitats and species of conservation interest are listed in Table 3.2 and the Site Synopsis is in Appendix 1.

Table 3.2 Habitats and Species of interest in the Lower River Suir SAC

Habitat	**Code**
Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	91E0
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
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
Taxus baccata woods of the British Isles	91J0
Species	
Freshwater Pearl Mussel *(Margaritifera margaritifera)*	1029
White-clawed Crayfish *(Austropotamobius pallipes)*	1092
Sea Lamprey *(Petromyzon marinus)*	1095
Brook Lamprey *(Lampetra planeri)*	1096
European River Lamprey *(Lampetra fluviatilis)*	1099
Twait Shad *(Alosa fallax)*	1103
Atlantic Salmon *(Salmo salar)*	1106
Otter *(Lutra lutra)*	1355

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Conservation Objectives

The conservation objective is to maintain or restore the favorable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected. https://www.npws.ie/protected-sites/sac/002137

3.2 River Barrow and River Nore SAC

Qualifying Interests

The River Barrow and River Nore SAC contains a high diversity of habitats and plant communities, including twelve habitats and eleven species listed on Annex I of the EU Habitats Directive. The habitats and species of conservation interest are listed in Table 3.3 and the Site Synopsis is in Appendix 2.

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Table 3.3 Habitats and Species of interest in the River Barrow and River Nore SAC

Habitat	Code
Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	91E0
Estuaries	1130
Mudflats and sandflats not covered by seawater at low tide	1140
Reefs	1170
Salicornia and other annuals colonizing 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
Species	
Desmoulin's whorl snail *(Vertigo moulinsiana)*	1016
Freshwater Pearl Mussel *(Margaritifera margaritifera)*	1029
White-clawed Crayfish *(Austropotamobius pallipes)*	1092
Sea Lamprey *(Petromyzon marinus)*	1095
Brook Lamprey *(Lampetra planeri)*	1096
European River Lamprey *(Lampetra fluviatilis)*	1099
Twait Shad *(Alosa fallax)*	1103
Atlantic Salmon *(Salmo salar)*	1106
Otter *(Lutra lutra)*	1355
Killarney fern *(Trichomanes speciosum)*	1421
Freshwater Pearl Mussel *(Margaritifera durrovensis)*	1990

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Conservation Objectives

To maintain or restore the favourable conservation condition of the bird species (Kingfisher) listed as Special Conservation Interests for this SAC. https://www.npws.ie/protected-sites/sac/002162

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4. LIKELY EFFECTS

4.1 Direct Effects

The application site is not located within any designated Natura 2000 Site and therefore the proposed development will not result in any direct habitat loss or fragmentation of any SPA or SAC.

4.2 Indirect Effects

The proposed development will not give rise to any new emissions to ground, groundwater, surface water or air. The only change to the current emissions will be an increase in the volume of rainwater run-off due to the increase in the impermeable areas. This will not affect the water quality.

The application site is not adjacent to any designated Natura 2000 Site and the closest sites are 8.3 km to the west and 12.5 km to the east. Given the distance there is no viable atmospheric pathway between the Ballybeg facility and Natura 2000 Sites, nor is there a groundwater pathway between the facility and the Natura 2000 Sites. There is no pathway between the application site and the River Barrow and River Nore SAC.

Rainwater run-off from the roof compost building and the paved yard at the front of the building discharges to drains that feed into the Ballyley/Breagagh River which is a tributary of the Drish River. The Drish joins the Suir upstream of the stretch that is part of the Lower River Suir SAC.

There is a potential pathway between the application site and the Lower Suir SAC; however as the development will not result in any change to the quality of the rainwater run-off it will not have a significant effect on either the qualifying interests, or conservation objectives of the SAC.

4.3 Assessment of Effects

There will be no adverse effects on the Natura 2000 sites identified as a result of the proposed development.

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5. SCREENING CONCLUSION & STATEMENT

5.1 Conclusion

The proposed development will not result in any adverse effects on any Natura 2000 sites.

5.2 Statement

The proposed development does not present a risk of significant effects on the Qualifying Interests and Conservation Objectives of the Lower River Suir SAC.

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APPENDIX 1

Site Synopsis & Conservation Objectives
Lower River Suir SAC

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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.

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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
[1410] Mediterranean 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*)

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[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*).

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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,

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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, 1999.

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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 in-flowing 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

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between Ballynakill and Cheekpoint. The Atlantic and Mediterranean sub-types are generally intermixed. The species list is extensive and 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*). These species are more representative of the Atlantic sub-type of the habitat. Common Cord-grass (*Spartina anglica*), is rather frequent along the main channel edge and up the internal channels. The legally protected (Flora (Protection) Order, 1999) Meadow Barley (*Hordeum secalinum*) grows at the landward transition of the saltmarsh. Sea Rush (*Juncus maritimus*), an indicator of the Mediterranean salt meadows, also occurs.

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.

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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

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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 White-fronted 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.

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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

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legally protected plants (Flora (Protection) Order, 1999) and the ornithological importance of the site adds further to the ecological interest and importance.

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APPENDIX 2

Site Synopsis & Conservation Objectives
River Barrow and River Nore SAC

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SITE SYNOPSIS

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.

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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

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[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*)
[1990] Nore Freshwater Pearl Mussel (*Margaritifera durrovensis*)

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*).

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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

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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*).

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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 re-generation 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).

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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*).

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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.

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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*.

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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

EPA Export 13-08-2021:02:39:02

(*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 (both *Margaritifera margaritifera* and *M. m. durrovensis*), 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 the only site in the world for the hard water form of the Freshwater Pearl Mussel, *M. m. durrovensis,* and 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*.

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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.

EPA Export 13-08-2021:02:39:02

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.

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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 and the population of the hard water form of the Freshwater Pearl Mussel, which is limited to a 10 km stretch of the Nore, add further interest to this site.

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