MWP

Screening for Appropriate Assessment

Cloonmore Regeneration Large Residential Development (LRD) Tralee, Co. Kerry

TULFARRIS CG LTD

August 2023

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Project No.	Doc. No.	Rev.	Date	Prepared By	Checked By	Approved By	Status
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1. Summary of Findings

1.1 Screening for Appropriate Assessment

Project Title	Supporting Information for Screening for Appropriate Assessment for the Application for a Large Residential Development (LRD) at Cloon More, Tralee, County Kerry
Project Proponent	TULFARRIS CG LTD
Project Location	Townland of Cloon More, Boherbee, Tralee, County Kerry
Screening for Appropriate Assessment	The Screening for Appropriate Assessment report is undertaken to determine the potential for likely significant effects of the proposed project, individually, or in combination with other plans or projects, on Natura 2000 sites, in view of the conservation objectives of the Natura 2000 sites.
Conclusion	It has been objectively concluded during the screening process that the Natura 2000 sites within the zone of influence of the proposed works will not be significantly impacted by the proposed project at Cloonmore, Tralee, County Kerry. These sites are: • Ballyseedy Wood SAC (Site code: 002112) • Tralee Bay Complex SPA (Site code: 004188) • Tralee Bay and Magharees Peninsula, West to Cloghane SAC (Site code: 002070) • Slieve Mish Mountains SAC (Site code: 002185) • Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (Site code: 004161) • Akeragh, Banna and Barrow Harbour SAC (Site code: 000332) • Lower River Shannon SAC (Site code: 002165) • Castlemaine Harbour SAC (Site code: 000343) • Castlemaine Harbour SPA (Site code: 004029)

2. Introduction

2.1 Purpose of the Assessment

A Planning Application is being lodged to Kerry County Council by Tulfarris CG Ltd. ('the applicant') for a Large Residential Development (LRD) at Cloonmore, Tralee, Co. Kerry (hereafter referred to as the 'proposed development site'). Permission is being sought for the construction of 147 dwelling units (129 apartments and 18 townhouse units) at a density of 95 dwellings per hectare including all associated ancillary development including parking, footpaths, connection to mains water supply, foul and storm water drainage, landscaping and amenity areas at Cloonmore, Tralee (hereafter referred to as the 'proposed development').

This screening for Appropriate Assessment report has been undertaken to determine whether the proposal is likely to have a significant effect on any Natura 2000 Site (i.e. European Sites), in view of the sites' conservation objectives.

This screening for Appropriate Assessment report has been undertaken by a staff ecologist from Malachy Walsh and Partners (MWP), Engineering and Environmental Consultants.

2.2 Statement of Competency

This screening for Appropriate Assessment Report has been prepared by Orla van der Noll (MSc, BSc) Ecologist at Malachy Walsh and Partners (MWP) Engineering and Environmental Consultants. Orla has been working full-time with MWP since September 2022. Orla began working in environmental consultancy as an Ecologist in March 2021. In 2020 Orla qualified with a first-class honours Master's degree in Marine Biology from Bangor University, Wales, and a Bachelors (hons) degree in Ecology and Environmental Biology from University College Cork in 2018. Orla has completed numerous ecological reports.

2.3 Project Overview

The proposed development site comprises a centrally located urban site of 1.55 Ha within the townland of Cloon More to the east of Tralee Town Centre, Co. Kerry. As part of the project, it is proposed to redevelop the site into a mixed housing and apartment development.

MWP was commissioned by Tulfarris CG Ltd. to prepare a screening for Appropriate Assessment report for the project. An Ecological Impact Assessment (EcIA) has also been prepared by MWP ecologists. These documents will be submitted as part of the planning application.

2.4 Legislative Context

The Habitats Directive (92/43/EEC) seeks to conserve natural habitats of wild fauna and flora by the designation of Special Areas of Conservation (SACs) and the Birds Directive (79/409/EEC) seeks to protect birds of special importance by the designation of Special Protection Areas (SPAs). It is the responsibility of each member state to designate SPAs and SACs, both of which form part of Natura 2000, a network of protected sites throughout the European Community. The Habitats Directive has been transposed into Irish law and the relevant Regulations are the European Communities (Birds and Natural Habitats) Regulations 2011. The requirement for Appropriate Assessment of the implications of plans and projects on the Natura 2000 network of sites comes from the Habitats Directive (Article 6(3)).

Under the European Communities (Birds and Natural Habitats) Regulations 2011, the Competent Authority is required to carry out a screening for Appropriate Assessment of a proposed development prior to issuing consent to assess, in view of best scientific knowledge and the sites conservation objectives, if that project or plan, individually or in combination with other plans or projects, is likely to have a significant effect on a Natura 2000 site. The screening for Appropriate Assessment will determine whether an Appropriate Assessment of the proposed development is required.

If it cannot be excluded, on the basis of the above objective information, that the proposed development will have a significant effect on a Natura 2000 site, then Appropriate Assessment of the proposed development is required and in this case a Natura Impact Statement (NIS) must be prepared.

The information presented in this screening for Appropriate Assessment report will be used by the Competent Authority, in this case Kerry County Council, to assist them in undertaking their own screening for Appropriate Assessment of the proposal.

2.5 Stages of Appropriate Assessment

The Appropriate Assessment process is a four-stage process with issues and tests at each stage. The purpose of the screening assessment is to record in a transparent and reasoned manner the likely effects on Natura 2000 sites of a proposed development. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required. The stages are set out in Appendix 2. This proposal has proceeded as far as Stage 1.

3. Methodology

3.1 Appropriate Assessment Guidance

This screening for Appropriate Assessment report has been undertaken in accordance with the European Commission Methodological Guidance on the provision of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2001), the European Commission Guidance '*Managing Natura 2000 Sites*' (EC, 2018), and '*Appropriate Assessment of Plans & Projects - Guidance for Planning Authorities'* prepared by the NPWS (DoEHLG, 2010).

3.2 Desktop Study

In order to complete the screening for Appropriate Assessment report certain information on the existing environment is required. A desk study was carried out to collate available information on the proposed development site's natural environment. This comprised a review of the following publications, data and datasets:

- Ordnance Survey Ireland (OSI) Aerial photography and 1:50000 mapping
- National Parks and Wildlife Service (NPWS) on-line datasets and literature
- National Biodiversity Data Centre (NBDC) (on-line mapping)
- BirdWatch Ireland on-line resources
- Teagasc soil area maps (NBDC website)
- Geological Survey Ireland (GSI) area maps

- Environmental Protection Agency (EPA) water quality data and on-line mapping
- Southwestern River Basin District (SWRBD) datasets (Water Framework Directive)
- Review of requested records from NPWS Rare and Protected Species database
- Kerry County Development Plan 2022 - 2028[1]
- Other information sources and reports footnoted in the course of the report

3.2.1 Data Requests and Database Searches

The proposed development area lies within the Ordnance Survey Ireland National Grid hectad Q81. Concise and site-specific information on species records available in this hectad was retrieved from the National Biodiversity Data Centre (NBDC) online database and reviewed.

On the 24th of July 2023, a request was made to NPWS for Sensitive Data Access for hectad Q81. Data for species records within the hectad was received from the NPWS on the 1st August 2023 and was used to help inform the impact assessment in relation to the proposal.

Information received via the NPWS and the NBDC in response to the data requests and database searches was used to help inform the baseline surveys and impact assessment in relation to the proposal.

3.3 Field Surveys

The desk top study was supplemented by multi-disciplinary ecological walkover surveys of the study area. Ecological field surveys were undertaken at the proposed development site on the 4th July 2023 by MWP ecologists to establish the site's ecological features and resources, particularly any rare/protected species and habitats occurring within the study area. Multidisciplinary walkover surveys were carried out to assess the habitat of the study area and identify any ecological features and resources that may potentially be impacted by the proposed development. The study area included all habitats and built areas within the site boundary (see **Figure 1** below).

Summaries of the field survey methodologies employed are provided in the following sub-sections.

3.3.1 Habitats and Flora

Baseline habitat and flora surveys were carried out as part of the MWP multi-disciplinary ecological walkover surveys (July 2023) and were undertaken within the optimum flora survey period. The habitat surveys had regard to '*Best Practice Guidance for Habitat Survey and Mapping*' (Smith *et al*., 2011) and '*A Guide to Habitats in Ireland*' (Fossitt, J. A., 2000). Habitats within the study area were categorised to Level 3 according to Fossitt (2000).

Habitats occurring were assessed for their potential suitability for faunal species such as otter.

3.3.2 Non-native/Invasive Species

The presence of Invasive Alien Plant species (IAPS) including species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011, as amended) was determined within the study area during the initial multi-disciplinary ecological walkover surveys undertaken by MWP.

[1] County Development Plan | (c) Kerry County Council (kerrycoco.ie) Accessed: 8th August 2023

3.3.3 Otter

Walkover surveys for mammals including otter were undertaken by MWP within the study area in July 2023. With regard to otter, the survey had a particular focus on any watercourses occurring within or next to the study area, as outlined in 'Monitoring the Otter *Lutra lutra*' (Chanin, 2003). As there were no watercourses identified onsite, no otter survey was carried out.

3.4 Screening for Appropriate Assessment

As set out in the NPWS guidance, the task of establishing whether a plan or project is likely to have an effect on a Natura 2000 site(s) is based on a preliminary impact assessment using available information and data, including that outlined above, and other available environmental information, supplemented as necessary by local site information and ecological surveys. This is followed by a determination of whether there is a risk that the effects identified could be significant. The precautionary principal approach is required.

Once the potential impacts that may arise from the proposal are identified the significance of these is assessed through the use of the following key indicators:

- Water quality
- Habitat loss and alteration
- Disturbance and/or displacement of species
- Habitat or species fragmentation

4. Screening for Appropriate Assessment

The purpose of the screening assessment is to record in a transparent and reasoned manner the likely effects, on relevant Natura 2000 Sites, of the project, and whether these likely effects are significant.

Screening for Appropriate Assessment (Stage 1) determines the need for a full Appropriate Assessment (Stage 2) and consists of a number of steps, each of which is addressed in the following sections of this report:

4.1 Establish whether the project is necessary for the management of a Natura 2000 site
4.2 Description of the project (Large Residential Development (LRD) in Tralee, Co. Kerry)
4.3 Identification of other plans, projects and activities with which the proposed development could interact to create in-combination effects
4.4 Identification of Natura 2000 sites potentially affected
4.5 Identification and description of potential individual and cumulative impacts (in-combination effects) of the project
4.6 Assessment of the significance of the impacts on Natura 2000 sites
4.7 Conclusion of screening stage

4.1 Management of Natura 2000 Sites

The proposal is not connected with or necessary to the conservation management of a Natura 2000 Site.

4.2 Description of Project

4.2.1 Site Location and Context

The proposed C. 1.55ha development site is situated in the town of Tralee, Co. Kerry within the townland of Cloon More to the east of Tralee Town Centre. The site mainly consists of grassland, vegetated and overgrown areas much of which has been recently cleared, Cluain Mór House with associated outbuildings, one derelict semi-detached cottage (within the landholding but excluded from the proposed development), and a pair of partially demolished semi-detached cottages. The site is accessed via Boherbee R875 Regional Road. See Figure 1 and 2, below.

The site is relatively flat along its length. Site boundaries are defined by a mix of hedging towards the northern part with walling, fencing to the eastern boundary and palisade fencing along the southern boundary. The site is bounded to the north by Boherbee road, to the east by O'Connor Kerry Haulage Ltd., 5 Cloon More Cottages, to the south by the new Gaelcholáiste Chiarraí building and access road, to the west by a Community Centre, KVH Sheltered Apartments, school sports fields, and O'Connor Terrace which fronts onto Boherbee. The site is within a mixed urban area with Austin Stack Park GAA stadium located to the northwest and Tralee Casement Railway Station and Tralee Bus Station a short distance to the northwest. There is a petrol station opposite with the Horan Shopping Centre located to the northeast. University Hospital Kerry is located to the south.

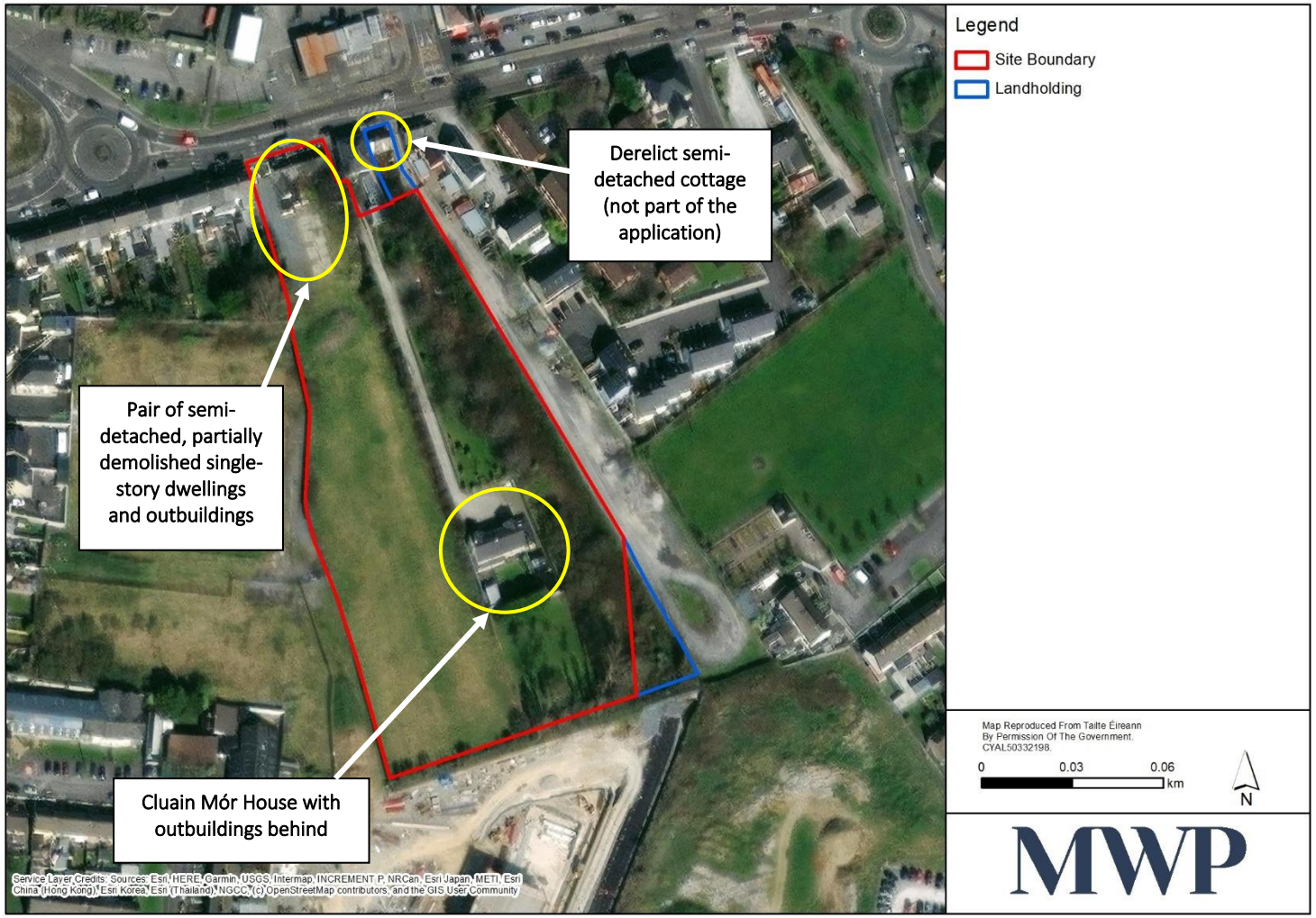

Figure 1. Aerial view of the proposed development site outlined in red comprising an existing dwelling (Cluain Mór House, currently occupied), sheds/outbuildings and a derelict semi-detached cottage (indicated in yellow)

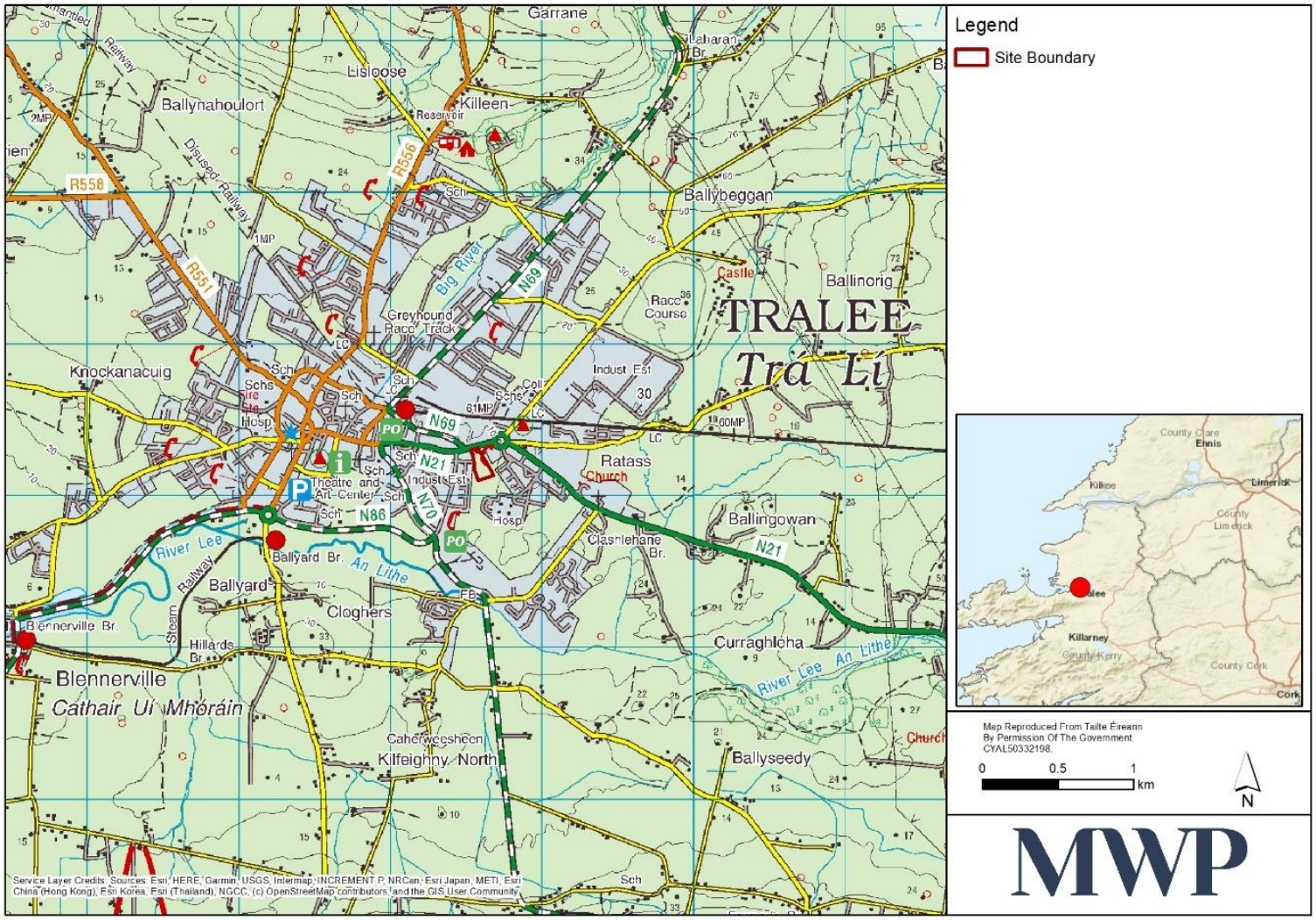

Figure 2. Location of proposed development site

4.2.2 Brief Project Description

The proposed development comprises of 147 no. residential units, at a density of 93.7 dwellings per hectare and all associated ancillary development including parking, footpaths, foul and storm water drainage, and landscaping at the proposed development. The scheme is comprised of:

- 129- Apartment
- 18 - Townhouses

4.2.3 Purpose of the Project

The purpose of the project is to develop a large residential development to provide housing.

4.2.4 Description of Existing Site

4.2.4.1 General Site Description

The proposed development site is located within the Electoral Divisions (ED) of 'Tralee Rural' and 'Tralee Urban'. CSO data indicates that in 2016, 'Tralee Urban' and 'Tralee Rural' had a total population of 4,954 and 17,825[2] residents respectively.

The CORINE (2018) landcover data series (available on EPA's interactive map viewer) indicates that landcover at the proposed development site is classified as 'Artificial Surfaces, Urban Fabric, and Discontinuous urban fabric' (Code: 112). The land to the immediate west is classified as 'Artificial Surfaces, Urban Fabric, and Continuous urban fabric' (Code: 111).

According to the Geological Survey Ireland (GSI) online map viewer, the proposed development site is underlain predominantly by Waulsortian Limestones of the Waulsortian Limestones Formation on the southern side. The middle section to the north is predominantly underlain by Unbedded calcilutite limestone of the Cracoean Reef Member. A small part of the site towards the northern tip is underlain by Bioclastic cherty grey limestone of the Dirtoge Limestone Formation. There is a fault present in the middle of the proposed site.

Soils at the proposed development site are categorised predominantly as 'Urban'. Subsoils at the proposed development site are classified as 'Man made'.

The underlying GSI bedrock aquifer at most part of the site is categorized as a 'Regionally Important Aquifer - Karstified (diffuse)' with a small section of the underlying bedrock aquifer to the northeast of the proposed development site categorized as a 'Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones' (Ll).

The groundwater vulnerability of the aquifer is recorded as 'Moderate'. The GSI define groundwater vulnerability as "a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated by human activities".

A Flood Risk Assessment (FRA) was undertaken for the proposed site by MWP. The FRA has identified that the site is outside of Flood Zones A and B as defined in the Flood Risk Management Guidelines (2009) and accordingly the proposed residential use is appropriate. The uses are consistent with existing zoning and the SFRA conducted for the Kerry CDP 2022-2028. The site's elevation is predominantly over 9.0m AOD.

[2] https://visual.cso.ie/?body=entity/ima/cop/2016&boundary=C03786V04535&guid=2AE19629221E13A3E055000000000001

The proposed development site is not located within a Special Area of Conservation (SAC) or Special Protection Area (SPA) collectively known as Natura 2000 sites. SPAs and SACs occurring within 15 km of the proposed development site are identified in Section 4.4 below.

According to the Kerry County Development Plan 2022-2028, the proposed development site is located within the 'Existing residential' Landscape Character Area and is not located within a Visually Sensitive Area.

Figure 3. View of the site from the entrance on Boherbee. Cluain Mór House in the middle background, and Gaelcholáiste Chiarraí in the right background

4.2.4.2 Hydrology and Hydrogeology

The site lies within the Lee [Tralee]_SC_010 Water Framework Directive (WFD) Sub-Catchment (ID: 23_8) which is within the Tralee Bay-Feale WFD Catchment (ID: 23). The EPA records the presence of River Waterbody 'LEE (TRALEE) _030' (European Code: IE_SH_23L010100) and 'LEE (TRALEE)_040' (European Code: IE_SH_23L010200) approximately 780m to the south of the proposed site. The River Waterbody WFD status of LEE (TRALEE)_030 for the 2016-2021 period was classified as 'Poor' and it's WFD Risk status is categorised as 'At risk'. The River Waterbody WFD status of LEE (TRALEE)_040 for the 2016-2021 period was classified as 'Moderate' and it's WFD Risk status is categorised as 'Review'. The WFD River Waterbodies Risk Status represents the risk for each waterbody of failing to meet their Water Framework Directive (WFD) objectives by 2027.

Waterbodies are categorised as 'Review' either because additional information is needed to determine their status before resources and more targeted measures are initiated or the measures have been undertaken, e.g. a wastewater treatment plant upgrade, but the outcome hasn't yet been measured/monitored. These river waterbodies flow from south to southwest and join the sea at Blennerville, approximately 3.17km from the proposed development site. All data relating to water features was obtained from the Environmental Protection Agency (EPA) interactive map viewer.

The nearest EPA river water quality monitoring station on the River Lee is located within the town boundary at the second bridge downstream from Ballymullen Mills. The most recent (2020) evaluation for this station indicates that the River Lee is considered to have biological water quality value, or Q value, of 'Poor status'. This evaluation is based on the composition and abundance of the invertebrate community in the stream at this location.

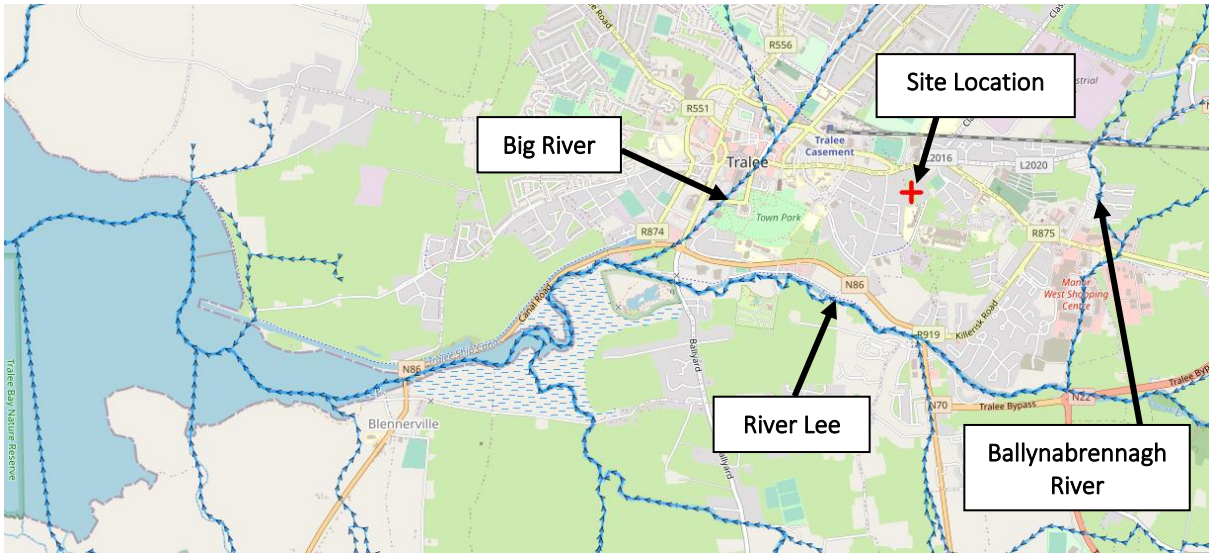

Figure 4. Watercourses within the vicinity of the proposed development site (Adapted from EPA map viewer)

4.2.4.3 Habitats and Flora

The dominant habitats within the proposed development site are grassland, scrub and man-made/artificial surfaces. There is no overlap between the extent of works footprint and any Natura 2000 sites.

The man-made/artificial surfaces comprise Cluain Mór House, derelict dwellings, outbuildings, boundary walls, access track/driveway and existing footpaths/parking area. These areas are classified as a combination of **Buildings and artificial surfaces (BL3)**, **Spoil and bare ground (ED2)**, **Recolonising bare ground (ED3)**, and **Stonewalls and other stonework (BL1)**.

Elsewhere within the extent of works footprint, habitats include modified grassland habitats comprising previously landscaped/managed areas of the property and grassland. These are categorised as **Improved Grassland (GA1)**, **Amenity grassland (GA2), Dry Meadows and Grassy Verges (GS2),** and **Ornamental/ Non-native shrub (WS3)** containing infestations of IAPS. Other habitats include **Scrub (WS1)**, **Treelines (WL2)**, **Hedgerows (WL1)**, and **Scattered Trees and Parkland (WD5)** representing the garden and orchard to the rear of Cluain Mór House.

No rare or protected flora species were recorded within the proposed construction footprint during any of the ecological surveys of the development site.

4.2.4.4 Invasive Species

Documented NBDC records of high/medium impact invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011, as amended) exist within the hectad Q81 encompassing the study area. Hectad records exist for eight high-impact species and ten medium-impact species. Nine IAPS are listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011, as amended).

Table 1. Desktop records of non-native/invasive species of flora within hectad Q81.

Species Common Name	Scientific name	Closest Species Record to Development Site	Invasiveness NBDC[3]	Listed on Regulation S.I. 477[4]
Black Currant	*Ribes nigrum*	Approximately 2.6 km southeast of the proposed development site	Medium impact	No
Brazilian Giant-rhubarb	*Gunnera manicata*	Approximately 1.8 km south of the proposed development site	Medium impact	Third Schedule listed
Butterfly-bush	*Buddleja davidii*	Approximately 300m northwest of the proposed development site	Medium impact	No
Cherry Laurel	*Prunus laurocerasus*	Approximately 2.0 km southeast of the proposed development site	High impact	No
Common Cord-grass	*Spartina anglica*	Approximately 2.9 km southwest of the proposed development site	High impact	Third Schedule listed
Douglas Fir	*Pseudotsuga menziesii*	Approximately 2.8 km southeast of the proposed development site	Medium impact	No
Giant Hogweed	*Heracleum mantegazzianum*	Approximately 2.4 km southeast of the proposed development site	High impact	Third Schedule listed
Giant Rhubarb	*Gunnera tinctoria*	Approximately 3.0 km east of the proposed development site	High impact	Third Schedule listed
Himalayan Balsam	*Impatiens glandulifera*	Approximately 130 m south of the proposed development site	High impact	Third Schedule listed
Himalayan Honeysuckle	*Leycesteria formosa*	Approximately 670 m south of the proposed development site	Medium impact	No
Japanese Knotweed	*Fallopia japonica*	Approximately 590 m south of the proposed development site	High impact	Third Schedule listed
Japanese Rose	*Rosa rugosa*	Approximately 1.7 km south of the proposed development site	Medium impact	No
Parrot's-feather	*Myriophyllum aquaticum*	Approximately 1.7 km west of the proposed development site	High impact	Third Schedule listed

[3] Species Profile Browser · Species Profile (biodiversityireland.ie)
[4] Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011, as amended)

Species Common Name	Scientific name	Closest Species Record to Development Site	Invasiveness NBDC[3]	Listed on Regulation S.I. 477[4]
Rhododendron	*Rhododendron ponticum*	Approximately 2.0 km southwest of the proposed development site	High impact	Third Schedule listed
Spanish Bluebell	*Hyacinthoides hispanica*	Approximately 790 m northwest of the proposed development site	Low Impact	Third Schedule listed
Sycamore	*Acer pseudoplatanus*	Approximately 370 m north of the proposed development site	Medium impact	No
Three-cornered Garlic	*Allium triquetrum*	Approximately 760 m northwest of the proposed development site	Medium impact	Third Schedule listed
Traveller's-joy	*Clematis vitalba*	Approximately 225 m north of the proposed development site	Medium impact	No
Turkey Oak	*Quercus cerris*	Approximately 900 m west of the proposed development site	Medium impact	No

During MWP multi-disciplinary ecological field surveys of the site, several invasive plant species listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2015) were recorded, including Japanese knotweed (occurring behind the derelict semi-detached dwelling, butterfly bush (occurring north of the site along the western site border), and cherry laurel (occurring as dense stands along the laneway leading to Cluain Mór House).

Plate 1. An infestation of Japanese/bohemian knotweed (top left) within the ruins of an outbuilding at the north of the site behind the derelict semi-detached dwelling. Butterfly bush (top right) found near the entrance along the western border of the site. Cherry laurel (bottom); many specimens found alongside the laneway to Cluain Mór House.

4.2.4.5 Otter

There are 17 documented records held by the NBDC and two records held by the NPWS of otter within the hectad Q81, mostly within the Tralee Bay coastal habitats. None of these records are within the proposed development site. The closest of these otter records is 0.7 km south of the proposed site boundary[5].

There were no watercourses or evidence of otter (including breeding or resting sites) recorded onsite at the proposed development site during the ecological field surveys.

[5] https://maps.biodiversityireland.ie/Map (Accessed 21/07/2023)

4.2.5 Characteristics of the Project

The proposed development comprises of 147 no. residential units, and all associated ancillary development including parking, footpaths, foul and storm water drainage, landscaping and amenity areas at the proposed development, the design of which has been developed through pre-planning discussions with the Local Authority.

The units comprise:

- 49 no. 1 bed apartments
- 78 no. 2 bed apartments
- 14 no. 2 bed townhouses
- 4 no. 3 bed townhouses

The proposed development site is within a regeneration area targeted for renewal and in a designated 'Hub Town' which is targeted for growth. It is on land zoned 'R2 Existing Residential', contiguous with residential development, and sustainably located within a 10 minute walk of the town centre, bus station and train station.

Vehicular access is proposed from a single access point at the existing access from R875 to Mitchels Road. Footpaths, and crossing facilities already exist along this road. The existing access road for the properties adjoining the site will be maintained for the sole use of the existing properties.

The Site Layout is shown in Figure 5 below. Please refer to the Planning Drawings which accompany the application.

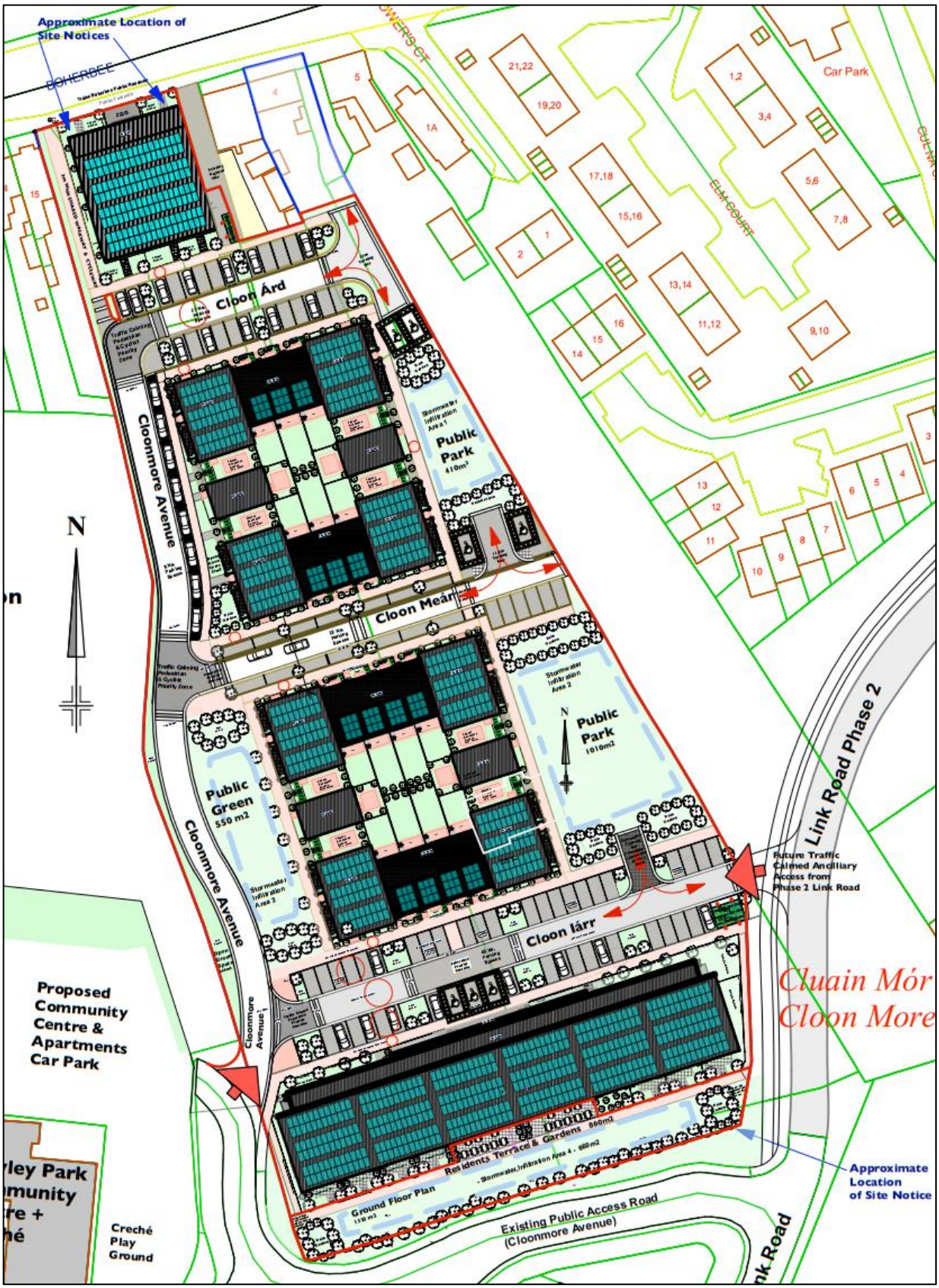

Figure 5. Proposed site layout (Source: John Phelan Architects)

Table 2. Characteristics of the proposed development

Size, scale, area, land-take	The total development site has an overall footprint of 1.5 ha with a gross floor area of construction: Apartment Block "A" footprint 492sqm, Triplex Apartments Footprint 155 sqm x 8 = 1,240 sqm, Townhouses Footprint 978 sqm, Apartment Block "B" footprint 1,493 sqm, and a total footprint of 4,203 sqm. There is no spatial overlap with any Natura 2000 site; therefore, there will be no land take within any Natura 2000 site. There is an indirect hydrological connection between the development site and two Natura 2000 sites via the proposed connection to Tralee WWTP which will receive wastewater from the development and discharge treated effluent into Tralee Bay.
Details of physical changes that will take place during the various stages of implementing the proposal	<u>Site set-up and clearance</u> Site set up, welfare facilities and compound establishment, decommissioning and movement of site compound and facilities as needed. Set up of hoarding around compound and the site boundary. Erection of safety signage to all areas and implementation of traffic/pedestrian management plan. Site clearance to remove vegetation and topsoil will take place prior to works commencing. All of the existing structures on site will be demolished as part of initial enabling works and hardstanding material excavated before the construction of the proposed development. Total area of demolition approx. 480 sqm. <u>Construction phase</u> The project excavations will involve excavations for new foundations, site levelling and excavations for roads and services. Construction of building structure on ground foundations. General site works including construction of drainage infrastructure, internal roads and footpaths (construction methodology and programme will be dictated by the Contractor). Ancillary site development works, landscaping and services. <u>*Construction Sequence (indicative)*</u> • Construction of the foundations for the development will involve the excavation of the site to foundation level, construction of the reinforced concrete foundations and subsequent backfilling to proposed floor level. • Construction of load bearing walls, columns, slabs, non-load bearing vertical elements and roof structures. • Installation of cladding to roof level and roof cladding. • First fix Mechanical & Electrical Fit-Out will commence from ground floor level upwards. • This will be followed by the second fix and final connections.

	• Initial installation of stud work when cladding completed, and floor is weather tight. • Installation of equipment and associated connection to services. • Completion of finishes. • The final commissioning period will commence during fit-out. **Operational phase** • On-going routine landscaping and general maintenance works. • Increased Lighting
Description of resource requirements for the construction/operation and decommissioning of the proposal (water resources, construction material, human presence etc)	**Construction-related Materials (indicative)** • Hoarding, scaffolding • Structural/Secondary support steelwork • Flooring • Non-structural metalwork • External wall finishes • Roof finishes • Above ground drainage pipes, fitting and pipework ancillaries • Foul and surface water drainage • Watermain pipework • Concrete (in-situ, reinforcement, sundries, formwork, precast/composite) • Brickwork/blockwork • Roofing, cladding and waterproofing • Woodwork • Road and pavements (sub-bases, bases and surfacing) • Kerbs, channels and edgings • Signage • Manholes and gullies • Attenuation tank • Full retention and bypass interceptors, silt traps, grease trap • Water storage units for fire fighting

	• Electrical pipework • Fill (crushed stone Clause 804, pea gravel) • Plaster, render, cement mortar etc. • Wall cladding • Tiling Construction plant and machinery required (indicative): • Hydraulic excavators • Mobile cranes • Specialist hydraulic demolition/crushing machines • 20t 360 Excavators • 20t Dumper Truck • 3t Mini Digger • 5t Dumper truck • 3t roller • Ready-mix concrete trucks • Pump unit for ready mix concrete • Vibrating rollers • HGV 20 foot trailers • HGV 40 foot trailers • Telescopic site handlers • Road Sweeper • Block Grab • Teleporter • 20m³ Skips • Articulated Booms 65ft • Scissor Lifts • 30 kva Generator (until temporary Power is live) • Kerbing Machine • Asphalt paver finisher

	Water Requirement Water supply during construction and operation will be via Public Watermain on R875 Road Boherbee. **Human Resource Requirement** It is estimated that there will initially be 10 – 30 staff on site on a typical day, however during peak construction periods this is expected to fluctuate up to 30-50 staff and contractors on site per day.
Description of timescale for the various activities that will take place as a result of implementation (including likely start and finish date)	The construction works associated with the development will be undertaken in 3 phases as per drawing 9. 2301 Phasing Diagram. Phase 1 demolition & construction work includes Apartment Block "B" and is expected to take approximately 18 - 24 months for the demolition, construction and commissioning phases prior to commencement of full operations and occupation. Phase 2 is expected to commence within 6 months prior to the completion of phase 1. Phase 2 is expected to take approximately 12-18 months for the construction and commissioning phases prior to commencement of full operations and occupation. Phase 3 is expected to commence within 6 months prior to the completion of phase 2. Phase 3 is expected to take approximately 12-18 months for the construction and commissioning phases prior to commencement of full operations and occupation. The construction programme is intended to commence in the first quarter of 2024, with a total 54-72-month programme and will be completed in 3 phases as outlined previously. The commencement date for the project will be dependent on timing of grant of planning. The proposed hours of work on site will be stipulated in the planning conditions attached to the planning grant. Any working hours outside the normal construction working hours will be agreed with the Local Authority.
Description of wastes arising and other residues (including quantities) and their disposal	**Construction phase** General non-hazardous construction and demolition wastes may comprise the following: • Mixed C&D waste (concrete (approx. 500 m^3), bricks, tiles, ceramics, wood, glass, plastic, steel and other scrap metal • Soil/sub-soil, stones (approx. 350 m^3) • Paper, cardboard/plasterboard • Certain electrical waste • Insulation materials • Other residual/surplus building materials • Temporary W/C utilities waste • Green/organic waste

	• Dry mixed recyclables/ mixed non-recyclables • Estimated quantity of demolition waste 300 tonnes • Estimated quantity of construction waste 500 tonnes It is expected that all excavated material will be removed off-site. Estimated 3 m max excavation depth. Expected volume of bulk excavation on site is 350 m^3 comprising concrete hardstanding and soil and stone. Potentially hazardous wastes which may arise include contaminated soil, fuels and oils, construction chemicals and other known hazardous substances (paints, glues/adhesives, batteries etc.), invasive plant species and/or vector material and asbestos. All plant will likely be refuelled on-site e.g. excavators, tractors & quads, while rigid and articulated vehicles (if required) will likely be fuelled off-site as would all site vehicles (jeeps, cars and vans). A Fuel Management Plan will be implemented prior to the commencement of works. As fuels and oils are classed as hazardous materials, any on-site storage of fuel/oil, all storage tanks and all draw-off points will be bunded (or stored in double-skinned tanks) and located in a dedicated, secure area of the site. Emergency procedures and contingency plans, including emergency spill kit with oil boom, will be set up to deal with accidental spillages. Surface water discharge from the site will be managed and controlled for the duration of the construction works until the permanently attenuated surface water drainage system of the proposed site is complete. A temporary drainage system shall be installed prior to the commencement of the construction works to collect surface water runoff by the site during construction. Any temporary W/C utilities used on site during the construction phase will be maintained by an approved and permitted contractor. A SuDS plan which integrates nature-based solutions has been outlined in the 23824-6002-A Civil Utilities report. SUDS measures proposed are Bioretention Systems/Rain Gardens, Tree pits and attenuation storage tanks. In the event that any potentially contaminated material is encountered, it will be segregated from clean/inert material, tested and classified as either non-hazardous or hazardous and dealt with accordingly. Japanese knotweed a third schedule IAPS and cherry laurel a high impact IAPS was detected onsite. An invasive species management plan will be produced and implemented during the construction and demolition phases of the development. If any Asbestos Containing Material (ACM) or suspected ACMs are identified, they will be required to be removed by a suitably trained and competent person prior to commencement of works. ACMs will only be removed from site by a suitably permitted waste haulier and will be brought to a suitably licenced facility. Paints, glues, adhesives, WEEE and other known hazardous substances will be stored in appropriate receptacles in designated areas pending collection by an authorised waste contractor.

	A detailed Resource Waste Management Plan (AWN Consulting Ltd.) has been prepared in relation to the development. Please refer to this document for more information. Operational phase Typical wastes arising will comprise dry mixed recyclables (paper, plastic, etc), organic waste (food/green waste), glass and mixed non-recyclable/general waste as well as other miscellaneous waste elements e.g. garden waste, batteries etc. Waste shall be segregated and stored in designated areas and protected as may be appropriate against spillage and leachate run-off. Waste will be collected by licenced waste contractors and be transported to registered/permitted/licensed facilities only. The development will connect to the public foul sewer system via a proposed foul sewer which will be fully separated from proposed storm water drainage. Wastewater will ultimately discharge to Lohercannon WWTP. Sufficient capacity has been confirmed with IW subject to sewage flow management measures which will be employed. Surface water run-off generated by the development will discharge from site via a proposed attenuation system and flow control device to an existing Local Authority storm drain. A detailed Operational Waste Management Plan has been prepared for the development by John Phelan Architects. Please refer to this document for more information.
Identification of wastes arising and other residues (including quantities) that may be of particular concern in the context of the Natura 2000 network	• Fuels/oils/lubricants etc • Chemical substances/residues • Waste concrete/mortar and other cementitious material • Effluent from temporary welfare facilities/operational development
Description of any additional services required to implement the project or plan, their location and means of construction	A site compound(s) including offices and temporary welfare facilities will be set up by the main contractor. Please refer to the CEMP for possible site compound locations within the development site. Materials, fuel etc will be stored in the secure site compound. Construction traffic and site access will be via R875 Road Boherbee. A Construction Traffic Management Plan will be implemented.

4.3 Identification of Other Projects or Plans or Activities

4.3.1 Plans

With regards to the potential for in-combination effects, the Kerry County Development Plan (2022-2028) was considered. This Plan was adopted on the 4th of July 2022 and came into effect on the 15th August 2022. One element of this plan, within Volume 1, Chapter 4 – Town & Villages, the Mitchels Regeneration Masterplan, is considered to have the potential to interact with the proposal in the context of potentially significant in-combination effects. The proposal lies within the footprint of the Mitchels Regeneration Masterplan.

The objective of the Mitchels Regeneration Masterplan is community regeneration through the provision of community, social and residential property[6]. The plan includes the construction of a day care centre, housing (including sheltered housing), road upgrades, Secondary Gaelscoil, parks and open spaces, and sporting facilities. The Mitchels Regeneration Masterplan will continue to be updated in consultation with the local community and its implementation and delivery will be supported by the Kerry County Development Plan (2022-2028).

[6] https://consult.kerrycoco.ie/en/consultation/draft-kerry-county-development-plan-2022-2028/chapter/14-urban-regeneration

4.3.2 Permitted and Proposed Developments in the Locality

A search of Kerry County Council's online planning enquiry system[7] for granted or on-going planning applications for the townland of 'Cloon More' which encompasses the proposed development site, was undertaken on the 14th July 2023.

Table 3. List of granted and/or on-going planning applications within the vicinity of townland of Cloon More

Application No.	Applicant	Location	Proposed Development	Decision	Grant Date
191064	The Health Service Executive	University Hospital Kerry, Cloon More, Tralee, Co. Kerry	Construct a new single storey roof level extension comprising new laboratories and laboratory support accommodation, located at first floor level, on an existing roof above an existing single storey portion of the existing hospital, and will include a new stairs extending through existing accommodation at ground floor level, new circulation linkages to existing accommodation at first floor level, together with the upgrading and recladding of part of the existing single storey frontage of the hospital, including the existing main entrance at ground floor level, together with associated localised demolitions and new site works and services.	Conditional	09/12/2019
191198	Peter Williams and Lorraine O'Sullivan	107, New Marian Park, Tralee, Co. Kerry	Retain extension to existing house	Refused	04/03/2020
19272	Kerry Education and Training Board	Cloon More, Tralee, Co. Kerry	(a) closure of existing site entrance at Kevin Barry Villas, new vehicular and pedestrian site entrance and secondary pedestrian entrance of proposed Bally Mullen Clash link relief road. This access includes a new internal access road for access to east of St Brigid's community centre, new pedestrian entrance to northeast of St Brigid's community centre. New boundary wall treatments generally (b) the project comprises the construction of a 600 pupil post primary school with connected sports hall and ESB sub station, 4 no ballcourts, new internal road with set down for buses and cars and accessing 55 no. Car parking spaces and associated ancillary landscaping and site works including reprofiling of material on site. The total development area is 7159 m2 plus 80 m2 external store.	Conditional	15/05/2019

[7] https://www.kerrycoco.ie/planning/online-planning-enquiry/

Application No.	Applicant	Location	Proposed Development	Decision	Grant Date
			Current site access is from Kevin Barry Villas, proposed site access will be from the approved part 8 Ballymullen Clash link relief road. Site area is 2.55 hectares.		
19655	Health Service Executive (HSE) South	University Hospital Kerry, Cloon More, Tralee Co. Kerry	Construction of waste compound including erection of security fencing, demolition of redundant oil bund, erection of demountable canopy, extension of hallway to create storm lobby and all associated site works.	Conditional	15/08/2019
20335	Tulfarris LTD	Cloon More, Boherbee Tralee, Co. Kerry	(A) demolish 2 no. Dwelling houses and associated outhouses and sheds (b) form new vehicular and pedestrian access (c) construct 6 no. One and a half storey 3 bedroom semi-detached dwellings, 6 no. 2 storey 3 bedroom and 6 no. 2 storey 2 bedroom dwellings, 7 no. 1 bedroom ground floor apartments and 7 no. 3 bedroom maisonettes in duplex format. (d) estate road, footpaths, boundary walls, services and all associated site works.	Refused	17/07/2020
211468	Sarah Kingston	No. 10, Cul Na Chlaishe, Clash, Tralee, Co. Kerry	Construct a new rear/side single storey extension to the existing dwelling house, including all associated ancillary site works.	Conditional	18/02/2022
21513	Tulfarris CG LTD	Cloon More, Tralee, Co. Kerry	(A) demolish two dwelling houses and ancillary works (b) construct new vehicular access to the site via 2 new road connections to the new school shared public access road accessed off the new Bally Mullen- Marion Park relief road. (c) construct 85 residential units, comprising 2 apartment buildings (containing 47 no. One or two bedroom apartments) 4 triplex buildings (each containing 6 one bedroom apartments, 12 two bedroom townhouses and 2 three bedroom townhouses. Including all associated works, roads, pavements and services.	Refused	07/07/2021
21740	Kerry Hospice Foundation LTD	Cloonmore, Rathass, Tralee, Co. Kerry	Erect a patio canopy to bedroom 15 at the existing palliative care inpatient unit together with ancillary site works.	Conditional	25/08/2021
22857	Jamie Lowham	56 Mitchel's Road, Tralee, Co. Kerry	Construct a two-story dwelling on his property with all ancillary site works associated with the application on site.	Conditional	20/04/2023

4.3.3 EPA Licenced/Registered Facilities

A review of EPA licensed operators within the area located an IEL Licensed premises 'Heiton Buckley Builders Merchants' (Licence No. P0347) on Edward Street, Tralee. This licence is now surrendered. There is also a historic IPPC Licensed facility 'Henry Denny & Sons Ltd.' (Licence No. P0161-01), formerly located at Rackett Lane, Tralee. This business premises has since been demolished and the site is being redeveloped. There are no licensed waste facilities in the surrounding area. Another surrendered IPPC was held by Amann Industries Limited located in Clash. The only current IPPC licenced facility is Sports Socks Co. (Ireland) Limited which is located northwest of the proposed development in the IDA Industrial Estate.

The Tralee Urban Wastewater Treatment (UWWT) Plant (Active License Number: D0040-01) is situated in Lohercannon, approximately 3 km west of the proposed development site. The Plant has a primary effluent emission point north of Blennerville that empties into Tralee Bay, which forms part of the Tralee Bay and Magharees Peninsula, West to Cloghane SAC and Tralee Bay Complex SPA. There are also several stormwater overflow emission points located along the River Lee and the Lee K Estuary. The latest compliance status for this plant is 'Pass'.

In light of the characteristics of the proposed development site and its surrounds, being located within a built-up area within Tralee town and in the absence of any watercourses draining the site as outlined in Section 4.2.4 above, and considering the size and scale of the proposal as outlined in Section 4.2.5 above, it is not envisaged that the project has any potential for interaction with any EPA licences/registered facilities, which could result in significant in-combination effects on Natura 2000 sites. However, based on the precautionary approach, the potential for in-combination effects as a result of the proposal will be evaluated in Section 4.6.7 below.

4.3.4 Existing Land-use and On-going Activities

Existing land-use within the proposed development site consists of an existing occupied residential building and derelict and unoccupied dwellings in an urban environment in the town centre of Tralee. Due to the nature, scale and location of the project, significant in-combination effects with existing land-use and on-going activities are not anticipated. An assessment of the potential for significant in-combination effects is discussed further in Section 4.6.7 below.

4.4 Identification of Natura 2000 Sites

4.4.1 Zone of Influence

The screening stage of Appropriate Assessment involves compiling a 'long list' of Natura 2000 sites within a potential zone of influence (ZOI). The ZOI of a proposed development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on the conservation interests of a Natura 2000 site.

Adopting the precautionary principle in identifying potentially affected Natura 2000 sites, it has been decided at this stage to include all SACs and SPAs within a 15 km radius of the proposal site (Section 4.4.2 below). Due to the nature and scale of the project under consideration, Natura 2000 sites outside this 15 km radius are considered to be outside the potential ZOI of the proposed development. Ultimately, the Natura 2000 sites identified at this stage may or may not be significantly impacted upon by the proposed development. These sites are characterised in the context of the rationale for designation and the qualifying features.

During later analysis, the list of Natura 2000 sites is evaluated in terms of the likely ZOI of the proposed development. The likely ZOI is established using the Source-Pathway-Receptor model. In order for an impact to occur there must be a risk initiated by having a 'source' (e.g. excavation), and an impact pathway between the

source and the receptor (e.g. a waterbody which connects the proposal site to the protected species or habitats). An evaluation based on these factors to determine which Natura 2000 sites are the plausible ecological receptors for potential impacts of the proposed development is conducted in Sections 4.6.1 and 4.6.2 below.

Once the Natura 2000 sites within the likely ZOI have been identified, an assessment is made in relation to these sites of the likely significance of the potential effects associated with the proposal (see Sections 4.6.3 to 4.6.7 below). As described above, the test for the screening for Appropriate Assessment is to assess, in view of best scientific knowledge, if the development, individually or in combination with other plans/projects, is likely to have a significant effect on a Natura 2000 site. If, following the assessment, there are any significant, potentially significant, or uncertain effects, it will be necessary to proceed to Appropriate Assessment and submit an NIS.

4.4.2 Identification of Natura 2000 Sites within the potential ZOI

Designated SACs and SPAs within the potential ZOI of the proposal, including their proximity, are shown in Table 4 below. The locations of these designated sites in relation to the proposed development site are shown on a map in Figure 6 below.

Table 4. Natura 2000 Sites within the potential ZOI (15 km radius of the proposal)

Designated Site	Site Code	Proximity of Designated Site to Nearest Point of Proposed development site	Hydrological/ Ecological Connection? (Yes/No)
Ballyseedy Wood SAC	002112	1.86 km	No
Tralee Bay Complex SPA	004188	2.1 km	No direct connection. Indirect connection
Tralee Bay and Magharees Peninsula, West to Cloghane SAC	002070	2.2 km	No direct connection. Indirect connection
Slieve Mish Mountains SAC	002185	3.34 km	No
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	004161	5.63 km	No
Akeragh, Banna and Barrow Harbour SAC	000332	9.94 km	No
Lower River Shannon SAC	002165	11.33 km	No
Castlemaine Harbour SAC	000343	11.6 km	No
Castlemaine Harbour SPA	004029	12.92 km	No

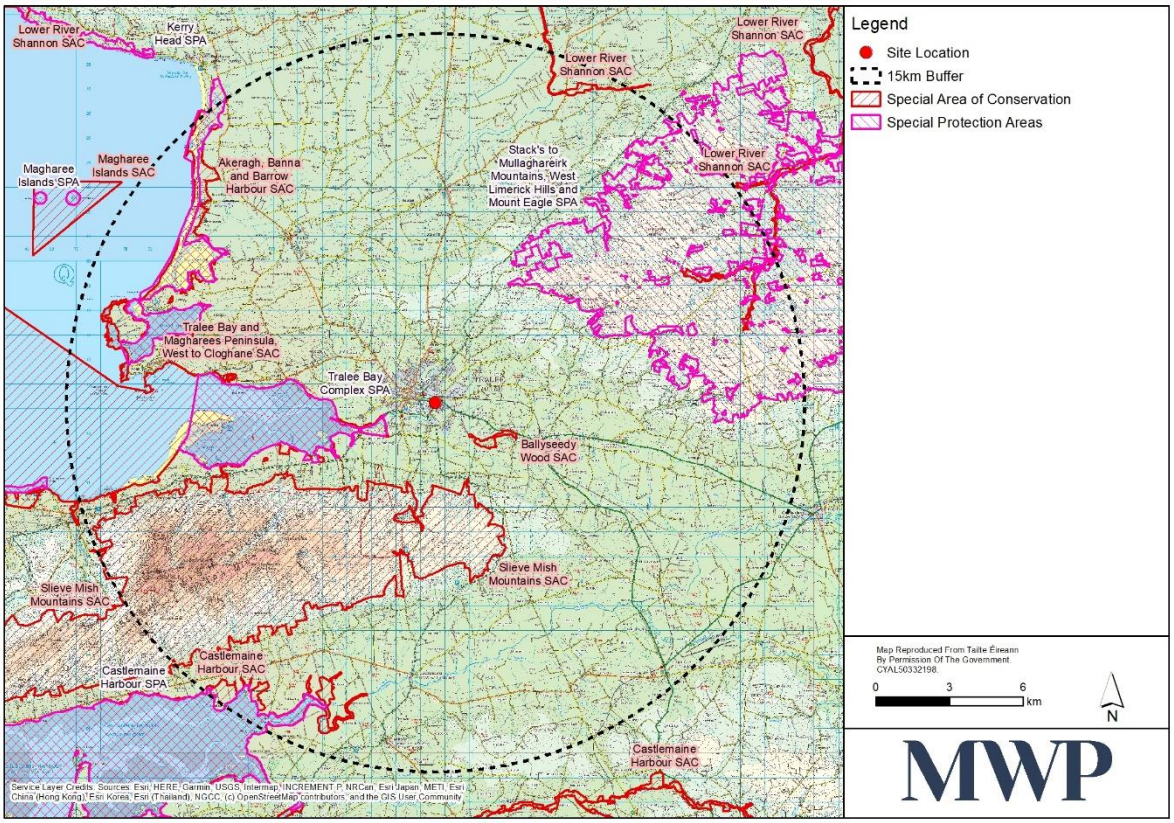

Figure 6. SACs and SPAs within 15 km radius of the proposed development site

4.4.3 Characteristics of Natura 2000 Sites

The following table lists the qualifying features of conservation interest for the Natura 2000 sites identified in the previous table. Information pertaining to the Natura 2000 sites is from site synopses, conservation objectives and other information available on www.npws.ie.

Table 5. Qualifying features of conservation interest of Natura 2000 sites within the potential ZOI

Designated Site	Site Code	Qualifying features of conservation interest
Ballyseedy Wood SAC	002112	• Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]
Tralee Bay Complex SPA	004188	• Whooper Swan (*Cygnus cygnus*) [A038] • Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] • Shelduck (*Tadorna tadorna*) [A048] • Wigeon (*Anas penelope*) [A050] • Teal (*Anas crecca*) [A052] • Mallard (*Anas platyrhynchos*) [A053] • Pintail (*Anas acuta*) [A054] • Scaup (*Aythya marila*) [A062] • Oystercatcher (*Haematopus ostralegus*) [A130] • Ringed Plover (*Charadrius hiaticula*) [A137] • Golden Plover (*Pluvialis apricaria*) [A140] • Grey Plover (*Pluvialis squatarola*) [A141] • Lapwing (*Vanellus vanellus*) [A142] • Sanderling (*Calidris alba*) [A144] • Dunlin (*Calidris alpina*) [A149]

Designated Site	Site Code	Qualifying features of conservation interest
		• Black-tailed Godwit (*Limosa limosa*) [A156] • Bar-tailed Godwit (*Limosa lapponica*) [A157] • Curlew (*Numenius arquata*) [A160] • Redshank (*Tringa totanus*) [A162] • Turnstone (*Arenaria interpres*) [A169] • Black-headed Gull (*Chroicocephalus ridibundus*) [A179] • Common Gull (*Larus canus*) [A182] • Wetland and Waterbirds [A999]
Tralee Bay and Magharees Peninsula, West to Cloghane SAC	002070	<u>Habitats</u> • Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • Coastal lagoons [1150] • Large shallow inlets and bays [1160] • Reefs [1170] • Annual vegetation of drift lines [1210] • Perennial vegetation of stony banks [1220] • *Salicornia* and other annuals colonising mud and sand [1310] • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] • Mediterranean salt meadows (*Juncetalia maritimi*) [1410] • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*) [2170] • Humid dune slacks [2190] • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] <u>Species</u> • *Lutra lutra* (Otter) [1355] • *Petalophyllum ralfsii* (Petalwort) [1395]
Slieve Mish Mountains SAC	002185	<u>Habitats</u> • Northern Atlantic wet heaths with *Erica tetralix* [4010] • European dry heaths [4030] • Alpine and Boreal heaths [4060] • Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110] • Calcareous rocky slopes with chasmophytic vegetation [8210] • Siliceous rocky slopes with chasmophytic vegetation [8220] <u>Species</u> • *Trichomanes speciosum* (Killarney Fern) [1421]
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	004161	• Hen Harrier (*Circus cyaneus*) [A082]
Akeragh, Banna and Barrow Harbour SAC	000332	<u>Habitats</u> • Annual vegetation of drift lines [1210] • *Salicornia* and other annuals colonising mud and sand [1310] • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] • Mediterranean salt meadows (*Juncetalia maritimi*) [1410]

Designated Site	Site Code	Qualifying features of conservation interest
		• Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • Humid dune slacks [2190] • European dry heaths [4030]
Lower River Shannon SAC	002165	<u>Habitats</u> • Sandbanks which are slightly covered by sea water all the time [1110] • Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • Coastal lagoons [1150] • Large shallow inlets and bays [1160] • Reefs [1170] • Perennial vegetation of stony banks [1220] • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • *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] • *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] <u>Species</u> • *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] • *Petromyzon marinus* (Sea Lamprey) [1095] • *Lampetra planeri* (Brook Lamprey) [1096] • *Lampetra fluviatilis* (River Lamprey) [1099] • *Salmo salar* (Salmon) [1106] • *Tursiops truncatus* (Common Bottlenose Dolphin) [1349] • *Lutra lutra* (Otter) [1355]
Castlemaine Harbour SAC	000343	<u>Habitats</u> • Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • Annual vegetation of drift lines [1210] • Perennial vegetation of stony banks [1220] • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • *Salicornia* and other annuals colonising mud and sand [1310] • Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] • Mediterranean salt meadows (Juncetalia maritimi) [1410] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • Dunes with *Salix repens* ssp. *argentea* (Salicion arenariae) [2170] • Humid dune slacks [2190]

Designated Site	Site Code	Qualifying features of conservation interest
		• Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Species • *Petromyzon marinus* (Sea Lamprey) [1095] • *Lampetra fluviatilis* (River Lamprey) [1099] • *Salmo salar* (Salmon) [1106] • *Lutra lutra* (Otter) [1355] • *Petalophyllum ralfsii* (Petalwort) [1395]
Castlemaine Harbour SPA	004029	• Red-throated Diver (*Gavia stellata*) [A001] • Cormorant (*Phalacrocorax carbo*) [A017] • Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] • Wigeon (*Anas penelope*) [A050] • Mallard (*Anas platyrhynchos*) [A053] • Pintail (*Anas acuta*) [A054] • Scaup (*Aythya marila*) [A062] • Common Scoter (*Melanitta nigra*) [A065] • Oystercatcher (*Haematopus ostralegus*) [A130] • Ringed Plover (*Charadrius hiaticula*) [A137] • Sanderling (*Calidris alba*) [A144] • Bar-tailed Godwit (*Limosa lapponica*) [A157] • Redshank (*Tringa totanus*) [A162] • Greenshank (*Tringa nebularia*) [A164] • Turnstone (*Arenaria interpres*) [A169] • Chough (*Pyrrhocorax pyrrhocorax*) [A346] • Wetland and Waterbirds [A999]

4.4.4 Conservation Objectives

According to the Habitats Directive, the *conservation status of a natural habitat* will be taken as 'favourable' within its biogeographic range when:

- its natural range and areas it covers within that range are stable or increasing, and
- 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 as defined below.

According to the Habitats Directive, the conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as 'favourable' within its biogeographical range when:

- 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, and
- 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.

Individual conservation objectives for each site are available on www.npws.ie. These have been accessed for the sites listed in the tables above on the 31st August 2023.

Site-specific conservation objectives were available for the following sites:

- Ballyseedy Wood SAC (002112). Version 1.0. Produced December 2021.
- Tralee Bay Complex SPA (004188). Version 1. Produced April 2014.
- Tralee Bay and Magharees Peninsula, West to Cloghane SAC (002070). Version 1. Produced February 2014.
- Slieve Mish Mountains SAC (002185). Version 1.0. Produced December 2021.
- Akeragh, Banna and Barrow Harbour SAC (000332). Version 1. Produced January 2017.
- Lower River Shannon SAC (002165). Version 0.1. Produced August 2012.
- Castlemaine Harbour SAC (000343). Version 2.0. Produced July 2011.
- Castlemaine Harbour SPA (004029). Version 2.0. Produced July 2011.

Generic conservation objectives were available for the following site:

- Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161). Generic version 1.0. Produced September 2022.

Management plans were not available for any of the sites. All conservation objectives together with other designated site information are available on www.npws.ie/protectedsites.

4.5 Identification of Potential Impacts

Potential likely direct, indirect or secondary ecological impacts arising from the proposed development (either alone or in combination with other plans or projects) are identified in this section.

Table 6. Description of elements of the project likely to give rise to potential ecological impacts

Construction Phase
• Site set-up, mobilisation, vegetation clearance • Excavation works • Demolition and construction activity • Importation/Stockpiling of material • Generation of waste/spoil/construction run-off • Use of plant, machinery, tools etc • Increased human activity, noise, lighting, dust • Use of fuels/oils/lubricants/chemicals/concrete/cementitious material • Treatment/management of invasive plant species on-site
Operational Phase
• Increased lighting • Increased human presence, activity, noise • An increase in stormwater runoff from the site due to the conversion of natural surfaces to artificial surfaces • An increase in foul wastewater discharge into public sewer system, adding pressure to the capacity of the wastewater treatment plant at Lohercannon. The treatment plant discharges treated water into Tralee bay, the location of Tralee Bay Complex SPA and Tralee Bay and Magharees Peninsula, West to Cloghane SAC. Any operational issues leading to the discharge of untreated water into the bay is a potential ecological impact.

Table 7. Direct, indirect or secondary ecological impacts of the construction and operational phases (either alone or in combination with other plans or projects) which have the potential for having significant effects

Describe any likely direct, indirect or secondary ecological impacts of the project (either alone or in combination with other plans or projects) by virtue of: • *Size and scale;* • *Land-take;*	There is no overlap with any Natura 2000 site or direct hydrological connection between the proposed development site and any Natura 2000 site. **Construction Phase** Habitat loss/alteration/fragmentation • There will be direct habitat loss/alteration within the construction works footprint, but no overlap with Natura 2000 sites (no loss of Annex I qualifying habitat

• *Distance from Natura 2000 Site or key features of the Site;* • *Resource requirements;* • *Emissions;* • *Excavation requirements;* • *Transportation requirements;* • *Duration of construction, operation etc.; and* • *Other.*	<u>Water quality</u> Impacts may potentially occur through: • Erosion and run-off of sediment and silt from excavation areas, disturbed ground, plant and machinery etc. • Use of chemical herbicides for treatment of invasive plant species • Ingress of fuels/oils, cementitious material, or other such substances to groundwater via leaching • Use of on-site temporary toilets and washing facilities <u>Species disturbance/displacement</u> Impacts to habitats and species not related to any Natura 2000 sites may potentially occur through: • construction noise/vibration/lighting • increased human presence • impacts on prey availability • loss of and alteration of breeding/resting/foraging/commuting or other required habitat **Operational Phase** <u>Water quality</u> • Wastewater discharge to public foul system • Increase in stormwater runoff <u>Species disturbance/displacement</u> Impacts may potentially occur through: • increased human presence/noise • increased light levels • impacts on prey availability • indirect alteration of foraging/commuting habitat

4.6 Assessment of Significance of Potential Impacts

This section considers the list of sites identified in Section 4.4.2 above, together with the potential ecological impacts identified in the previous section and determines whether the project is likely to have significant effects on a Natura 2000 site. When assessing impact, Natura 2000 sites are only considered relevant where a credible or tangible source-pathway-receptor link exists between the proposed development and a protected species or habitat type. The evaluation takes cognisance of the scope, scale, nature and size of the project, its location relative to the Natura 2000 sites listed identified in Section 4.4.2 above, and the degree of connectedness that exists between the project and each Natura 2000 site's potential ecological receptors.

4.6.1 Natura 2000 sites outside the likely Zone of Influence

With regards to the proposal, it is considered that certain Natura 2000 sites are located outside the likely ZOI of the proposal due to the absence of plausible impact pathways and/or the attenuating effect of the distance intervening, and as such the works do not include any element that has the potential to significantly affect the conservation objectives for which these sites are designated.

Therefore, it is objectively concluded that significant effects on the conservation objectives of these sites are not reasonably foreseeable as a result of the proposed development described at Section 4.2.5. These sites, which are listed in Table 8 below, along with their distance from the proposed development site and the rationale for exclusion, are excluded from further consideration within this report.

Table 8. Natura 2000 Sites excluded from further consideration

Designated Site	Site Code	Proximity of Designated Site to Nearest Point of Proposed development site	Rationale for Exclusion
Ballyseedy Wood SAC	002112	The SAC is located approx. 1.86 km to the south-east	- There is no spatial overlap or hydrological connection between the proposed development site and the SAC. - No plausible impact pathways for either habitats or species effects have been identified. - No potential for direct habitat loss - No potential for significant effects.
Slieve Mish Mountains SAC	002185	The SAC is located 3.34 km to the south	- There is no spatial overlap or hydrological connection between the proposed development site and the SAC. - No plausible impact pathways for either habitats or species effects have been identified. - No potential for significant effects.
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	004161	The SPA is located 5.63 km to the east	- No spatial overlap between the proposed development site and the SPA (intervening distance of 5.63km) - Habitats recorded within the proposed development site are not suitable for any of the qualifying species - No potential for direct habitat loss - No direct hydrological connection between the proposed development site and the SPA - No significant indirect habitat effects envisaged
Akeragh, Banna and Barrow Harbour SAC	000332	The SAC is located approx. 9.94 km to the northwest	- No spatial overlap between the proposed development site and the SAC (intervening distance of 9.94km) - No potential for direct habitat loss - No significant indirect habitat effects envisaged

Designated Site	Site Code	Proximity of Designated Site to Nearest Point of Proposed development site	Rationale for Exclusion
Lower River Shannon SAC	002165	The SAC is located approx. 11.33 km to the northeast	- No spatial overlap between the proposed development site and the SAC (intervening distance of 11.33 km) - No potential for direct habitat loss - No hydrological connection between the proposed development site and the SAC - No plausible impact pathway for indirect habitat effects - No significant indirect habitat effects envisaged
Castlemaine Harbour SAC	000343	The SAC is located approx. 11.6 km to the south	- There is no spatial overlap or hydrological connection between the proposed development site and the SAC. - No plausible impact pathways for either habitats or species effects have been identified. - No potential for significant effects
Castlemaine Harbour SPA	004029	The SPA is located approx. 12.92 km to the south	- Intervening distance between the proposed development site and the SPA. - Habitats recorded within the proposed development site are not suitable for qualifying species. - No plausible impact pathway for qualifying species effects has been identified. - No potential for significant effects.

4.6.2 Natura 2000 sites within the likely Zone of Influence

The assessment of significance of potential effects that follows focuses on the two remaining Natura 2000 sites identified in Table 4 above, as it is considered that these sites have the potential to be impacted by the proposal. The rationale for inclusion for further consideration and evaluation for these sites is outlined in Table 9 below.

Table 9. Natura 2000 sites included for further evaluation

Designated Site	Site Code	Proximity of Designated Site to Nearest Point of Proposed development site	Rationale for Inclusion
Tralee Bay Complex SPA	004188	The SPA is located approx. 2.1 km to the west	- Foul sewer water from the operational stage of the development will be discharged into the public sewer system. The proposed development site will be connected indirectly to the SPA via the public wastewater treatment plant in Lohercannon which discharges treated water directly into Tralee Bay. - Due to the indirect connection between the development and the SPA, there is potential for effects and further assessment is required. - Stormwater will be treated on site using standard best-practice SUDs measures. Therefore, there will be no indirect impact on the SPA from stormwater entering the public system.

Designated Site	Site Code	Proximity of Designated Site to Nearest Point of Proposed development site	Rationale for Inclusion
Tralee Bay and Magharees Peninsula, West to Cloghane SAC	002070	The SAC is located approx. 2.2 km to the west	- Foul sewer water from the operational stage of the development will be discharged into the public sewer system. The proposed development site will be connected indirectly to the SAC via the public wastewater treatment plant in Lohercannon which discharges treated water directly into Tralee Bay. - Due to the indirect connection between the development and the SAC, there is potential for effects and further assessment is required. - Stormwater will be treated on site using standard best-practice SUDs measures. Therefore, there will be no indirect impact on the SAC from stormwater entering the public system.

The likelihood of significant effects from the project to the Natura 2000 sites outlined above was determined based on several indicators including:

- Water quality
- Habitat loss/alteration
- Disturbance and/or displacement of species
- Habitat or species fragmentation

The likelihood of significant in-combination effects is assessed in Section 4.6.7.

4.6.3 Water Quality

There are no watercourses, other drainage features or waterbodies within the proposed development site. Therefore, there is no potential for the direct discharge of polluted water into any Natura 2000 sites. The closest mapped watercourse, the Lee, is located approximately 700m to the south of the site (see Section 4.2.4.2 above). With regard to the proposal, there will be no direct impacts on water quality of these water features during the construction phase and operational phase.

4.6.3.1 Construction phase impacts

Construction works in general can pose a risk to the aquatic environment via a number of mechanisms. Excavation works, ground movement and disturbance, and the storage and stockpiling of materials can result in sediment erosion and run-off which can lead to siltation of the aquatic environment. The use of plant and machinery poses a risk of accidental ingress of fuel, oils, lubricants to the aquatic environment, as does on-site storage of these and other such substances. Use of concrete and other cementitious materials, generation of washout and use of chemicals also poses a risk to water quality. In general, such materials can enter the aquatic environment via direct discharges to drainage features, overland flow and/or leaching to groundwater in the event of a spillage/leakage.

With regard to any IAPS treatment plans, the treatment of invasive plant species via chemical herbicide can also, in general, pose a risk to the aquatic environment via direct discharges to drainage features, overland flow and/or leaching to groundwater in the event of a spillage/leakage. During the MWP multi-disciplinary ecological field

surveys of the site, several invasive plant species listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2015) were recorded, including Japanese knotweed (occurring behind the derelict semi-detached dwelling), butterfly bush (occurring along the western site border near the Boherbee access point) and cherry laurel (occurring as dense stands along the laneway leading to Cluain Mór House). There was also a small area at the northern end of the driveway where montbretia and snowberry were present.

With regard to potential indirect water quality impacts via siltation, it is considered that the proposed construction works will generate little localised run-off as the site is flat and any water runoff from construction works will be contained on site using a temporary drainage system utilising French drains. Implementation of construction industry best practice guidelines (Construction Industry Research and Information Association – CIRIA guidance) and the CEMP which has been prepared for the development is noted.

With regard to potential indirect water quality impacts associated with the generation of sewage/wastewater from the use of temporary welfare facilities during the construction phase, it is noted that these facilities will be maintained accordingly by an approved and permitted contractor who will remove effluent to a licenced facility for disposal. Therefore, this aspect of the proposal is not considered to have any potential for significant effects to Natura 2000 sites.

4.6.3.2 Operational phase

With regard to the potential for indirect water quality impacts associated with wastewater generation from the operational development, the site will connect to the public foul sewerage system. In summary, wastewater will be discharged to the existing public foul system from where it will discharge to Lohercannon Wastewater treatment plant for tertiary[8] treatment. The treated effluent will then be discharged from the plant into Tralee Bay, which is within the footprint of the Tralee Bay and Magharees Peninsula, West to Cloghane SAC and Tralee Bay Complex SPA.

Currently, the treatment plant is not working at full capacity; the plant design population equivalent (PE) is 50,333, and the agglomeration PE is 32,637[9]. The latest Plant Compliance is 'Pass'. Feasibility of the proposed connection has been confirmed by a Pre-Connection Enquiry Review from Irish Water. Wastewater generation from the operational stage of the proposed development is unlikely to cause water quality impacts within the Tralee Bay and Magharees Peninsula, West to Cloghane SAC and Tralee Bay Complex SPA.

Connecting the proposed development site to public water and foul sewerage networks is subject to no stormwater permitted to enter the public foul sewer. MWP have designed nature-based solutions for dealing with surface water run-off at the proposed development site. These solutions include infiltration areas, rain gardens, and swales. These solutions are further described in the SuDS measures prepared by MWP for the proposed development (MWP, 2023) and will involve the storage of stormwater in underground cellular attenuation tanks. These tanks will allow runoff to infiltrate naturally through the soil beneath and into the ground water. As the site does not overlap with or have any hydrological connection with any Natura 2000 sites, and stormwater will be treated onsite, potential water quality impacts from the proposed development site during the operational stage is unlikely.

In summary, significant direct or indirect water quality impacts on any Natura 2000 sites as a result of the proposal are not considered likely. The potential for indirect impacts on qualifying aquatic habitats and species are discussed in the following sections.

[8] https://leap.epa.ie/licence-profile/D0040
[9] https://gis.epa.ie/EPAMaps/SewageTreatment

4.6.4 Habitat Loss and Alteration

4.6.4.1 Tralee Bay and Magharees Peninsula, West to Cloghane SAC

There is no spatial overlap or direct hydrological connection between the proposed development site and the Tralee Bay and Magharees Peninsula, West to Cloghane SAC. Therefore, there will be no direct loss/alteration of any of the qualifying habitats of conservation interest for which this site is designated.

There is no likelihood of potential direct or indirect loss or alteration of any of the following designated terrestrial habitats:

- Annual vegetation of drift lines [1210]
- Perennial vegetation of stony banks [1220]
- Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
- Salicornia and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Embryonic shifting dunes [2110]
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]
- Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
- Dunes with Salix repens ssp. argentea (*Salicion arenariae*) [2170]
- Humid dune slacks [2190]
- Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]

With regard to potential habitat impacts, the SAC is designated for the following marine/aquatic habitats:

- **Estuaries [1130]** the Lohercannon wastewater treatment plant discharge location[10] is within the footprint of this habitat.
- **Mudflats and sandflats not covered by seawater at low tide [1140]** the Lohercannon wastewater treatment plant discharge location is within the footprint of this habitat.
- **Large shallow inlets and bays [1160]** the Lohercannon wastewater treatment plant discharge location is approx. 1.1 km east of the footprint of this habitat.
- **Reefs [1170]** the closest reef is 200m from the Lohercannon wastewater treatment plant discharge location.

Section 4.6.3.2, above, has identified that indirect impacts from foul wastewater from the operational stage of the proposed development is unlikely to have significant water quality effects on any Natura 2000 sites. Therefore, it is unlikely there will be any habitat loss and alteration of aquatic/marine qualifying habitats within the SAC resulting from the proposed development.

4.6.4.2 Tralee Bay Complex SPA

The E.U. Birds Directive pays particular attention to wetland habitats, which forms part of the Tralee Bay Complex SPA. The site and its associated wetland habitats support a large assemblage of bird species. Wetlands are of special conservation interest for this SPA.

[10] https://gis.epa.ie/EPAMaps/SewageTreatment

There is no spatial overlap or direct hydrological connection between the proposed development site and the Tralee Bay Complex SPA. Therefore, there will be no direct loss/alteration of the qualifying wetland habitat of conservation interest for which this site is designated.

Section 4.6.3.2 above has concluded that significant indirect water quality impacts as a result of the discharge of wastewater to Lohercannon WWTP are not likely; therefore, the conclusions drawn for Tralee Bay and Magharees Peninsula, West to Cloghane SAC (see Section 4.6.4.1 above) will also be applied to the Tralee Bay Complex SPA. It is unlikely there will be any significant habitat loss and alteration within the SPA resulting from the proposed development.

4.6.5 Disturbance and/or Displacement of Species

4.6.5.1 Tralee Bay and Magharees Peninsula, West to Cloghane SAC

There is no spatial overlap or direct hydrological connection between the proposed development site and the Tralee Bay and Magharees Peninsula, West to Cloghane SAC. The following are qualifying species of interest for the SAC:

- Otter (*Lutra lutra*) [1355]
- Petalwort (*Petalophyllum ralfsii)* [1395]

Otter and petalwort are species listed on Annex II of the EU Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna) and are therefore protected through the designation of SACs. Additionally, Petalwort is listed on the Flora (Protection) Order, 2022, making it 'illegal to cut, uproot or damage the listed species in any way, or to offer them for sale[11]'.

Otter

There is no suitable habitat for otter present within the boundary of the proposed development, and neither is there any connectivity to suitable habitat. There are also no existing records from the NBDC or NPWS of otter within the site boundary of the proposed development. Disturbance and/or displacement of this species due to direct potential impacts is therefore unlikely to occur. The closest record of otter within hectad Q81, as described in Section 4.2.4.5, is 0.7 km from the site boundary.

Otter is found throughout most coastal habitats and has been recorded around Tralee Bay (see Section 4.2.4.5 above). Otter is known to be sensitive to water pollution and records from the NBDC show the species occurring within 500 m of the Lohercannon WWTP discharge location. However, as per Section 4.6.3.2, significant water quality impacts within Tralee Bay are not envisaged and therefore significant disturbance and/or displacement of otter as a result of the proposed development is not likely.

Petalwort

Petalwort is a pioneering species of liverwort found in areas of bare, moist, stable sand or on short turf, mainly on mildly to strongly base rich dune slacks and machair where the habitat can be subject to inundation in the winter (NPWS, 2019).

There is no suitable habitat for petalwort present within the boundary of the proposed development, nor was this species recorded during field surveys at the proposed development site. There is also no connectivity to suitable habitat or spatial overlap with the SAC. There are no existing records from the NBDC or NPWS of petalwort within the site boundary of the proposed development, or within hectad Q81.

[11] https://www.npws.ie/legislation/irish-law/flora-protection-order-1999

Due to the nature and location of the works, significant disturbance/displacement effects on petalwort within the SAC are not likely. Petalwort is a terrestrial species found on coastal dunes. It is objectively concluded that significant disturbance or displacement impacts to the QI species petalwort a result of the proposed development are not predicted and thus significant effects on the SAC are not likely in this regard.

4.6.5.2 Tralee Bay Complex SPA

Tralee Bay Complex SPA is of high ornithological importance as it supports over 20,000 wintering waterbirds of various species, including an internationally important population of light-bellied brent goose *Branta bernicla hrota,* and nationally important populations of 21 other species. These bird species utilise the estuarine and coastal habitats within the sites and surrounding areas for feeding and roosting. Three species listed on Annex I of the E.U. Birds Directive regularly occur at the SPA; whooper swan *Cygnus cygnus*, golden plover *Pluvialis apricaria*, and bar-tailed godwit *Limosa limosa*.

The following are qualifying species of interest for the SAC:

- Whooper Swan [A038]
- Light-bellied Brent Goose [A046]
- Shelduck (*Tadorna tadorna*) [A048]
- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Mallard (*Anas platyrhynchos*) [A053]
- Pintail (*Anas acuta*) [A054]
- Scaup (*Aythya marila*) [A062]
- Oystercatcher (*Haematopus ostralegus*) [A130]
- Ringed Plover (*Charadrius hiaticula*) [A137]
- Golden Plover [A140]
- Grey Plover (*Pluvialis squatarola*) [A141]
- Lapwing (*Vanellus vanellus*) [A142]
- Sanderling (*Calidris alba*) [A144]
- Dunlin (*Calidris alpina*) [A149]
- Black-tailed Godwit [A156]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]
- Turnstone (*Arenaria interpres*) [A169]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Common Gull (*Larus canus*) [A182]
- Wetland and Waterbirds [A999]

Human wastewater discharged into estuaries and other wetland habitats are known to have negative impacts on bird species populations (Alves et al., 2012; Murray and Hamilton, 2010). With regard to the potential for indirect disturbance or displacement of SCIs via potential water quality/indirect habitat alteration impacts, it has been determined in Section 4.6.3.1 and Section 4.6.3.2 above that significant water quality impacts and/or indirect habitat alteration are not likely as a result of the proposed development.

4.6.6 Habitat or Species Fragmentation

Habitat fragmentation has been defined as 'reduction and isolation of patches of natural environment' (Hall *et al.*, 1997 cited in Franklin *et al.*, 2002) which results in spatial separation of habitat areas which had previously been in a state of greater continuity. Adverse effects of habitat fragmentation on species include the increased isolation of populations which can detrimentally impact on the resilience or robustness of the populations.

The preceding sections have concluded that there is no potential for direct habitat loss/alteration. Therefore, the potential for significant habitat or species fragmentation effects can be ruled out at this stage, and thus further assessment is not required.

4.6.7 In-combination Effects

As well as singular effects, the potential for in-combination effects also need to be considered. A cumulative impact arises from incremental changes caused by other past, present or reasonably foreseeable future actions together with the proposed development. The proposal was considered in combination with other relevant plans, projects and activities in the area, identified in Section 4.3 above.

No significant cumulative impacts are predicted with the Kerry CDP, as outlined in Section 4.3.1 above, as each plan has a range of environmental and natural heritage policy safeguards in place. These safeguards that protect the natural environment and Natura 2000 Sites will also apply to the proposal described in this report.

With regards to Lohercannon UWWT plant it is understood that the plant is currently operating in full accordance with its current Licence conditions.

No significant in-combination effects are considered likely as a result of interaction between the proposed development and any plans, other projects or activities.

4.7 Conclusion of Screening Stage

This report for screening for Appropriate Assessment was compiled to assist the competent authority in carrying out the screening for Appropriate Assessment.

It has been objectively concluded, during the screening process, that the following Natura 2000 sites within the potential zone of impact influence of the proposed development are not likely to be significantly affected by the proposal considered in this report. These sites are:

- Ballyseedy Wood SAC (002112)
- Tralee Bay Complex SPA (004188)
- Tralee Bay and Magharees Peninsula, West to Cloghane SAC (002070)
- Slieve Mish Mountains SAC (002185)
- Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (004161)
- Akeragh, Banna and Barrow Harbour SAC (000332)
- Lower River Shannon SAC (002165)
- Castlemaine Harbour SAC (000343)
- Castlemaine Harbour SPA (004029)

It is concluded that, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will not have a significant effect on the aforementioned Natura 2000 sites, in view of the site's conservation objectives, and therefore Stage 2 Appropriate Assessment is not required in relation to the proposal described in this report.

Reasons for Conclusion

- The works of the proposed development are not complex in nature and will be contained and controlled.
- There is no spatial overlap between the proposed works and any Natura 2000 site.
- There is no direct hydrological connection between the proposed works and any Natura 2000 site.
- Significant water quality effects on Natura 2000 sites arising as a result of the proposal are not likely.
- No direct loss or alteration of habitats in Natura 2000 sites will occur.
- No significant disturbance or displacement of qualifying interest species is likely.
- No significant habitat or species fragmentation arising as a result of the proposal is likely.
- Significant cumulative/in-combination effects through interaction between the proposal and other plans, projects and activities are not likely.
- Therefore, it is objectively concluded that significant effects on these Natura 2000 sites in light of the sites Conservation Objectives are not likely.

5. References

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Appendix 1

Finding of No Significant Effects Matrix

FINDING OF NO SIGNIFICANT EFFECTS MATRIX	
Name of project or plan	Cloonmore Regeneration LRD, Tralee, co. Kerry
Name and location of Natura 2000 site	Ballyseedy Wood SAC (Site code: 002112) Tralee Bay Complex SPA (Site code: 004188) Tralee Bay and Magharees Peninsula, West to Cloghane SAC (Site code: 002070) Slieve Mish Mountains SAC (Site code: 002185) Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (Site code: 004161) Akeragh, Banna and Barrow Harbour SAC (Site code: 000332) Lower River Shannon SAC (Site code: 002165) Castlemaine Harbour SAC (Site code: 000343) Castlemaine Harbour SPA (Site code: 004029)
Description of the project	Large Residential Development (LRD) at Cloonmore, Tralee, Co. Kerry (hereafter referred to as the 'proposed development site'). Permission is being sought for the construction of 147 dwelling units at a density of 95 dwellings per hectare including all associated ancillary development including parking, footpaths, connection to mains water supply, foul and storm water drainage, landscaping and amenity areas at the proposed development. 125 apartments and 18 townhouse units.
Is the project or plan directly connected with or necessary to the management of the site?	No
Are there other projects or plans that together with the project or plan being assessed could affect the site	No
THE ASSESSMENT OF SIGNIFICANCE OF EFFECTS	
Describe how the project or plan (alone or in combination) is likely to affect the Natura 2000 site(s).	Likely significant effects are not likely for any Natura 2000 sites as a result of the proposed development.
List of agencies consulted: provide contact name and telephone or e- mail address.	N/A
Response to consultation.	N/A
DATA COLLECTED TO CARRY OUT THE ASSESSMENT	
Who carried out the assessment?	Orla van der Noll BSc MSc, Ecologist with Malachy Walsh and Partners (MWP)
Sources of data	Refer to references.
Level of assessment completed	Stage 1 AA.

Appendix 2

Stages of Appropriate Assessment

Stage 1 - Screening

This is the first stage of the Appropriate Assessment process and that undertaken to determine the likelihood of significant impacts as a result of a proposed project or plan. It determines need for a full Appropriate Assessment.

If it can be concluded that no significant impacts to Natura 2000 Sites are likely then the assessment can stop here. If not, it must proceed to Stage 2 for furthermore detailed assessment.

Stage 2 - Natura Impact Statement (NIS)

The second stage of the Appropriate Assessment process assesses the impact of the proposal (either alone or in combination with other projects or plans) on the integrity of the Natura 2000 Site with respect to the conservation objectives of the site and its ecological structure and function. This is a much more detailed assessment than Stage 1. A Natura Impact Statement containing a professional scientific examination of the proposal is required and includes any mitigation measure to avoid, reduce or offset negative impacts.

If the outcome of Stage 2 is negative i.e. adverse impacts to the sites cannot be scientifically ruled out, despite mitigation, the plan or project should proceed to Stage 3 or be abandoned.

Stage 3 - Assessment of alternative solutions

A detailed assessment must be undertaken to determine whether alternative ways of achieving the objective of the project/plan exists.

Where no alternatives exist the project/plan must proceed to Stage 4.

Stage 4 - Assessment where no alternative solutions exist and where adverse impacts remain

The final stage is the main derogation process examining whether there are imperative reasons of overriding public interest (IROPI) for allowing a plan or project to adversely affect a Natura 2000 Site where no less damaging solution exists.

Appendix 3
Site Synopsis

Site Name: Ballyseedy Wood SAC

Site Code: 002112

Ballyseedy Wood lies south of the River Lee, some 2 km south-east of Tralee, Co. Kerry. Most of the wood is situated in the floodplain of the River Lee on sticky, gleyed clay.

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):

[91E0] Alluvial Forests*

The woodland at the site is dominated by native tree species: Ash (*Fraxinus excelsior*), Alder (*Alnus glutinosa*), Rusty Willow (*Salix cinerea* subsp. *oleifolia*) and Hazel (*Corylus avellana*), with oak (*Quercus* spp.), Yew (*Taxus baccata*), elm (*Ulmus* sp.) and Spindle (*Euonymus europaeus*) also occurring. Non-native tree species found include Sycamore (*Acer pseudoplatanus*), Horse-chestnut (*Aesculus hippocastanum*), poplar (*Populus* sp.), Beech (*Fagus sylvatica*) and Hornbeam (*Carpinus betulus*). Three semi-natural woodland types are represented - areas dominated by Alder and Ash (following and adjacent to the River Lee); areas dominated by Ash and Hazel (on sloping, better-drained soil, mostly in the western half of the site); and areas dominated by Alder and Rusty Willow (on level sections further removed from the river).

The Alder/Ash-dominated woodland is a high canopy wood. The very large Alder trees present were probably planted, but much of the secondary regeneration is also very mature, being up to 100 years old. Sycamore, Horse-chestnut, poplar and Beech can also be found here. In the understorey species such as Hawthorn (*Crataegus monogyna*), Holly (*Ilex aquifolium*), elm, Spindle and Guelder-rose (*Viburnum opulus*) are found. The Alder/Ash-dominated woodland conforms well with the woodland type 'Alluvial Forest', listed with priority status on Annex I of the E.U. Habitats Directive.

The Ash/Hazel-dominated woodland is also mature, with Sycamore, Hornbeam and Beech also present. Hazel is frequent in the sub-canopy, with Hawthorn and the occasional elm also occurring.

The Alder/willow woodland stands are, for the most part, dominated by Alder, with Rusty Willow occurring as scattered trees.

The ground flora is represented by Wild Angelica (*Angelica sylvestris*), Meadowsweet (*Filipendula ulmaria*), Golden-saxifrage (*Chrysosplenium oppositifolium*), Enchanter's-nightshade (*Circaea lutetiana*), Soft Shield-fern (*Polystichum setiferum*), Broad Buckler-fern (*Dryopteris dilatata*), Scaly Male-fern (*Dryopteris affinis*), Thin-spiked Wood-sedge (*Carex strigosa*), Remote Sedge (*C. remota*) and Pendulous Sedge (*C. pendula*).

Several plant species which are nationally or locally scarce are found on the site, including Rough Horsetail (*Equisetum hyemale*), Thin-spiked Wood-sedge, Dark-leaved Willow (*S. myrsinifolia*) and Wood Horsetail (*E. sylvaticum*). The rare moss *Pylaisia polyantha*, a species known in Ireland only from Counties Donegal, Kerry and Mayo, has also been recorded from the site.

Ballyseedy Wood is a nesting site for Long-eared Owl, and the river is frequented by Otters, a species listed on Annex II of the E.U. Habitats Directive.

The site is undisturbed and apparently infrequently visited by man. Non-native tree species are present within the site but account for less than 30% of the woodland. Exotic and potentially invasive species present include Rhododendron (*Rhododendron ponticum*), Snowberry (*Symphoricarpos albus*), Cherry Laurel (*Prunus laurocerasus*), Japanese Knotweed (*Reynovtria japonica*) and Bamboo. These are, however, localised within the site and are not found throughout

the woodland. In fact, some stands of woodland are remarkable for the complete absence of exotic species.

Ballyseedy Wood is of prime importance for its Alder/Ash-dominated woodland stands, a habitat type that is rare and threatened in Europe. The site is also of significance for several rare or scarce plant species that occur there. The scarcity of woodlands in north Kerry adds to the importance of the site.

SITE NAME: TRALEE BAY COMPLEX SPA

SITE CODE: 004188

The Tralee Bay Complex SPA is located along the coast of north Co. Kerry between Ballyheige in the north, Tralee in the east and Stradbally in the west. The site includes the inner part of Tralee Bay, including Derrymore Island, the inlets of Barrow Harbour and Carrahane Strand, Akeragh Lough, Lough Gill, and much of the intertidal habitat from Scraggane Point at the northern end of the Magharees Peninsula around the coast to *c*. 2 km south of Ballyheige. Inner Tralee Bay is well sheltered by the Derrymore Island peninsula. The intertidal sediments vary from muddy sands on the upper shore to firm rippled sands on the lower, more exposed shore. The sediments have a diverse macro-invertebrate fauna, with such species as Cockle (*Cerastoderma edule*), Lugworm (*Arenicola marina*), Ragworm (*Hediste diversicolor*), Baltic Tellin (*Macorna balthica*) and Shrimp (*Crangon crangon*) occurring. The intertidal flats have extensive beds of Eelgrass (*Zostera* spp.).

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Whooper Swan, Light-bellied Brent Goose, Shelduck, Wigeon, Teal, Mallard, Pintail, Scaup, Oystercatcher, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Sanderling, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Turnstone, Black-headed Gull and Common Gull. It is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Tralee Bay Complex SPA is an internationally important wetland for wintering waders and wildfowl. It supports an internationally important population of Light-bellied Brent Goose (1,412) and nationally important populations of a further 21 species, i.e. Whooper Swan (101), Shelduck (220), Wigeon (1,634), Teal (623), Mallard (571), Pintail (54), Scaup (892), Oystercatcher (1,011), Ringed Plover (344), Golden Plover (6,393), Grey Plover (195), Lapwing (6,106), Sanderling (228), Dunlin (2,444), Black-tailed Godwit (139), Bar-tailed Godwit (608), Curlew (1,170), Redshank (635), Turnstone (229), Black-headed Gull (1,320) and Common Gull (599) – all figures are five year mean peak counts for the period 1995/96 to 1999/2000, except the gulls which are four year mean peak counts for the period 1996/97 to 1999/2000.

Tralee Bay Complex SPA is of high ornithological importance as it annually supports over 20,000 wintering waterbirds, including an international important population of Light-bellied Brent Goose and nationally important populations of 21 other species. It is of note that three of the species that regularly occur, Whooper Swan, Golden Plover and Bar-tailed Godwit, are listed on Annex I of the E.U. Birds Directive. Tralee Bay is a Ramsar Convention site and parts of the Tralee Bay Complex SPA are designated as Nature Reserves. Lough Gill is a Wildfowl Sanctuary.

Site Name: Tralee Bay and Magharees Peninsula, West to Cloghane SAC
Site Code: 002070

This large site in Co. Kerry stretches from Tralee town westwards to Fenit Harbour and Cloghane, encompassing Tralee Bay, Brandon Bay and the Magharees Peninsula. It includes extensive mudflats at the eastern end, the beaches of Derrymore Island, the sand dunes and lagoons of the Magharees Peninsula, as well as the rocky headlands at its end. The site includes two Statutory Nature Reserves, Tralee Bay and Derrymore Island, and much of the estuarine part of the site has been designated a Special Protection Area (SPA) for birds and their habitats.

The site is mostly underlain by limestone, but significant parts of this are covered with glacial drift or windblown sand. The main exposures occur at Fenit port, Oyster Hall, Blennerville and at Rough Point and Fahamore, but there are some other low outcrops on the beaches west to Castlegregory. Elsewhere the sandstones and slates of the Dingle Beds appear.

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
[1150] Coastal Lagoons*
[1160] Large Shallow Inlets and Bays
[1170] Reefs
[1210] Annual Vegetation of Drift Lines
[1220] Perennial Vegetation of Stony Banks
[1310] *Salicornia* Mud
[1330] Atlantic Salt Meadows
[1410] Mediterranean Salt Meadows
[2120] Marram Dunes (White Dunes)
[2130] Fixed Dunes (Grey Dunes)*
[2170] Dunes with Creeping Willow
[2190] Humid Dune Slacks
[6410] *Molinia* Meadows
[91E0] Alluvial Forests*
[1355] Otter (*Lutra lutra*)
[1395] Petalwort (*Petalophyllum ralfsii*)

Both the Tralee and Brandon (Owenmore) estuaries feature wide expanses of sheltered intertidal flats, often fringed with saltmarsh vegetation. Plant species are typically scarce on the flats, although there are some eelgrass (*Zostera* spp.) beds and patches of green algae (e.g. *Ulva* spp. and *Enteromorpha* spp.). The eelgrass beds at Derrymore Island include *Zostera noltii*, a species which has a limited distribution in Ireland. A variety of polychaetes (worms) and bivalve molluscs are also present in the intertidal sections.

The majority of Tralee Bay is shallow and composed of sublittoral sediments. In the more sheltered areas of the bay, there is a variety of important sublittoral sediment communities in which a number of rare species occur. Seagrass beds in sandy substrates are characterized by oysters and the rare anemone *Calliactis parasitica* which lives on shells inhabited by the hermit crab *Pagurus bernhardus*. The little known hydroid, *Laomedia angulata*, is also found on the fronds of the seagrass. The native

oyster, *Ostrea edulis,* occurs in sediment communities throughout the bay. Maerl beds, composed of the free-living coralline algae *Lithothamnion corallioides* and *Phymatolithon calcareum*, and characterized by anemones (*Anthopleura balli*) and oysters, occur in the middle of the bay. The rare anemone *Halcampa chrysanthellum* has been recorded here.

The intertidal reefs of Tralee Bay and the Magharees peninsula range from being exposed to sheltered from wave action, and the communities present are good examples of the communities typically found on these types of shores. The barnacle/limpet community with the lichen *Lichina pygmaea* is an uncommon community and is found in the upper-mid shore at Rough Point. The low shore at Rough Point, which is moderately exposed to wave action, and the shore at Coosanea, which is sheltered from wave action, are both very species-rich. Rocky outcrops on the shore half way round the bay near Camp are known to support a community of the uncommon honeycomb worm *Sabellaria alveolata*. The sublittoral reefs support communities characterised by a variety of red foliose algae, as well as the brown algae *Dictyota dichotoma,* and are typical of communities that are subjected to sand scour as indicated by the presence of the red algae *Furcellaria lumbricalis* and *Polyides rotundus*.

In the transition zone between the intertidal flats and saltmarsh, specialised colonisers of mud predominate - swards of Common Cord-grass (*Spartina anglica*) are extensive on the leeward side of Derrymore Island, while swards of Glasswort (*Salicornia europaea* agg.) also occur in parts of the site.

Saltmarsh vegetation frequently fringes the mudflats, with the most extensive areas being found at Blennerville, Derrymore Island and Formoyle in Brandon Bay. The dominant type of saltmarsh present is Atlantic salt meadow. Characteristic species occurring include Common Saltmarsh-grass (*Puccinellia maritima*), Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Sea-milkwort (*Glaux maritima*), Sea Plantain (*Plantago maritima*), Red Fescue (*Festuca rubra*), Creeping Bent (*Agrostis stolonifera*), Saltmarsh Rush (*Juncus gerardi*), Long-bracted Sedge (*Carex extensa*), Lesser Sea-spurrey (*Spergularia marina*) and Sea Arrowgrass (*Triglochin maritima*). Areas of Mediterranean salt meadows, characterised by clumps of Sea Rush (*Juncus maritimus*), occur occasionally.

Sandy beaches backed by strips of 'white' dunes are common along the southern shore of the site. The vegetation of these 'white' dunes is dominated by Marram (*Ammophila arenaria*). However, the main dune area on this southern shore occurs on the Magherees Peninsula - a tombolo which joins a number of the Magharees Islands with the mainland. Here there are extensive areas of fixed 'grey' dunes, which feature a number of damp hollows or dune slacks. The fixed dunes are species-rich, with characteristic species such as White Clover (*Trifolium repens*), Lesser Hawkbit (*Leontodon taraxacoides*), Common Centaury (*Centaurium erythraea*), Lady's Bedstraw (*Galium verum*) and grasses (e.g. *Festuca rubra, Poa trivialis* and *Avenula pubescens*).

Relatively scarce plants found on the dunes include the following: Fringed Rock-cress (*Arabis brownii*), Fragrant Orchid (*Gymnadenia conopsea*), Squinancywort (*Asperula cynanchica*), Autumn Lady's-tresses (*Spiranthes spiralis*) and Dodder (*Cuscuta epithymum*). Dune slack species include Strawberry Clover (*Trifolium fragiferum*), Chaffweed (*Anagallis minima*) and the fungus *Inocybe halophila*.

Lough Gill, a natural sedimentary lagoon, is located at the base of the Magherees Peninsula. The lagoon is only slightly brackish and therefore contains freshwater species along with lagoon specialists. Submerged flora present includes Beaked Tasselweed (*Ruppia maritima*) and Horned Pondweed (*Zannichellia palustris*), while species fringing the lagoon include Common Reed

(*Phragmites australis*), Sea Club-rush (*Scirpus maritimus*) and Grey Club-rush (*S. lacustris* subsp. *tabernaemontani*).

Other coastal habitats that occur within the site include shingle beaches, rocky shores and vegetated sea-cliffs. The site also contains fragments of terrestrial habitats such as deciduous woodland, scrub, heath, dry limestone grassland, wet grassland and freshwater marshes.

There is some good limestone flora on the hill at Oyster Hall, with Burnet Rose (*Rosa pimpinellifolia*), Southern Polypody (*Polypodium australe*) and Hairy Rock-cress (*Arabis hirsuta*) occurring. There is an old record for the Red Data Book species, Sea-kale (*Crambe maritima*). At Fahamore and Rough Point it is the intertidal communities that are particularly rich, benefiting from a multitude of microhabitats in the eroded limestone. Red algae are frequent, including the agar seaweeds *Gelidium* and *Pterocladia*.

A small area of *Molinia* meadow is found in the site, with species such as Purple Moor-grass (*Molinia caerulea*), Devil's-bit Scabious (*Succisa pratensis*), Sharp-flowered Rush (*Juncus acutiflorus*) being common, and species such as Greater Tussock-sedge (*Carex paniculata*), Tormentil (*Potentilla erecta*), Marsh Cinquefoil (*Potentilla palustris*), Wild Angelica (*Angelica sylvestris*) and Common Valerian (*Valeriana officinalis*) also frequent.

Beach features dominate the northern coast of the Dingle Peninsula with an excellent series of shingle ridges forming Derrymore Island and the tombolo which links area of well developed sand dunes with an exceptionally rich flora and great topographic variation. The flora includes Fringed Rock-cress, Squinancywort, Dodder, Autumn Lady's-tresses and Chaffweed - all plants with a restricted distribution in the west of Ireland. These occur in a vegetation with abundant Red Fescue, scattered Marram, and herbs such as Lady's Bedstraw, Wild Thyme (*Thymus praecox*), Common Bird's-foot-trefoil (*Lotus corniculatus*) and Kidney Vetch (*Anthyllis vulneraria*). Yellow-rattle (*Rhinanthus minor*), eyebrights (*Euphrasia* spp.), Pyramidal Orchid (*Anacamptis pyramidalis*) and Heath Spotted-orchid (*Dactylorhiza maculata*) are four sensitive species which also occur here.

At the seaward edge drift line vegetation is often present. The more stable areas of shingle support Sea Beet (*Beta vulgaris* subsp. *maritima*), Sea Mayweed (*Matricaria maritima*), Sea Campion (*Silene vulgaris* subsp. *maritima*), Curled Dock (*Rumex crispus*), oraches (*Atriplex* spp.), Sea Sandwort (*Honkenya peploides*) and Silverweed (*Potentilla anserina*).

Between the dunes where erosion has removed the sand down to the water table there are temporary ponds or dune slacks with many additional species. Marsh Pennywort (*Hydrocotyle vulgaris*), Silverweed, various sedges (*Carex panicea* and *C. nigra*) and, in places, Strawberry Clover, Adder's-tongue (*Ophioglossum vulgatum*), Knotted Pearlwort (*Sagina nodosa*) and the orchids *Dactylorhiza majalis* and *D. incarnata* all occur. Some parts of the dune slacks feature a vegetation community characterised by the presence of Creeping Willow (*Salix repens*).

Woodland is rare on the Dingle Peninsula so the three stands included in this site are locally important. A deserted river valley at Killelton, the steep valley of the Finglas River at Camp and the west-facing slopes of Drom Hill opposite Cloghane all have features of significant interest. The last site has many species of lower plant (liverworts and lichens) that form distinctive elements of the westernmost natural woods in Ireland. At Garrahies Wood, adjacent to the Finglas River, there is an example of wet woodland on base-rich soils subject to flooding. The woodland type falls into the ash-alder alluvial forest category. The most common tree species are Alder (*Alnus glutinosa*), Downy Birch (*Betula pubescens*) and willows (*Salix* spp.). Bluebell (*Hyacinthoides non-scripta*), grasses and Bramble (*Rubus fruticosus* agg.) are the most common species in the ground layer.

The dune complex on the Magharees Peninsula supports the largest Irish breeding population of Natterjack Toads. Indeed, the population may be the largest breeding population in Britain and Ireland. The Natterjack Toad is listed as vulnerable in the Red Data Book and is protected under both European and national legislation. The toads require shallow warm water to spawn in and sandy habitats for over-wintering. Their tadpoles are vulnerable to predation in permanent lakes but despite this they have some success in Lough Gill which is a shallow lake with flat shores of sand, wet grassland or marsh. Natterjack Toads also breed within the site at Fermoyle, to the west. Also recorded from Fermoyle is the rare whorl snail *Vertigo angustior*, a species listed on Annex II of the E.U. Habitats Directive. Two species of hover fly - *Platycheris perpilladus* and *Sphaerophoria loewi* - have their only Irish records from the Magharees Peninsula dune system and a water beetle, *Cercyon sternalis,* was first recorded in Ireland in 1997 in Lough Gill.

The site supports populations of several rare plant species which have not been mentioned already. The bryophyte Petalwort (*Petalophyllum ralfsii*), which is listed on Annex II of the E.U. Habitats Directive, is known from the dune slacks on the Magharees Peninsula and Smooth Brome (*Bromus racemosus*), a Red Data Book grass, has been recorded from two wet meadows within the site. Several aquatic plants of interest grow in Lough Gill, the rarest being the Red Data Book stonewort *Chara canescens*. The Slender-leaved Pondweed (*Potamogeton filiformis*) occurs far to the south of its distribution elsewhere in Ireland and Britain, while there are also old records for Spiral Tasselweed (*Ruppia spiralis*). The marshes along the southern shore in the past support a rich variety of vegetation including several species rare in Kerry such as Water Dock (*Rumex hydrolapathum*) and Greater Spearwort (*Ranunculus lingua*), as well as sedges (*Carex dioica, C. limosa* and *C. diandra*) on patches of peat. Despite local reclamation it is likely that most of these still survive.

Otters regularly feed within this extensive site though it is not known if they breed. Otter is listed on Annex II of the E.U. Habitats Directive.

Tralee Bay, including Lough Gill, is an internationally important wetland for wintering waders and wildfowl. Species present which are listed on Annex I of the E.U. Birds Directive include Whooper Swans (24, mid-1980s), Golden Plover (3,053, 1994-95) and Bar-tailed Godwit (903, 1995-96). The dunes also provide an important feeding ground for Chough, a resident Annex I species.

Other wintering waders and wildfowl present include: Pale-bellied Brent Goose (944, mid-1980s), Shelduck (218, 1995-96), Gadwall (14, 1994-95), Teal (860, 1994-95), Pintail (56, 1995-96), Shoveler (144, mid-1980s), Scaup (1560, 1994-95), Scoter (620, 1994-95), Red-breasted Merganser (46, 1994-95), Ringed Plover (332, 1994-95), Grey Plover (674, 1995-96), Lapwing (5700, 1994-95), Knot (320, 1994-95), Sanderling (270, 1994-95), Purple Sandpiper (103, mid-1980s), Dunlin (4122, 1995-96), Black-tailed Godwit (508, 1994-95), Curlew (826, 1994-95), Redshank (352, 1995-96), Greenshank (21, 1994-95) and Turnstone (477, mid-1980s). Most of these species are present in nationally important numbers.

The dunes at this site face pressures from intensive farming practises and recreational use by visitors. The most threatening activities include fertilisation of the species-rich dune grasslands, over-grazing, and trampling of areas of dunes adjacent to tourist facilities (e.g. caravan parks). These activities may lead to severe erosion and eutrophication of the dune grasslands and dune slacks. Parts of the dune system are also vulnerable to invasion by Sea Buckthorn (*Hippophae rhamnoides*).

Agricultural run-off from areas of fertilised dune grasslands in the vicinity of Lough Gill pose a continued threat to the nutrient status of the lagoon; algal blooms and fish kills have occurred in the past. Removal of sand has also occurred and poses a threat to the integrity of the system.

Generally, the intertidal areas are relatively robust, although certain communities are vulnerable. For example, *Spartina* has spread widely, and may oust less vigorous colonisers of mud and may also reduce the area of mudflat available to feeding birds. Other activities, such as land reclamation and aquaculture, pose potential threats in terms of damage to habitats and potential disturbance to wintering birds.

Domestic and industrial wastes are discharged into inner Tralee Bay, but water quality is generally satisfactory - except in the inner bay, reflecting the sewage load from Tralee Town. Further industrial development along the bay in the vicinity of Tralee Town and Fenit and water polluting operations are potential threats.

This site is of considerable ecological and conservation significance for the excellent diversity of habitats it contains, many of which are listed on Annex I of the E.U. Habitats Directive. The occurrence of a species listed on Annex II of the E.U. Habitats Directive adds further importance to the site. The presence of a number of Red Data Book species, including the largest population of Natterjack Toads in Ireland, is also notable, as is the occurrence of several species listed on Annex I of the E.U. Birds Directive.

Site Name: Slieve Mish Mountains SAC

Site Code: 002185

The Slieve Mish Mountains form the backbone of the eastern half of the Dingle Peninsula in Co. Kerry. The highest peak is Baurtregaum (851 m). The range is composed predominantly of Old Red Sandstone.

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):

[4010] Wet Heath

[4030] Dry Heath

[4060] Alpine and Subalpine Heaths

[8110] Siliceous Scree

[8210] Calcareous Rocky Slopes

[8220] Siliceous Rocky Slopes

[1421] Killarney Fern (*Trichomanes speciosum*)

The dominant habitat within Slieve Mish Mountains SAC is heath. Wet heath, dry heath and acid grassland occur in mosaics on the lower slopes of the mountains, while dry heath tends to dominate the upper, steeper slopes. Typical species of the wet heath include Purple Moor-grass (*Molinia caerulea*), Cross-leaved Heath (*Erica tetralix*), Common Cottongrass (*Eriophorum angustifolium*) and Deergrass (*Scirpus cespitosus*). The dry heath is dominated by Heather (*Calluna vulgaris*), with grasses (e.g. *Agrostis capillaris, A. canina* and *Festuca ovina*) and mosses. Some alpine heath occurs on the highest ridges; this supports a number of locally scarce species, including Dwarf Willow (*Salix herbacea*), Stiff Sedge (*Carex bigelowii*), Thrift (*Armeria maritima*) and Crowberry (*Empetrum nigrum*).

The site is intersected, particularly on its northern flank, by several steep-sided glaciated river valleys or glens. The head of Derrymore Glen features a classic oligotrophic corrie lake which is surrounded by steep cliffs. Steep cliffs, scree and rocky ridges are features of the site above 650 m. Cliffs within the site support a number of rare bryophytes, i.e. *Bazzania pearsonii, Daltonia splachnoides, Dumortiera hirsute, Mastigophora woodsii, Moerckia hibernica, Paraleptodontium recurvifolium, Radula carringtonii* and *Scapania ornithopodioides*, along with several relatively scarce vascular plant taxa typical of high-altitude inland cliffs, i.e. Starry Saxifrage (*Saxifraga stellaris*), Roseroot (*Rhodiola rosea*), Alpine Scurvygrass (*Cochlearia officinalis* subsp. *alpina*), Alpine Hair-grass (*Deschampsia cespitosa* subsp. *alpina*), Mountain Everlasting (*Antennaria dioica*), Mountain Sorrel (*Oxyria digyna*), Brittle Bladder-fern (*Cystopteris fragilis*) and Irish Saxifrage (*Saxifraga rosacea*). The cliffs also support Kidney Saxifrage (*Saxifraga hirsuta*), St Patrick's-cabbage (*Saxifraga spathularis*) and the hybrid between these two species.

The site includes a small area of dry deciduous woodland, supporting species such as Sessile Oak (*Quercus petraea*), Ash (*Fraxinus excelsior*) and Holly (*Ilex aquifolium*).

The site contains a good population of Killaney Fern (*Trichomanes speciosum*), a species that is listed on Annex II of the E.U. Habitats Directive. Two other plants that are also listed in the Irish Red Data Book occur, namely Betony (*Stachys officinalis*) and Cornish Moneywort (*Sibthorpia europaea*). In Ireland, the latter species is confined to the Dingle Peninsula - its most easterly known station lies within the site. Other notable plant species recorded from the site include Whorled Caraway (*Carum verticillatum*), Lemon-scented Fern (*Oreopteris limbosperma*) and Ivy-leaved Bellflower

(*Wahlenbergia hederacea*). Killarney Fern (*Trichomanes speciosum*) and Betony are protected under the Flora (Protection) Order, 2015.

Peregrine Falcons breed on cliffs within the site, and Chough are known to feed in the area. Both of these species are listed on Annex I of the E.U. Birds Directive.

Most of the site is grazed by sheep, with a smaller area being grazed by cattle. Over-grazing on parts of the site has led to some habitat degradation, particularly of the wet heath covering the lower slopes. Most of the blanket bog within the site has been extensively cut for turf and some of the turbary is still active. The lack of forestry within the Slieve Mish range is notable.

Overall, the site is of considerable conservation significance, particularly for the presence of several habitats and species that are listed on Annexes I and II of the E.U. Habitats Directive. The presence of two bird species that are listed on Annex I of the E.U. Birds Directive and the populations of several rare or scarce plant species adds to the importance of the site.

SITE NAME: STACK'S TO MULLAGHAREIRK MOUNTAINS, WEST LIMERICK HILLS AND MOUNT EAGLE SPA

SITE CODE: 004161

The Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA is a very large site centred on the borders between the counties of Cork, Kerry and Limerick. The site is skirted by the towns of Newcastle West, Ballydesmond, Castleisland, Tralee and Abbeyfeale. The mountain peaks included in the site are not notably high or indeed pronounced, the highest being at Knockfeha (451 m). Other mountains included are Mount Eagle, Knockanefune, Garraunbaun, Taur, Rock Hill, Knockacummer, Mullaghamuish, Knight's Mt, Ballincollig Hill, Beennageeha Mt, Sugar Hill, Knockanimpuba and Knockathea, amongst others. Many rivers rise within the site, notably the Blackwater, Owentaraglin, Owenkeal, Glenlara, Feale, Clydagh, Allaghaun, Allow, Oolagh, Galey and Smerlagh.

The site consists of a variety of upland habitats, though almost half is afforested. The coniferous forests include first and second rotation plantations, with both pre-thicket and post-thicket stands present. Substantial areas of clear-fell are also present at any one time. The principal tree species present are Sitka Spruce (*Picea sitchensis*) and Lodgepole Pine (*Pinus contorta*). A substantial part (28%) of the site is unplanted blanket bog and heath, with both wet and dry heath present. The vegetation of these habitats is characterised by such species as Ling Heather (*Calluna vulgaris*), Bilberry (*Vaccinium myrtillus*), Common Cottongrass (*Eriophorum angustifolium*), Hare's-tail Cottongrass (*Eriophorum vaginatum*), Deergrass (*Scirpus cespitosus*) and Purple Moor-grass (*Molinia caerulea*). The remainder of the site is mostly rough grassland that is used for hill farming. This varies in composition and includes some wet areas with rushes (*Juncus* spp.) and some areas subject to scrub encroachment.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for Hen Harrier.

This SPA is a stronghold for Hen Harrier and supports the largest concentration of the species in the country. A survey in 2005 recorded 45 pairs, which represents over 20% of the all-Ireland total. A similar number of pairs had been recorded in the 1998-2000 period. The mix of forestry and open areas provides optimum habitat conditions for this rare bird, which is listed on Annex I of the E.U. Birds Directive. The early stages of new and second-rotation conifer plantations are the most frequently used nesting sites, though some pairs may still nest in tall heather of unplanted bogs and heath. Hen Harriers will forage up to *c*. 5 km from the nest site, utilising open bog and moorland, young conifer plantations and hill farmland that is not too rank. Birds will often forage in openings and gaps within forests. In Ireland, small birds and small mammals appear to be the most frequently taken prey.

Short-eared Owl, a very rare species in Ireland, has been known to breed within the site. Nesting certainly occurred in the late 1970s and birds have been recorded intermittently since. The owls are considered to favour this site due to the presence of Bank Voles, a favoured prey item. Merlin also breed within the site but the size of the population is not known. Red Grouse is found on some of the unplanted areas of bog and heath – this is a species that has declined in Ireland and is now Red-listed.

The Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA is of ornithological importance because it provides excellent nesting and foraging habitat for breeding Hen Harrier and is one the top sites in the country for the species. The presence of three species, Hen Harrier, Merlin and Short-eared Owl, which are listed on Annex I of the E.U. Birds Directive is of note.

Site Name: Akeragh, Banna and Barrow Harbour SAC
Site Code: 000332

Akeragh, Banna and Barrow Harbour SAC is a large coastal site covering a 10 km section of coastline in Co. Kerry, and including a wide diversity of habitats. The underlying rock is limestone, which outcrops only in the southern part of the site, in the impressive columns and hillsides north of Fenit. Elsewhere shell sand is predominant with occasional development of peat.

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):

[1210] Annual Vegetation of Drift Lines
[1310] Salicornia Mud
[1330] Atlantic Salt Meadows
[1410] Mediterranean Salt Meadows
[2110] Embryonic Shifting Dunes
[2120] Marram Dunes (White Dunes)
[2130] Fixed Dunes (Grey Dunes)*
[2190] Humid Dune Slacks
[4030] Dry Heath

Sand dunes run southwards from Ballyheigue and they become especially interesting south of the Akeragh outflow where they show great variety in both physiography and vegetation. The largest proportion of the sand dune system is fixed dune grassland. The vegetation is made up of a mosaic of Marram (*Ammophila arenaria*) tussocks interspersed with low-lying patches of a Red Fescue-Lady's Bedstraw (*Festuca rubra-Galium verum*) community. Other species occurring include Smooth Meadow-grass (*Poa pratensis*), Daisy (*Bellis perennis*), Ribwort Plantain (*Plantago lanceolata*) and Bulbous Buttercup (*Ranunculus bulbosus*). There is a sparse occurrence of moss species, including *Brachythecium rutabulum, Tortula ruralis* ssp. *ruraliformis* and *Homalothecium lutescens*. These tend to be restricted to areas close to rabbit burrows, where they are associated with species such as Germander Speedwell (*Veronica chamaedrys*), Squinancywort (*Asperula cynanchica*) and Dog Lichen (*Peltigera* spp.). A number of other species typical of Mesobromion grasslands are found in this habitat type, reflecting the calcareous nature of the site. These include Pyramidal Orchid (*Anacamptis pyramidalis*), Thyme-leaved Sandwort (*Arenaria serpyllifolia*) and Hairy Rock-cress (*Arabis hirsuta*). Dodder (*Cuscuta epithymum*), a parasitic plant, grows in abundance on the fixed dune slopes at Carrahane.

Mobile Marram dunes occur as a narrow band running along the seaward side of the entire coastal strip. There is a slight increase in dune mobility towards the growing tip at Carrahane. The main ridges are dominated by Marram and reach heights in excess of 20 m in places. Companion species include Sea Spurge (*Euphorbia paralias*), Colt's-foot (*Tussilago farfara*), Sea-holly (*Eryngium maritimum*) and Sand Sedge (*Carex arenaria*). Also occurring are embryonic dunes, with such species as Sand Couch (*Elymus farctus*) and Sea Rocket (*Cakile maritima*). The latter species, along with Spear-leaved Orache (*Atriplex prostrata*), has also been recorded from the 'annual vegetation of drift lines' habitat at this site.

The site contains a number of dune slack areas, these being best developed on the landward side of Carrahane dunes. Species present in these dune slacks include Common Bent (*Agrostis stolonifera*),

Red Clover (*Trifolium pratense*), Glaucous Sedge (*Carex flacca*), Water Mint (*Mentha aquatica*), Creeping Willow (*Salix repens*) and the scarce Marsh Helleborine (*Epipactis palustris*).

Of particular ecological interest is the gradation from fixed dune and dune slack to saltmarsh at Carrahane. Saltmarsh here is particularly well-developed but also occurs at Barrow Harbour. Common saltmarsh species include Thrift (*Armeria maritima*), Red Fescue, Sea Plantain (*Plantago maritima*), Saltmarsh Rush (*Juncus gerardi*) and Sea Rush (*Juncus maritima*). A number of scarce species are associated with the saltmarsh, notably Hard-grass (*Parapholis strigosa*), Saltmarsh Flat-sedge (*Blysmus rufus*), Strawberry Clover (*Trifolium fragiferum*) and a species of sea-lavender (*Limonium recurvum*). Glassworts (*Salicornia* spp.) occur on the edges of the saltmarsh and in sheltered areas extends onto the intertidal muds.

The harbour is surrounded by low hills of limestone which support an interesting grassland community where they remain unfertilised. This is best seen at the entrance to Carrahane Bay but recurs sporadically elsewhere. Coastal heath occurs scattered on limestone rocky areas in the southern part of the site. It generally occurs in association with dry grassland. Species which occur include Gorse (*Ulex europaeus*), Western Gorse (*U. gallii*), Burnet Rose (*Rosa pimpinellifolia*), Blackthorn (*Prunus spinosa*), Biting Stonecrop (*Sedum acre*), Black Medick (*Medicago lupulina*), Common Whitlowgrass (*Erophila verna*), Kidney Vetch (*Anthyllis vulneraria*) and Wild Madder (*Rubia peregrina*), among others. Akeragh Lough now supports extensive areas of brackish vegetation. It was formerly richer in birdlife, but the lake level has been controlled by a sluice on the outflow, the total water area has declined. Also, the peaty land to the east has been afforested. The site supports important wintering waterfowl populations. Brent Goose occur in internationally important numbers (360 in winter 1996/97), while in winter 1996/97 nationally important populations of Ringed Plover (130), Grey Plover (62), Lapwing(approx. 2000), Sanderling (280) and Bar-tailed Godwit (345) occurred. Notable populations of Golden Plover, Oystercatcher, Dunlin, Curlew and Redshank also occur. The regular occurrence of Golden Plover and Bar-tailed Godwit is of note as these species are listed on Annex I of the E.U. Birds Directive.

This large site is of major ecological interest due both to its range of floristically-rich coastal habitats, nine of which are listed on Annex I of the E.U. Habitats Directive, including one priority habitat, and as a wintering site for significant numbers of waterfowl (including two Annex I species).

Site Name: Lower River Shannon SAC

Site Code: 002165

This very large site stretches along the Shannon valley from Killaloe in Co. Clare to Loop Head/ Kerry Head, a distance of some 120 km. The site thus encompasses the Shannon, Feale, Mulkear and Fergus estuaries, the freshwater lower reaches of the River Shannon (between Killaloe and Limerick), the freshwater stretches of much of the Feale and Mulkear catchments and the marine area between Loop Head and Kerry Head. Rivers within the sub-catchment of the Feale include the Galey, Smearlagh, Oolagh, Allaughaun, Owveg, Clydagh, Caher, Breanagh and Glenacarney. Rivers within the sub-catchment of the Mulkear include the Killeenagarriff, Annagh, Newport, the Dead River, the Bilboa, Glashacloonaraveela, Gortnageragh and Cahernahallia.

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):

[1110] Sandbanks
[1130] Estuaries
[1140] Tidal Mudflats and Sandflats
[1150] Coastal Lagoons*
[1160] Large Shallow Inlets and Bays
[1170] Reefs
[1220] Perennial Vegetation of Stony Banks
[1230] Vegetated Sea Cliffs
[1310] *Salicornia* Mud
[1330] Atlantic Salt Meadows
[1410] Mediterranean Salt Meadows
[3260] Floating River Vegetation
[6410] *Molinia* Meadows
[91E0] Alluvial Forests*
[1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*)
[1095] Sea Lamprey (*Petromyzon marinus*)
[1096] Brook Lamprey (*Lampetra planeri*)
[1099] River Lamprey (*Lampetra fluviatilis*)
[1106] Atlantic Salmon (*Salmo salar*)
[1349] Bottle-nosed Dolphin (*Tursiops truncatus*)
[1355] Otter (*Lutra lutra*)

The Shannon and Fergus Rivers flow through Carboniferous limestone as far as Foynes, but west of Foynes Namurian shales and flagstones predominate (except at Kerry Head, which is formed from Old Red Sandstone). The eastern sections of the Feale catchment flow through Namurian rocks and the western stretches through Carboniferous limestone. The Mulkear flows through Lower Palaeozoic rocks in the upper reaches before passing through Namurian rocks, followed by Lower Carboniferous shales and Carboniferous limestone. The Mulkear River itself, immediately north of Pallas Green, passes through an area of Rhyolites, Tuffs and Agglomerates.

The Shannon and Fergus Estuaries form the largest estuarine complex in Ireland. They form a unit stretching from the upper tidal limits of the Shannon and Fergus Rivers to the mouth of the Shannon Estuary (considered to be a line across the narrow strait between Kilcredaun Point and Kilconly

Point). Within this main unit there are several tributaries with their own 'sub-estuaries' e.g. the Deel River, Mulkear River, and Maigue River. To the west of Foynes, a number of small estuaries form indentations in the predominantly hard coastline, namely Poulnasherry Bay, Ballylongford Bay, Clonderalaw Bay and the Feale or Cashen River estuary.

Both the Fergus and inner Shannon Estuaries feature vast expanses of intertidal mudflats, often fringed with saltmarsh vegetation. The smaller estuaries also feature mudflats, but have their own unique characteristics, e.g. Poulnasherry Bay is stony and unusually rich in species and biotopes. Plant species are typically scarce on the mudflats, although there are some eelgrass (*Zostera* spp.) beds and patches of green algae (e.g. *Ulva* sp. and *Enteromorpha* sp.). The main macro-invertebrate community which has been noted from the inner Shannon and Fergus estuaries is a *Macoma-Scrobicularia-Nereis* community.

In the transition zone between mudflats and saltmarsh, specialised colonisers of mud predominate. For example, swards of Common Cord-grass (*Spartina anglica*) frequently occur in the upper parts of the estuaries. Less common are swards of Glasswort (*Salicornia europaea* agg.). In the innermost parts of the estuaries, the tidal channels or creeks are fringed with species such as Common Reed (*Phragmites australis*) and club-rushes (*Scirpus maritimus, S. tabernaemontani* and *S. triquetrus*). In addition to the nationally rare Triangular Club-rush (*Scirpus triqueter*), two scarce species are found in some of these creeks (e.g. Ballinacurra Creek): Lesser Bulrush (*Typha angustifolia*) and Summer Snowflake (*Leucojum aestivum*).

Saltmarsh vegetation frequently fringes the mudflats. Over twenty areas of estuarine saltmarsh have been identified within the site, the most important of which are around the Fergus estuary and at Ringmoylan Quay. The dominant type of saltmarsh present is Atlantic salt meadow occurring over mud. Characteristic species occurring include Common Saltmarsh-grass (*Puccinellia maritima*), Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Sea-milkwort (*Glaux maritima*), Sea Plantain (*Plantago maritima*), Red Fescue (*Festuca rubra*), Creeping Bent (*Agrostis stolonifera*), Saltmarsh Rush (*Juncus gerardi*), Long-bracted Sedge (*Carex extensa*), Lesser Sea-spurrey (*Spergularia marina*) and Sea Arrowgrass (*Triglochin maritima*). Areas of Mediterranean salt meadows, characterised by clumps of Sea Rush (*Juncus maritimus*) occur occasionally. Two scarce species are found on saltmarshes in the vicinity of the Fergus estuary: a type of robust saltmarsh-grass (*Puccinellia foucaudii*), sometimes placed within the species Common Saltmarsh-grass (*P. maritima*) and Hard-grass (*Parapholis strigosa*).

Saltmarsh vegetation also occurs around a number of lagoons within the site, two of which have been surveyed as part of a National Inventory of Lagoons. Cloonconeen Pool (4-5 ha) is a natural sedimentary lagoon impounded by a low cobble barrier. Seawater enters by percolation through the barrier and by overwash. This lagoon represents a type which may be unique to Ireland since the substrate is composed almost entirely of peat. The adjacent shore features one of the best examples of a drowned forest in Ireland. Aquatic vegetation in the lagoon includes typical species such as Beaked Tasselweed (*Ruppia maritima*) and green algae (*Cladophora* sp.). The fauna is not diverse, but is typical of a high salinity lagoon and includes six lagoon specialists (*Hydrobia ventrosa, Cerastoderma glaucum, Lekanesphaera hookeri, Palaemonetes varians, Sigara stagnalis* and *Enochrus bicolor*). In contrast, Shannon Airport Lagoon (2 ha) is an artificial saline lake with an artificial barrier and sluiced outlet. However, it supports two Red Data Book species of stonewort (*Chara canescens* and *Chara cf. connivens*).

Most of the site west of Kilcredaun Point/Kilconly Point is bounded by high rocky sea cliffs. The cliffs in the outer part of the site are sparsely vegetated with lichens, Red Fescue, Sea Beet (*Beta vulgaris*

subsp. *maritima*), Sea Campion (*Silene vulgaris* subsp. *maritima*), Thrift and plantains (*Plantago* spp.). A rare endemic type of sea-lavender, *Limonium recurvum* subsp. *pseudotranswallianum,* occurs on cliffs near Loop Head. Cliff-top vegetation usually consists of either grassland or maritime heath. The boulder clay cliffs further up the estuary tend to be more densely vegetated, with swards of Red Fescue and species such as Kidney Vetch (*Anthyllis vulneraria*) and Common Bird's-foot-trefoil (*Lotus corniculatus*).

The site supports an excellent example of a large shallow inlet and bay. Littoral sediment communities in the mouth of the Shannon Estuary occur in areas that are exposed to wave action and also in areas extremely sheltered from wave action. Characteristically, exposed sediment communities are composed of coarse sand and have a sparse fauna. Species richness increases as conditions become more sheltered. All shores in the site have a zone of sand hoppers at the top, and below this each of the shores has different characteristic species giving a range of different shore types.

The intertidal reefs in the Shannon Estuary are exposed or moderately exposed to wave action and subject to moderate tidal streams. Known sites are steeply sloping and show a good zonation down the shore. Well developed lichen zones and littoral reef communities offering a high species richness in the sublittoral fringe and strong populations of the Purple Sea Urchin *Paracentrotus lividus* are found. The communities found are tolerant to sand scour and tidal streams. The infralittoral reefs range from sloping platforms with some vertical steps, to ridged bedrock with gullies of sand between the ridges, to ridged bedrock with boulders or a mixture of cobbles, gravel and sand. Kelp is very common to about 18 m. Below this it becomes rare and the community is characterised by coralline crusts and red foliose algae.

Other coastal habitats that occur within the site include stony beaches and bedrock shores (these support a typical zonation of seaweeds such as *Fucus* spp., *Ascophyllum nodosum* and kelps), shingle beaches (with species such as Sea Beet, Sea Mayweed - *Matricaria maritima*, Sea Campion and Curled Dock - *Rumex crispus*), sandbanks which are slightly covered by sea water at all times (e.g. in the area from Kerry Head to Beal Head) and sand dunes (a small area occurs at Beal Point, where Marram – *Ammophila arenaria* is the dominant species).

Freshwater rivers have been included in the site, most notably the Feale and Mulkear catchments, the Shannon from Killaloe to Limerick (along with some of its tributaries, including a short stretch of the Kilmastulla River), the Fergus up as far as Ennis, and the Cloon River. These systems are very different in character: the Shannon is broad, generally slow flowing and naturally eutrophic; the Fergus is smaller and alkaline; while the narrow, fast flowing Cloon is acid in nature. The Feale and Mulkear catchments exhibit all the aspects of a river from source to mouth. Semi-natural habitats, such as wet grassland, wet woodland and marsh occur by the rivers, but improved grassland is the most common habitat type. One grassland type of particular conservation significance, *Molinia* meadows, occurs in several parts of the site and the examples at Worldsend on the River Shannon are especially noteworthy. Here are found areas of wet meadow dominated by rushes (*Juncus* spp.) and sedges (*Carex* spp.), and supporting a diverse and species-rich vegetation, including such uncommon species as Blue-eyed Grass (*Sisyrinchium bermudiana*) and Pale Sedge (*C. pallescens*).

Floating river vegetation characterised by species of water-crowfoot (*Ranunculus* spp.), pondweeds (*Potamogeton* spp.) and the moss *Fontinalius antipyretica* are present throughout the major river systems within the site. The rivers contain an interesting bryoflora with *Schistidium alpicola* var. *alpicola* recorded from in-stream boulders on the Bilboa, new to Co. Limerick.

Alluvial woodland occurs on the banks of the Shannon and on islands in the vicinity of the University of Limerick. The woodland is up to 50 m wide on the banks and somewhat wider on the largest island. The most prominent woodland type is gallery woodland where White Willow (*Salix alba*) dominates the tree layer with occasional Alder (*Alnus glutinosa*). The shrub layer consists of various willow species with Rusty Willow (*Salix cinerea* ssp. *oleifolia*) and what appear to be hybrids of *S. alba* x *S. viminalis.* The herbaceous layer consists of tall perennial herbs*.* A fringe of bulrush (*Typha* sp.) occurs on the river side of the woodland. On slightly higher ground above the wet woodland and on the raised embankment remnants of mixed oak-ash-alder woodland occur. These are poorly developed and contain numerous exotic species but locally there are signs that it is invading open grassland. Alder is the principal tree species, with occasional Pedunculate Oak (*Quercus robur*), elm (*Ulmus glabra* and *U. procera*), Hazel (*Corylus avellana*), Hawthorn (*Crataegus monogyna*) and the shrubs Guelder-rose (*Viburnum opulus*) and willows. The ground flora is species-rich.

While woodland is infrequent within the site, however Cahiracon Wood contains a strip of old oak woodland. Sessile Oak (*Q. petraea*) forms the canopy, with an understorey of Hazel and Holly (*Ilex aquifolium*). Great Wood-rush (*Luzula sylvatica*) dominates the ground flora. Less common species present include Great Horsetail (*Equisetum telmeteia*) and Pendulous Sedge (*Carex pendula*).

In the low hills to the south of the Slievefelim Mountains, the Cahernahallia River cuts a valley through the Upper Silurian rocks. For approximately 2 km south of Cappagh Bridge at Knockanavar, the valley sides are wooded. The woodland consists of birch (*Betula* spp.), Hazel, oak, Rowan (*Sorbus aucuparia*), some Ash (*Fraxinus excelsior*) and willow (*Salix* spp.). Most of the valley is not grazed by stock, and as a result the trees are regenerating well. The ground flora features prominent Great wood-rush and Bilberry (*Vaccinium myrtillus*), along with a typical range of woodland herbs. Bracken (*Pteridium aquilinum*) is a feature in areas where there is more light available.

The valley sides of the Bilboa and Gortnageragh Rivers, on higher ground north-east of Cappamore, support patches of semi-natural broadleaf woodland dominated by Ash, Hazel, oak and birch. There is a good scrub layer with Hawthorn, willow, Holly and Blackthorn (*Prunus spinosa*) common. The herb layer in these woodlands is often open, with a typically rich mixture of woodland herbs and ferns. Moss species diversity is high. The woodlands are ungrazed. The Hazel is actively coppiced in places.

There is a small area of actively regenerating cut-away raised bog at Ballyrorheen. It is situated approximately 5 km north-west of Cappamore in Co. Limerick. The bog contains some wet areas with good cover of bog mosses (*Sphagnum* spp.). Species of particular interest include Cranberry (*Vaccinium oxycoccos*) and White Sedge (*Carex curta*), along with two regionally rare mosses, including the bog moss *S. fimbriatum*. The site is being invaded by Downy Birch (*Betula pubescens*) scrub woodland. Both commercial forestry and the spread of Rhododendron (*Rhododendron ponticum*) has greatly reduced the overall value of the site.

A number of plant species that are listed in the Irish Red Data Book occur within the site, and several of these are protected under the Flora (Protection) Order, 1999. These include Triangular Club-rush (*Scirpus triquetrus*), a species which is only found in Ireland only in the Shannon Estuary, where it borders creeks in the inner estuary. Opposite-leaved Pondweed (*Groenlandia densa*) is found in the Shannon where it passes through Limerick City, while Meadow Barley (*Hordeum secalinum*) is abundant in saltmarshes at Ringmoylan and Mantlehill. Hairy Violet (*Viola hirta*) occurs in the Askeaton/Foynes area. Golden Dock (*Rumex maritimus*) is noted as occurring in the River Fergus estuary. Finally, Bearded Stonewort (*Chara canescens*), a brackish water specialist, and Convergent Stonewort (*Chara connivens*) are both found in Shannon Airport Lagoon.

Overall, the Shannon and Fergus Estuaries support the largest numbers of wintering waterfowl in Ireland. The highest count in 1995-96 was 51,423 while in 1994-95 it was 62,701. Species listed on Annex I of the E.U. Birds Directive which contributed to these totals include: Great Northern Diver (3; 1994/95), Whooper Swan (201; 1995/96), Pale-bellied Brent Goose (246; 1995/96), Golden Plover (11,067; 1994/95) and Bar-tailed Godwit (476; 1995/96). In the past, three separate flocks of Greenland White-fronted Goose were regularly found, but none were seen in 1993/94.

Other wintering waders and wildfowl present include Greylag Goose (216; 1995/96), Shelduck (1,060; 1995/96), Wigeon (5,976; 1995/96), Teal (2,319; 1995-96), Mallard (528; 1995/96), Pintail (45; 1995/96), Shoveler (84; 1995/96), Tufted Duck (272; 1995/96), Scaup (121; 1995/96), Ringed Plover (240; 1995/96), Grey Plover (750; 1995/96), Lapwing (24,581; 1995/96), Knot (800; 1995/96), Dunlin (20,100; 1995/96), Snipe (719, 1995/96), Black-tailed Godwit (1,062; 1995/96), Curlew (1,504; 1995/96), Redshank (3,228; 1995/96), Greenshank (36; 1995/96) and Turnstone (107; 1995/96). A number of wintering gulls are also present, including Black-headed Gull (2,216; 1995/96), Common Gull (366; 1995/96) and Lesser Black-backed Gull (100; 1994/95). This is the most important coastal site in Ireland for a number of the waders including Lapwing, Dunlin, Snipe and Redshank. It also provides an important staging ground for species such as Black-tailed Godwit and Greenshank.

A number of species listed on Annex I of the E.U. Birds Directive breed within the site. These include Peregine Falcon (2-3 pairs), Sandwich Tern (34 pairs on Rat Island, 1995), Common Tern (15 pairs: 2 on Sturamus Island and 13 on Rat Island, 1995), Chough (14-41 pairs, 1992) and Kingfisher. Other breeding birds of note include Kittiwake (690 pairs at Loop Head, 1987) and Guillemot (4,010 individuals at Loop Head, 1987).

There is a resident population of Bottle-nosed Dolphin in the Shannon Estuary. This is the only known resident population of this E.U. Habitats Directive Annex II species in Ireland. The population is estimated (in 2006) to be 140 ± 12 individuals.

Otter, a species also listed on Annex II of this Directive, is commonly found on the site.

Five species of fish listed on Annex II of the E.U. Habitats Directive are found within the site. These are Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*), River Lamprey (*Lampetra fluviatilis*), Twaite Shad (*Allosa fallax fallax*) and Salmon (*Salmo salar*). The three lampreys and Salmon have all been observed spawning in the lower Shannon or its tributaries. The Fergus is important in its lower reaches for spring salmon, while the Mulkear catchment excels as a grilse fishery, though spring fish are caught on the actual Mulkear River. The Feale is important for both types. Twaite Shad is not thought to spawn within the site. There are few other river systems in Ireland which contain all three species of lamprey.

Two additional fish species of note, listed in the Irish Red Data Book, also occur, namely Smelt (*Osmerus eperlanus*) and Pollan (*Coregonus autumnalis pollan*). Only the former has been observed spawning in the Shannon.

Freshwater Pearl Mussel (*Margaritifera margaritifera*), a species listed on Annex II of the E.U. Habitats Directive, occurs abundantly in parts of the Cloon River.

There is a wide range of land uses within the site. The most common use of the terrestrial parts is grazing by cattle, and some areas have been damaged through over-grazing and poaching. Much of the land adjacent to the rivers and estuaries has been improved or reclaimed and is protected by embankments (especially along the Fergus estuary). Further, reclamation continues to pose a threat, as do flood relief works (e.g. dredging of rivers). Gravel extraction poses a major threat on the Feale.

In the past, cord-grass (*Spartina* sp.) was planted to assist in land reclamation. This has spread widely, and may oust less vigorous colonisers of mud and may also reduce the area of mudflat available to feeding birds.

Domestic and industrial wastes are discharged into the Shannon, but water quality is generally satisfactory, except in the upper estuary where it reflects the sewage load from Limerick City. Analyses for trace metals suggest a relatively clean estuary with no influences of industrial discharges apparent. Further industrial development along the Shannon and water polluting operations are potential threats.

Fishing is a main tourist attraction on the Shannon and there are a large number of angler associations, some with a number of beats. Fishing stands and styles have been erected in places. The River Feale is a designated Salmonid Water under the E.U. Freshwater Fish Directive. Other uses of the site include commercial angling, oyster farming, boating (including dolphin-watching trips) and shooting. Some of these may pose threats to the birds and dolphins through disturbance. Specific threats to the dolphins include underwater acoustic disturbance, entanglement in fishing gear and collisions with fast moving craft.

This site is of great ecological interest as it contains a high number of habitats and species listed on Annexes I and II of the E.U. Habitats Directive, including the priority habitats lagoon and alluvial woodland, the only known resident population of Bottle-nosed Dolphin in Ireland and all three Irish lamprey species. A good number of Red Data Book species are also present, perhaps most notably the thriving populations of Triangular Club-rush. A number of species listed on Annex I of the E.U. Birds Directive are also present, either wintering or breeding. Indeed, the Shannon and Fergus Estuaries form the largest estuarine complex in Ireland and support more wintering wildfowl and waders than any other site in the country. Most of the estuarine part of the site has been designated a Special Protection Area (SPA), under the E.U. Birds Directive, primarily to protect the large numbers of migratory birds present in winter.

Site Name: Castlemaine Harbour SAC

Site Code: 000343

This is a large site located on the south-east corner of the Dingle Peninsula, Co. Kerry. It consists of the whole inner section of Dingle Bay, i.e. Castlemaine Harbour, the spits of Inch and White Strand/Rosbehy and a little of the coastline to the west. The River Maine, almost to Castlemaine, and much of the River Laune catchment, including the Gaddagh, Gweestion, Glanooragh, Cottoner's River and the River Loe, are also included within the site.

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
[1210] Annual Vegetation of Drift Lines
[1220] Perennial Vegetation of Stony Banks
[1230] Vegetated sea cliffs of the Atlantic and Baltic coasts
[1310] *Salicornia* Mud
[1330] Atlantic Salt Meadows
[1410] Mediterranean Salt Meadows
[2110] Embryonic Shifting Dunes
[2120] Marram Dunes (White Dunes)
[2130] Fixed Dunes (Grey Dunes)*
[2170] Dunes with Creeping Willow
[2190] Humid Dune Slacks
[91E0] Alluvial Forests*
[1095] Sea Lamprey (*Petromyzon marinus*)
[1099] River Lamprey (*Lampetra fluviatilis*)
[1106] Atlantic Salmon (*Salmo salar*)
[1355] Otter (*Lutra lutra*)
[1395] Petalwort (*Petalophyllum ralfsii*)

Inch Spit holds a fine sand dune system. It is one of the largest and best remaining dune systems in the country. Fore dunes are found on the western side of Rosbehy and Inch. In these younger, mobile dunes, Marram (*Ammophila arenaria*) is common, with Groundsel (*Senecio vulgaris*), Sea Rocket (*Cakile maritima*) and Dandelion (*Taraxacum* agg.) also present. Other characteristic species include Sand Couch (*Elymus farctus*), Lyme-grass (*Leymus arenarius*) and Sea Spurge (*Euphorbia paralias*). Fixed dune, a priority habitat under the E.U. Habitats Directive, is well-represented at the site, and in particular towards the tip of Inch Spit. Such areas support species such as Lady's Bedstraw (*Galium verum*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Wild Thyme (*Thymus praecox*), Kidney Vetch (*Anthyllis vulneraria*), Wild Pansy (*Viola tricolor*), Biting Stonecrop (*Sedum acre*), Common Centuary (*Centaurium erythraea*), Thyme-leaved Sandwort (*Arenaria serpyllifolia*) and Common Whitlowgrass (*Erophila verna*), among others. There is also a rich lichen and bryophyte flora. The slightly damper conditions which prevail in dune slacks support Creeping Bent (*Agrostis stolonifera*), Crested Dog's-tail (*Cynosurus cristatus*), Glaucous Sedge (*Carex flacca*), Creeping Willow (*Salix repens*) and Jointed Rush (*Juncus articulatus*). The rare bryophyte Petalwort (*Petalophyllum ralfsii*), which is listed on Annex II of the E.U. Habitats Directive, has been recorded in this system. A smaller spit, with a similar diversity of dune types, occurs at Rosbehy on the southern shore, from

where Yellow Centaury (*Cicendia filiformis*) and Knotted Pearlwort (*Sagina nodosa*) have been recorded from a dune slack along with other, more common, species.

The sand spits, and also the Coomore peninsula, are underlain by shingle and in places the shingle is exposed and supports a characteristic flora. Species present include Lyme-grass and Sea Sandwort (*Honkenya peploides*). Strandline communities are well-developed along Inch spit, with the exception of the north-western end where recreational pressure is high. Typical species of the strandline include Prickly Saltwort (*Salsola kali*), Sea Rocket, oraches (*Atriplex* spp.) and Sea Sandwort. Two Red Data Book plants, Sea Pea (*Lathyrus japonicus* subsp. *maritimus*) and Sea-kale (*Crambe maritima*), are found associated with the shingle and strandline communities.

The coastline is fringed in many places by saltmarsh. The vegetation here includes Thrift (*Armeria maritima*), Common Saltmarsh-grass (*Puccinellia maritima*), Sea Aster (*Aster tripolium*), Sea Rush (*Juncus maritimus*) and Sea Plantain (*Plantago maritima*). Upper saltmarsh communities extend inland, along estuarine channels, where they are mixed with freshwater communities. Sea Club-rush (*Scirpus maritimus*) and Common Reed (*Phragmites australis*) occur at these locations. Common Cord-grass (*Spartina anglica*) has colonised the lower part of the saltmarsh at Inch and extends out onto the open mudflat. Glassworts (*Salicornia* spp.) occur in association with saltmarsh.

West of Inch, cliffs of glacial drift occur, which support such plants as Ivy (*Hedera helix*), Red Fescue (*Festuca rubra*), Heather (*Calluna vulgaris*), Thrift, Sea Plantain, Sea Mayweed (*Matricaria maritima*), Kidney Vetch and Honeysuckle (*Lonicera periclymenum*). Along the cliff-tops there is coastal grassland with species such as Sweet Vernal-grass (*Anthoxanthum odoratum*), Cock's-foot (*Dactylis glomerata*) and Wood Sage (*Teucrium scorodonia*).

Much of the site consists of intertidal sand and mudflats, supporting a number of soft sediment communities, including beds of eelgrass (mostly *Zostera noltii*) in some places. A subtidal mixed sediment community complex is also present in the channel between Rossbehy Point and Inch Point.

The rivers and their associated habitats also make up a considerable portion of the site. These associated habitats include wet grassland, woodland, scrub and bog/heath. In the valley up-river of Killorglin, is an interesting area of alluvial wet woodland, dominated by Alder (*Alnus glutinosa*) and willows (*Salix* spp.). The vegetation is quite diverse, and there are spectacular tussocks of Greater Tussock-sedge (*Carex paniculata*). Other species which occur include Ash (*Fraxinus excelsior*), Wild Angelica (*Angelica sylvestris*), Cuckooflower (*Cardamine pratensis*), Meadowsweet (*Filipendula ulmaria*), Common Nettle (*Urtica dioica*), Remote Sedge (*Carex remota*) and a range of bryophytes. While small in area, this is one of the few examples in Ireland of woodland on riverine alluvium dominated by native tree species.

Five plants listed in the Irish Red Data Book have been recorded at this site: Sea-kale, Corn Cockle (*Agrostemma githago*), Sea Pea, Pennyroyal (*Mentha pulegium*) and Irish Lady's-tresses (*Spiranthes romanzoffiana*). The three last-named are legally protected under the Flora (Protection) Order, 1999, as is the rare bryophyte, Petalwort. Other scarce species which occur here are Yellow Bartsia (*Parentucellia viscosa*), Lax-flowered Sea-lavender (*Limonium humile*) and Blue-eyed-grass (*Sisyrinchium bermudiana*).

The vicinity of Castlemaine Harbour is also important as one of few areas in Ireland (all of which are in Co. Kerry) where the Natterjack Toad naturally occurs. This amphibian is listed in the Irish Red Data Book and on Annex IV of the E.U. Habitats Directive.

The site also supports a small colony of Common Seal, while two Lamprey species have been recorded in the Laune river catchment. The Laune catchment is used by Otter and is also an important Salmon system with nurseries, riffles pools and glides.

Castlemaine Harbour is a very important site for passage and wintering waterfowl. The following figures are derived from counts between 1994/5 and 1996/7. One species occurs here in internationally important numbers - Brent Goose (734) - with 16 species having populations of national importance: Cormorant (215), Shelduck (129), Pintail (167), Scaup (138), Wigeon (3,513), Red-breasted Merganser (51), Oystercatcher (1,539), Ringed Plover (330), Golden Plover (1,940), Grey Plover (122), Knot (347), Sanderling (207), Dunlin (1,360), Redshank (299), Greenshank (26) and Turnstone (296).

Castlemaine Harbour is of major ecological importance. It contains a range of coastal habitats of excellent quality, including many that are listed on Annex I of the E.U. Habitats Directive, and two which are listed with priority status (fixed dunes and alluvial forests). It also includes long stretches of river and stream which are excellent habitats for Salmon, Lamprey and Otter. Inch dunes are recognised as among the finest in the country, with particularly well-developed dune slacks. The site supports internationally important waterfowl populations, rare plant species, the rare Natterjack Toad, as well as populations of several animal species that are listed on Annex II of the E.U. Habitats Directive. Part of the site is designated a Special Protection Area (SPA) and is listed as a site under the Ramsar Convention. Part of Castlemaine Harbour is a Statutory Nature Reserve, while Inch and Rosbehy are Wildfowl Sanctuaries.

SITE NAME: CASTLEMAINE HARBOUR SPA

SITE CODE: 004029

Castlemaine Harbour SPA is a large coastal site occupying the innermost part of Dingle Bay. It extends from the lower tidal reaches of the River Maine and River Laune to west of the Inch and Rosbehy peninsulas (*c*. 16 km from east to west). The average width of the estuary is 4-5 km though it is *c*. 11 km wide at the outer limit. The site comprises the estuaries of the River Maine and the River Laune, both substantial rivers, and has extensive areas of intertidal sand and mud flats. A number of other rivers, e.g. the Caragh and the Emlagh, flow into the site, as well as numerous small streams. Conditions in the bay are very sheltered due to the presence of three protruding sand spits on its seaward side. These spits overly gravel bars. Two of the spits, Rosbehy and Inch, are included within the site. Salt marshes fringe much of the shoreline. A very large dune system occurs on the Inch peninsula. A substantial area of shallow marine water is included in the site.

The intertidal flats are mostly muds or muddy sands and have high densities of polychaete worms such as Ragworm (*Hediste diversicolor*) and Lugworm (*Arenicola marina*), along with a good variety of bivalves and molluscs. Eelgrass (*Zostera* spp.) is common in places. The introduced Common Cord-grass (*Spartina anglica*) is found in sheltered areas of the intertidal flats and has colonised the lower part of the saltmarsh at Inch. Salt marsh vegetation includes Thrift (*Armeria maritima*), Common Saltmarsh-grass (*Puccinellia maritima*), Sea Aster (*Aster tripolium*), Sea Rush (*Juncus maritimus*) and Sea Plantain (*Plantago maritima*). The sand dune system at Inch is the largest and arguably the best remaining intact dune system in the country and includes large areas of embryo dunes, Marram (*Ammophila arenaria*) dunes and fixed dunes, as well as dune slacks.

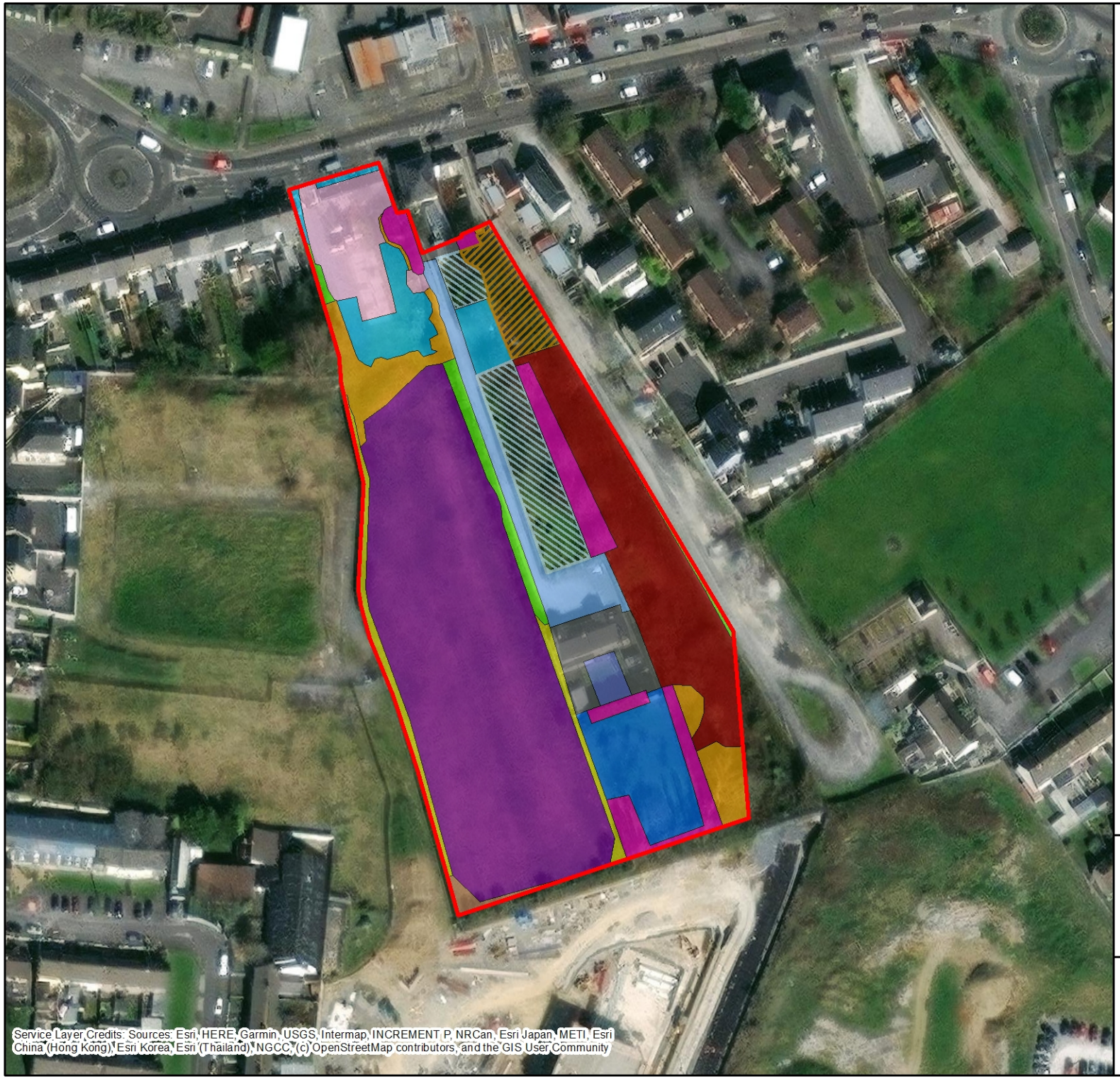
The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Red-throated Diver, Cormorant, Light-bellied Brent Goose, Wigeon, Mallard, Pintail, Scaup, Common Scoter, Oystercatcher, Ringed Plover, Sanderling, Bar-tailed Godwit, Redshank, Greenshank, Turnstone and Chough. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Castlemaine Harbour SPA is one of the most important sites for wintering waterfowl in the south-west. It provides habitats for an excellent diversity of waterbirds, including divers and seaduck. It is of international importance for its Light-bellied Brent Goose population (694) - figures given are mean peaks for the five winters 1995/96-1999/2000, as well as nationally important populations of a further fourteen waterbird species, i.e. Red-throated Diver (56), Cormorant (136), Wigeon (6,819), Mallard (487), Pintail (145), Scaup (74), Common Scoter (3,637), Oystercatcher (1,035), Ringed Plover (206), Sanderling (335), Bar-tailed Godwit (397), Redshank (341), Greenshank (46) and Turnstone (144). The population of Wigeon is of note, being 7.6% of the all-Ireland total, while that of Sanderling is over 5%. Other species which occur include Great Northern Diver (22), Shelduck (90), Teal (287), Red-breasted Merganser (29), Golden Plover (972), Grey Plover (46), Knot (199), Dunlin (933), Curlew (474) and Black-headed Gull (538). The site provides good quality habitat for the feeding and roosting requirements of the various bird species which winter here. Whilst not breeding within the site, Chough occur in nationally important numbers and are regularly found on the sand dunes at Inch where they feed and socialise; during the autumn in 2002/03 and 2003/04 the dunes at Inch held flocks of up to 40 and 64 birds respectively.

Castlemaine Harbour SPA is a very important ornithological site, with one species, Light-bellied Brent Goose, occurring in numbers of international importance. In addition, it supports nationally important populations of a further fifteen species. Of particular note is that five species that occur

regularly are listed on Annex I of the E.U. Birds Directive, i.e. Red-throated Diver, Great Northern Diver, Golden Plover, Bar-tailed Godwit and Chough. Castlemaine Harbour is a Ramsar Convention site and parts of Castlemaine Harbour SPA are designated as a Statutory Nature Reserve and as Wildfowl Sanctuaries.

Appendix 4
Habitat Map



Legend

Site Boundary

Habitat

- BL1: Stone walls and other stonework
- BL3: Buildings and artificial surfaces
- BL3/ED2: Buildings and artificial surfaces/Spoil and bare ground
- ED2: Spoil and bare ground
- ED2/ED3: Spoil and bare ground/Recolonising bare ground
- ED3: Recolonising bare ground
- GA1: Improved grassland
- GA2: Amenity grassland
- GS2: Dry meadows and grassy verges
- GS2/WS1:Dry meadows and grassy verges/Scrub
- WD5: Scattered trees and parkland
- WD5/WS3: Scattered trees and parkland/Ornamental or non-native shrub
- WL1: Hedgerows
- WL2: Treelines
- WS1: Scrub
- WS1/WL2: Scrub/Treelines

0 0.03 0.06 km

N

MWP