Three Trouts Residential Development

Ecological Impact Assessment




Prepared By:

Moore Group -
Environmental Services

On behalf of:
Wicklow County Council

Job Number 19138
August 2019

Project Proponent	Wicklow County Council
Project	Three Trouts Residential Development
Title	Three Trouts Residential Development Ecological Impact Assessment

Project Number	19146	**Document Reference**	19146 Three Trouts Res Dev EcIA Rev0	
Revision	**Description**		**Author**	**Date**
Rev0	Issued for Client Review		G. O'Donohoe	22nd August 2019
Moore Archaeological and Environmental Services Limited				

TABLE OF CONTENTS **PAGE**

1. INTRODUCTION

Moore Group was commissioned by Wicklow County Council to undertake a Habitat Survey and EcIA of the site of a proposed residential development at Three Trouts, Greystones, Co. Wicklow.

This report was compiled by Ger O'Donohoe of Moore Group providing information on habitats in the study area. Ger O'Donohoe M.Sc. is the principal ecologist with Moore Group and has over 25 years' experience in ecological impact assessment. He graduated from GMIT in 1993 with a B.Sc. in Applied Freshwater & Marine Biology and subsequently worked in environmental consultancy while completing an M.Sc. in Environmental Sciences, graduating from Trinity College, Dublin in 1999. His primary role in Moore Group is as Principal Ecologist in the management and compilation of Ecological Impact Assessments and Appropriate Assessment of the terrestrial and aquatic environments of any particular development.

The report provides information on ecological features if present within the study areas, of particular significance, primarily designated habitats and species, including habitats/species listed in Annex I, II and IV of the EU Habitats Directive, rare flora listed in the Flora Protection Order along with other semi-natural habitats of conservational value.

The following important ecological receptors were considered in planning and designing the proposed Project, and in assessing its likely ecological effects:

- Sites with nature conservation designations, including proposed NHAs, the reasons for their designation, and their conservation objectives, where available;
- Annex IV (Habitats Directive) species of fauna and flora, and their breeding sites and resting places, which are strictly protected under the European Communities (Birds and Natural Habitats) Regulations, 2011;
- Other species of fauna and flora which are protected under the Wildlife Acts, 1976-2012;
- *'Protected species and natural habitats'*, as defined in the Environmental Liability Directive (2004/35/EC) and European Communities (Environmental Liability) Regulations, 2008, including:
    - Birds Directive – Annex I species and other regularly occurring migratory species, and their habitats (wherever they occur);
    - Habitats Directive – Annex I habitats, Annex II species and their habitats, and Annex IV species and their breeding sites and resting places (wherever they occur);
- Other habitats of ecological value in a national to local context, including rocky habitats in the general area;
- Stepping stones and ecological corridors encapsulated by Article 10 of the Habitats Directive.

The report has been compiled in compliance with the European Communities Legal requirements and follows EPA Draft Guidelines on Information to be contained in an EIAR (EPA, 2017) and on Transport Infrastructure Ireland TII policy and guidance outlined in Section 2.

The European Habitats Directive 92/43/EEC (Article 6) indicates the need for plans and projects to be subject to Habitats Directive Assessment (also known as Appropriate Assessment) if the plan or project not directly connected with or necessary to the management of a Natura 2000 site (which includes SACs and SPAs) but which has the potential to have implications on a site's conservation objectives. These implications can be significant effects either individually or in combination with other plans or projects.

The site location is presented in Figure 1 below.

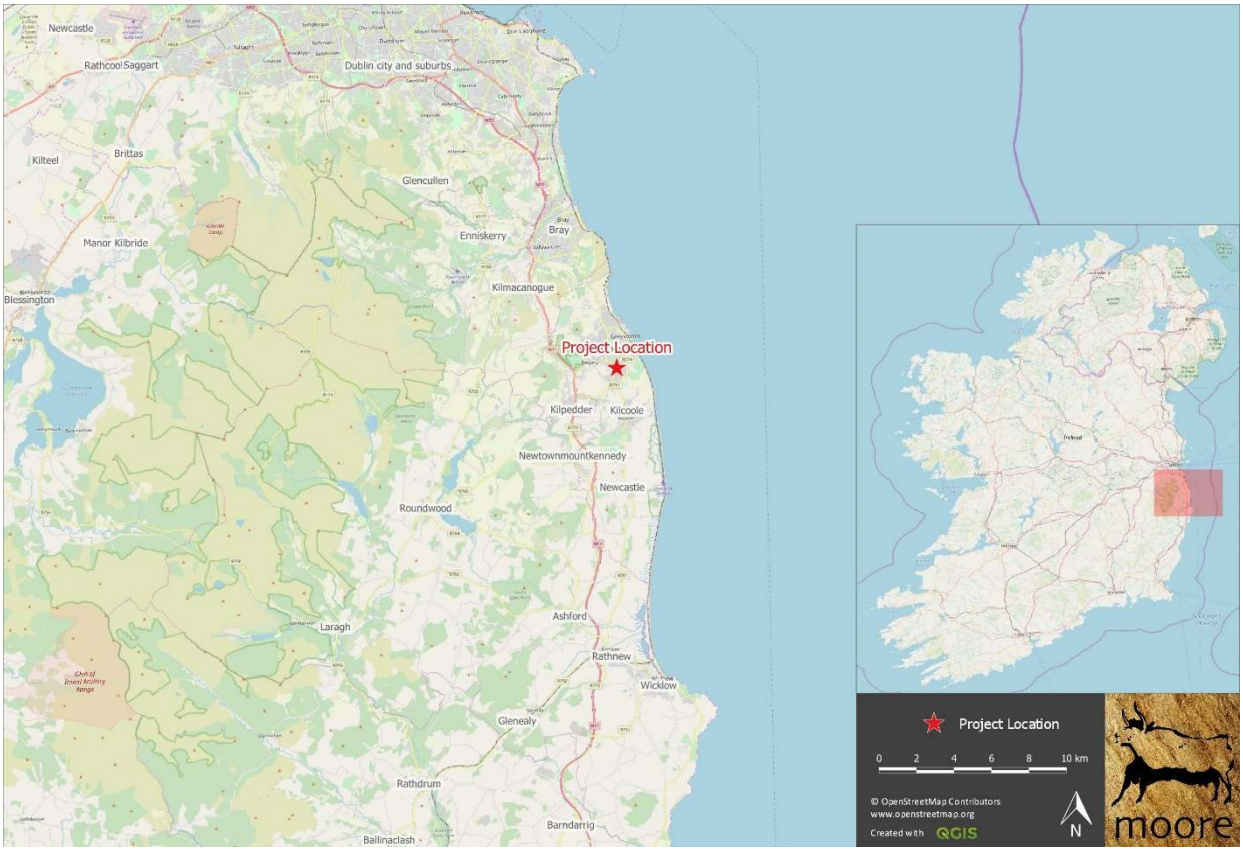

Figure 1. Showing the site location at Three Trouts, Greystones, County Wicklow (©OSM).

2. ASSESSMENT METHODOLOGY

2.1. POLICY & LEGISLATION

2.1.1. EU Habitats Directive

The "*Habitats Directive*" (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna) is the main legislative instrument for the protection and conservation of biodiversity within the European Union and lists certain habitats and species that must be protected within wildlife conservation areas, considered to be important at a European as well as at a national level. A "*Special Conservation Area*" or SAC is a designation under the Habitats Directive. The Habitats Directive sets out the protocol for the protection and management of SACs.

The Directive sets out key elements of the system of protection including the requirement for "*Appropriate Assessment*" of plans and projects. The requirements for an Appropriate Assessment are set out in the EU Habitats Directive. Articles 6(3) and 6(4) of the Directive.

The European Habitats Directive 92/43/EEC (Article 6) indicates the need for plans and projects to be subject to a Habitats Directive Assessment (also known as Appropriate Assessment) if the plan or project is not directly connected with or necessary to the management of a Natura 2000 site (which includes SACs and SPAs) but which has the potential to have implications on a site's conservation objectives. These implications can be significant effects either individually or in combination with other plans or projects.

2.1.2. EU Birds Directive

The "*Birds Directive*" (Council Directive 79/409/EEC and Council Directive 2009/147/EC on the Conservation of Wild Birds) provides for a network of sites in all member states to protect birds at their breeding, feeding, roosting and wintering areas. This directive identifies species that are rare, in danger of extinction or vulnerable to changes in habitat and which need protection (Annex I species). Appendix I indicates Annex I bird species as listed on the Birds Directive. A "*Special Protection Area*" or SPA, is a designation under The Birds Directive.

Special Areas of Conservation and Special Protection Areas form a pan-European network of protected sites known as Natura 2000 sites and any plan or project that has the potential to impact upon a Natura 2000 site requires appropriate assessment.

2.1.3. Wildlife Acts 1976 - 2012

The primary domestic legislation providing for the protection of wildlife in general, and the control of some activities adversely impacting upon wildlife is the Wildlife Act of 1976. The aims of the wildlife act according to the National Parks and Wildlife Service are "*... to provide for the protection and conservation of wild fauna and flora, to conserve a representative sample of important ecosystems, to provide for the development and protection of game resources and to regulate their exploitation, and to provide the services necessary to accomplish such aims*." All bird species are protected under the act. The Wildlife (Amendment) Act of 2000 amended the original Act to improve the effectiveness of the Act to achieve its aims. The Wildlife (Amendment) Act of 2012 amended the original Act to improve the effectiveness of the Act to achieve its aims.

2.2. SURVEY METHODOLOGY

2.2.1. Desk Study

The assessment was carried out in three stages, firstly through desktop assessment to determine existing records in relation to habitats and species present in the study areas. This included research on the NPWS metadata website, the National Biodiversity Data Centre (NBDC) database and a literature review of published information on flora and fauna occurring in the development area.

2.2.2. Field Study

The second phase of the assessment involved a site visit to establish the existing environment in the footprint of the proposed development area. Areas which were highlighted during desktop assessment were investigated in closer detail according to the Heritage Council Best Practice Guidance for Habitat Survey and Mapping (Smith *et al*., 2011). Habitats in the proposed development area were classified according to the Heritage Council publication "*A Guide to Habitats in Ireland*" (Fossitt, 2000). This publication sets out a standard scheme for identifying, describing and classifying wildlife habitats in Ireland. This form of classification uses codes to classify different habitats based on the plant species present. Species recorded in this report are given in both their Latin and English names. Latin names for plant species follow the nomenclature of "*An Irish Flora"* (Parnell & Curtis, 2012).

Habitats were surveyed on the 11th & 12th June 2019 by conducting a study area walkover covering the main ecological areas identified in the desktop assessment. The survey date is within the optimal botanical survey period. A photographic record was made of features of interest.

Signs of mammals such as badgers and otters were searched for while surveying the study area noting any sights, signs or any activity in the vicinity especially along adjacent boundaries.

Birds were surveyed using standard transect methodology and signs were recorded where encountered during the field walkover surveys.

2.2.3. Data Sources & Guidance

Sources of information that were used to collect data on the Natura 2000 network of sites, and the environment within which they are located, are listed below:

- The following mapping and Geographical Information Systems (GIS) data sources, as required:
    - National Parks & Wildlife (NPWS) protected site boundary data;
    - Ordnance Survey of Ireland (OSI) mapping and aerial photography;
    - OSI/Environmental Protection Agency (EPA) rivers and streams, and catchments;
    - Open Street Maps;
    - Digital Elevation Model over Europe (EU-DEM);
    - Google Earth and Bing aerial photography 1995-2019;
- Online data available on Natura 2000 sites as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie including:
    - Natura 2000 - Standard Data Form;
    - Conservation Objectives;
    - Site Synopses;
- National Biodiversity Data Centre records;
    - Online database of rare, threatened and protected species;
    - Publicly accessible biodiversity datasets.
- Status of EU Protected Habitats in Ireland. (National Parks & Wildlife Service, 2013); and
- Relevant Development Plans and Local Area Plans in neighbouring areas;
    - Wicklow County Development Plan 2016-2022

The final part of the assessment involves an evaluation of the study area and determination of the potential impacts on the habitats of the study area. This part of the assessment forms the basis for Impact Assessment and is based on the following guidelines and publications:

- Assessment of plans and projects significantly affecting Natura 2000 sites (EC, 2002);
- Managing Natura 2000 Sites (EC, 2000);
- Managing Natura 2000 Sites (EC, 2018);
- Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC (EC, 2007);
- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DEHLG, December 2009, Rev 2010);
- EPA Draft Guidelines on Information to be contained in an EIAR (EPA, 2017);
- Best Practice Guidance for Habitat Survey and Mapping (Heritage Council, 2011);

- Ecological Surveying Techniques for Protected Flora & Fauna (NRA, 2008)
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009)
- Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2016)

2.2.4. Site Evaluation and Impact Assessment

The TII Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009) outlines the methodology for evaluating ecological impacts of the proposed Project in the present report. According to the TII Guidelines, the Ecological Study should address:

- Designated conservation areas and sites proposed for designation within the zone(s) of influence of any of the route options,
- All the main inland surface waters (e.g. rivers, streams, canals, lakes and tanks) that are intersected by any of the route corridor options, including their fisheries value and any relevant designations,
- Aquifers and dependent systems and turloughs and their subterranean water systems,
- Any known or potentially important sites for rare or protected flora or fauna that occur along or within the zone(s) of influence of any of the route options,
- Any other sites of ecological value, that are not designated, along or in close proximity to any of the route corridor options,
- Any other relevant conservation designations or programmes (e.g. catchment management schemes, habitat restoration or creation projects, community conservation projects, etc.),
- Any other features of particular ecological or conservation significance along any of the route options.

The TII Guidelines set out a method of evaluating the importance of sites identified and in turn the evaluation of the significance of impacts. The Evaluation Scheme is presented in Appendix 1.

3. PROJECT DESCRIPTION

The proposed Project comprises the construction and operation of a residential development at Three Trouts, Greystones, County Wicklow. The proposed Project is to consist of 32 housing units for social housing.

The proposed Project site is a greenfield site that is located to the south of and adjacent to Three Trouts Stream, within the suburban environment of Charlesland to the south of Greystones. The Project includes an access road from the existing Burnaby Court estate to the north. The road will be facilitated by the inclusion of a precast culvert over the Three Trouts Stream.

Storm water disposal shall be in accordance with Wicklow County Council policy on storm water, the Greater Dublin Regional Code of Practice for Drainage Works and best practice for Sustainable Urban Drainage Systems.

Wastewater from the proposed development will be directed to the Greystones WWTP which has the capacity to assimilate the additional load, see Annual Environmental Report for Greystones WWTP (2017) available online through the Environmental Protection Agency's (EPA) website. Section 3.2 of the report refers to the existing capacity and reports that the WWTP has the remaining capacity of 15,063 PE.

Figure 2 shows a detailed view of the existing site on high resolution aerial photography. Figure 3 shows the layout of the proposed development.

Figure 2. Showing the indicative site and overall land holding on recent aerial photography.

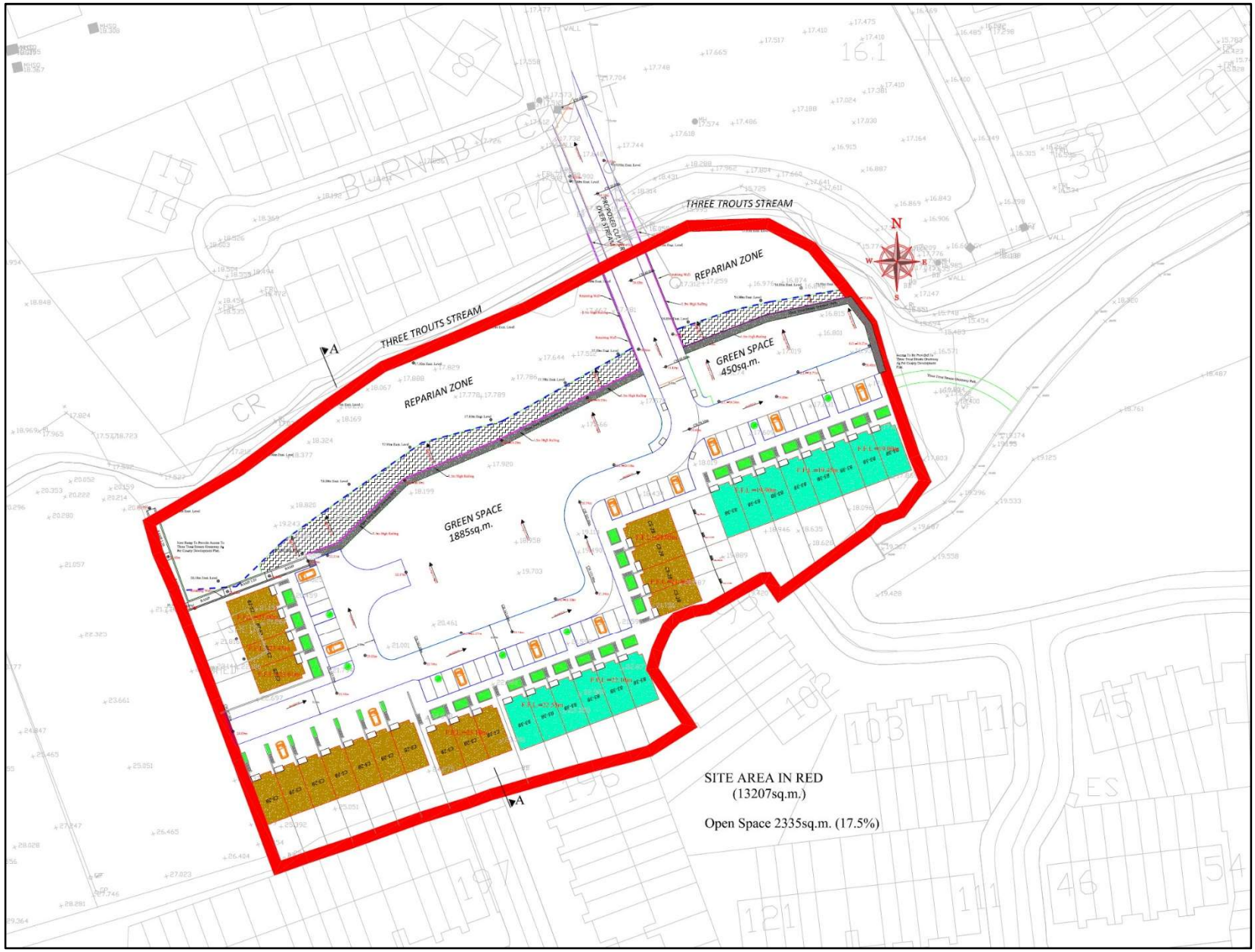

Figure 3. Site layout of the proposed development within the land holding.

4. EXISTING ENVIRONMENT

4.1. DESIGNATED CONSERVATION AREAS

DoEHLG (2009) Guidance on Appropriate Assessment suggests an assessment of European sites within a zone of impact of 15 km. This distance is a guidance only and the zone of impact has been identified taking consideration of the nature and location of the proposed Project to ensure all European sites with connectivity to it are considered in terms of a catchment-based assessment.

The zone of impact may be determined by connectivity to the proposed Project in terms of:

- Nature, scale, timing and duration of works and possible impacts, nature and size of excavations, storage of materials, flat/sloping sites;
- Distance and nature of pathways (dilution and dispersion; intervening 'buffer' lands, roads etc.); and
- Sensitivity and location of ecological features.

The guidance provides that, at the screening stage, it is necessary to identify the sites and compile information on their qualifying interests and conservation objectives. In preparation for this, the potential for source pathway receptor connectivity is firstly identified and detailed information is then provided on sites with connectivity. European sites that are located within 15 km of the Project are listed in Table 1 and presented in Figures 4 and 5, below. Spatial boundary data on the Natura 2000 network was extracted from the NPWS website (www.npws.ie) on the 1st August 2019.

Table 1 European Sites located within 15km or the potential zone of impact[1] of the Project.

Site Code	Site name	Distance (km)[2]
000713	Ballyman Glen SAC	9.26
000714	Bray Head SAC	3.13
000716	Carriggower Bog SAC	6.23
000719	Glen of The Downs SAC	1.96
000725	Knocksink Wood SAC	9.77
002122	Wicklow Mountains SAC	9.02
002249	The Murrough Wetlands SAC	2.29
003000	Rockabill to Dalkey Island SAC	13.01
004040	Wicklow Mountains SPA	9.02
004186	The Murrough SPA	3.18

[1] All European sites potentially connected irrespective of the nature or scale of the proposed Project.

[2] Distances indicated are the closest geographical distance between the proposed Project and the European site boundary, as made available by the NPWS. Connectivity along hydrological pathways may be significantly greater.

The proposed Project site is a greenfield site located to the south of Greystones and to the south of and adjacent to Three Trouts Stream. The Three Trouts Stream discharges into the Irish Sea approximately 1.29 km to the east of the proposed Project.

The Project includes an access road from the existing Burnaby Court estate to the north. The road will be facilitated by the inclusion of a precast culvert over the Three Trouts Stream which will clear span the stream.

The Glen of The Downs SAC (Site Code 000719) is located approximately 2.22 km upstream from the proposed Project site. Given its upstream location there is no potential for hydrological connectivity to this European site. A review of the Qualify Interests for this site indicates that it has been selected for the following habitat, 'Old sessile oak woods with Ilex and Blechnum in the British Isles'. In light of this, there is no potential for meaningful biological connectivity between this European site and the proposed Project.

North along the coast is the Bray Head SAC (Site Code 000714) and to south is The Murrough Wetlands SAC (Site Code 002249); these sites are located over 2 km from the proposed Project. There is no potential for meaningful biological or relevant hydrological connectivity to these sites, which are in different catchments to the proposed Project and are only linked via the Irish Sea.

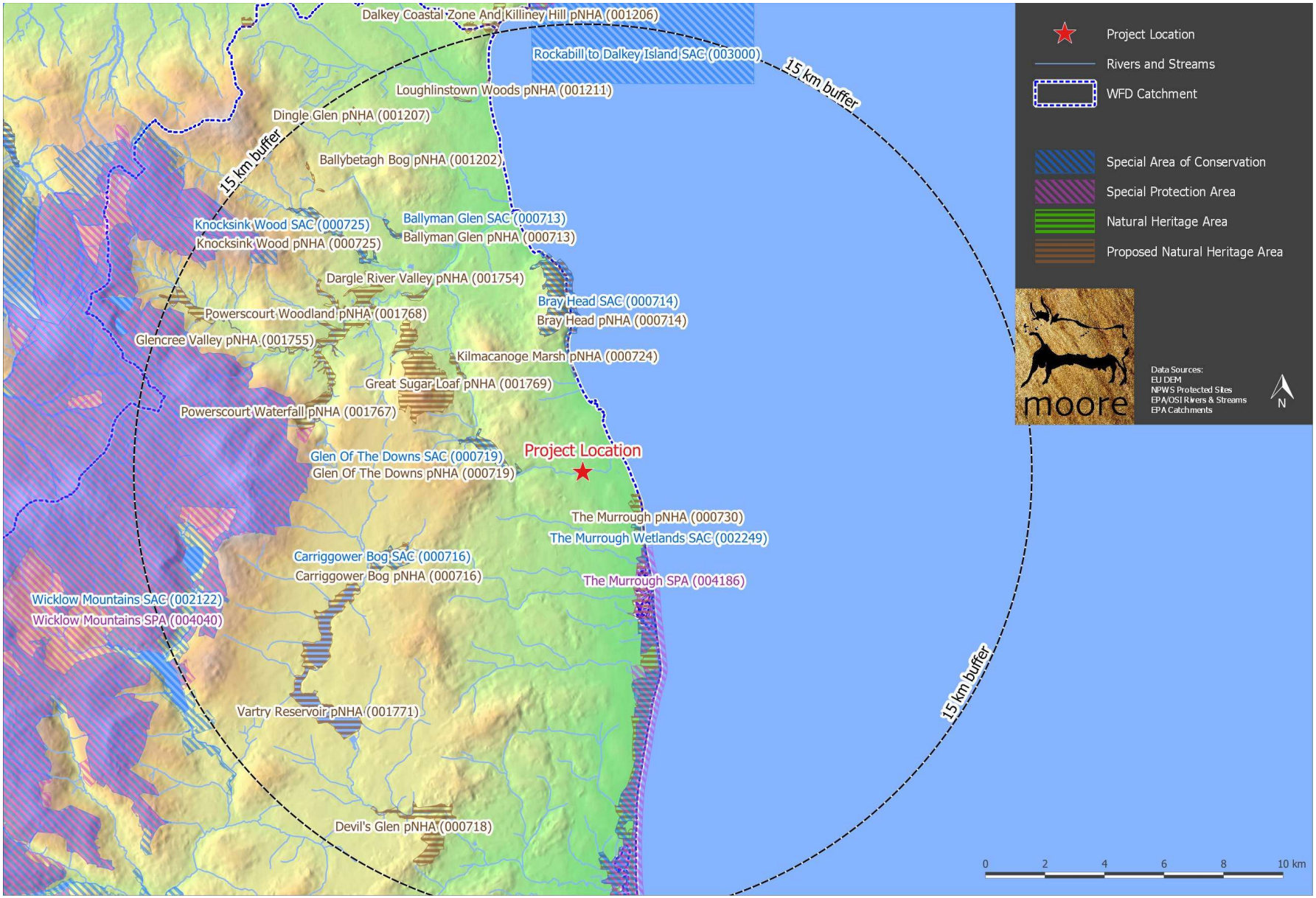

Figure 4. Showing the designated conservation sites in the vicinity of the Project.

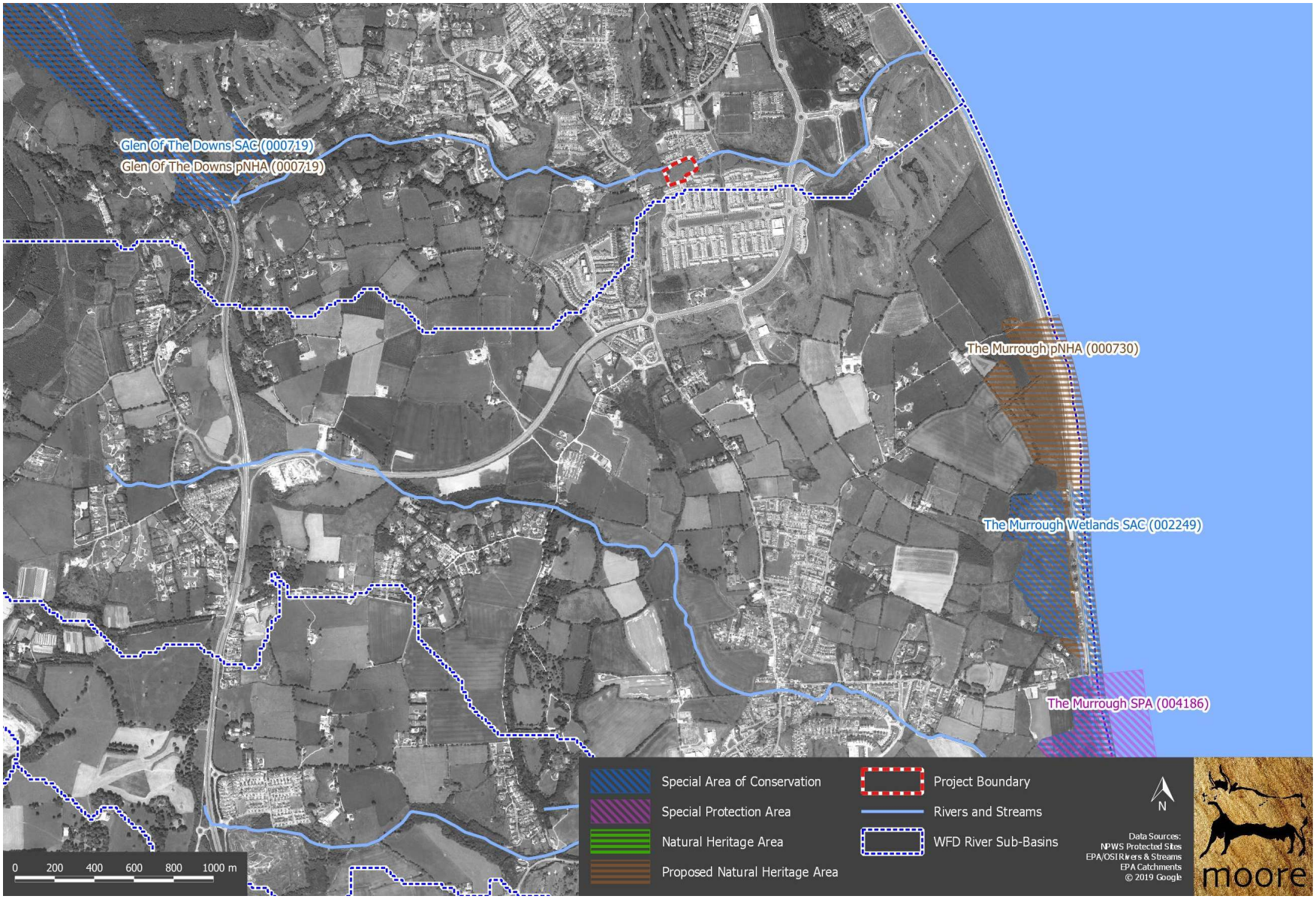

Figure 5. Detail of designated conservation sites showing the Three Trouts Stream adjacent to the Project site.

4.2. HABITAT DESCRIPTIONS

The proposed Project site is for the most part comprised of rank agricultural grassland (GA1) with patches of Scrub (WS1) and Broadleaved Woodland (WD1), see Figure 6. The central grassland elements of the fallow fields that were historically managed have become rank and are succeeding to scrub including willow, gorse and juvenile Blackthorn (*Prunus spinosa*) with Willow patches growing out under surrounding hedgerows to become early woodland. The riparian zone of the Three Trouts stream is comprised of a mixture of Alder and Ash woodland.

Grassland species present include: Cocksfoot (*Dactylis glomerata*), Yorkshire fog (*Holcus lanatus*), Rye grasses (*Lolium* spp.), Nettle (*Urtica diocia*), Thistles, (*Cirsium arvense, C. vulgaris*), Broad dock (*Rumex obtusifolius*), Ragwort (*Senecio jacobaea*), Broad plantain (*Plantago major*), Stitchwort (*Stellaria holostea*), Red dead nettle *(Lamium purpureum*), Yarrow (*Achillea millefolium*), Birds-foot trefoil (*Lotus corniculatus*), Dandelion (*Taraxacum officinale* agg.), Germander Speedwell (*Veronica persica*) Common vetch (*Vicia savita*), along with Sowthistles (*Sonchus asper and S. oleraceus*) and Cleavers (*Galium aparine*).

Scrub (WS1) species present include semi-mature Ash (*Fraxinus excelsior*), Hawthorn (*Crataegus monogyna*), Blackthorn, Elder (*Sambucus nigra*) and Alder (*Alnus glutinosa*) with occasional patches of Gorse (*Ulex europaeus*), Bramble (*Rubus fruticosus agg*.) and Ivy (*Hedera helix*) under larger tree groups at the site corners.

The riparian woodland along the northern bank of the Three Trouts Stream presents a mixed broadleaved stand of Ash, Alder and Willow. The northern riparian zone of the stream is comprised of a dense thicket of Willow and Blackthorn and has many landscaped species including Dogwood (*Cornus* spp.), Cotoneaster, Hebe, Tutsan (*Hypericum androsaemum*), Dog rose (*Rosa canina*) and some introduced such as Buddleia and Solomon's Seal (*Polygonatum* spp.).

The understorey of the stream edges and southern side is populated with dense stands of Hogweed (*Heracleum sphondylium*), Cow parsley (*Anthriscus sylvestris*), Wood rush (*Lazula sylvatica*), Cleavers, Bramble and Ivy along with Water Forget-me-not (*Myosotis scorpioides*), Water Figwort (*Scrophularia auriculata*) and occasional Water-cress (*Nasturtium officinale*).

There is a small area of mixed woodland at the northwester corner of the site where the notional Three Trouts greenway would enter the site having crossed the stream in the area. The trees include Beech (*Fagus sylvatica*), Sycamore (Acer pseudoplatanus) and a mature Blue Spruce (*Picea pungens*). Again the ground flora is comprised of frequent Hogweed and Cow parsley with abundant Ivy, Cleavers and Wild garlic (*Allium ursinum*).

There were no third schedule invasive species recorded at the proposed development site. Buddleia was recorded on the northern side of the Three Trouts Stream outside the redline boundary.

Figure 6. Habitat map based on recent aerial photography.

4.1. FAUNA

4.1.1. Mammals

Otters

There are no current records for otters from the Three Trouts stream or adjacent to the site . There are no holts or resting places in the vicinity of the site and no signs of otters .

Badgers

There are no badger setts in the study area and no potential for badgers on the development site.

Bats

There are no records for bats from the NBDC 1 km square (O2910) in which the proposed development is located. It is likely that the woodland habitat along the Three Trouts stream would be of higher value to summer roosting bats and to commuting and feeding bats.

The mature trees in the small pocket of woodland at the north-western corner of the site have potential for roosting bats.

Lighting from the proposed residential scheme is unlikely to affect commuting bats given the buffer distance from the Project site to the riparian woodland.

4.1.2. Birds

All birds are protected under the Wildlife Acts. A list of breeding bird species recorded during fieldwork on the 11th June 2019 is presented in Table 2 below.

Table 2. Birds recorded during fieldwork in June 2019.

Birds	Scientific name	BWI Status	Habitat Type
Blackbird	*Turdus merula*	Green	Dense woodland to open moorland, common in gardens
Magpie	*Pica pica*	Green	Gardens, woods, hedges
Chaffinch	*Fringilla coelebs*	Green	Hedgerows, gardens and farmland
Great Tit	*Parus major*	Green	Woods, hedges, gardens
Robin	*Erythacus rubecula*	Green	Woodland, gardens and parks
Woodpigeon	*Columba palumbus*	Green	Gardens, woods, hedges

5. ASSESSMENT OF IMPACTS

5.1. SITE EVALUATION

The ecological value of the site was assessed following the guidelines set out in the Institute of Ecology and Environmental Management's Guidelines for Ecological Impact Assessment (2016) and according to the Natura Scheme for evaluating ecological sites (after Nairn & Fossitt, 2004). Judgements on the evaluation were made using geographic frames of reference*, e.g.* European, National, Regional or Local.

Due cognisance of features of the landscape which are of major importance for wild flora and fauna, such as those with a "*stepping stone*" and ecological corridors function, as referenced in Article 10 of the Habitats Directive were considered in this assessment.

Following a detailed literature review, desktop assessment and field survey the site can be categorised into a three main habitat types:

- Improved grassland (GA1)
- Scrub (WS1)
- Mixed broadleaved woodland & Scrub (WD1/WS1)

There were no rare or protected species recorded on the site and there were no records of Third schedule invasive species.

The habitats under the footprint of the proposed development are of low to moderate local ecological value.

5.2. IMPACT ASSESSMENT

5.2.1. Direct Impacts

Habitats

The proposed Project site is for the most part comprised of a mosaic of rank grassland (GA1), Scrub (WS1 and Broadleaved Woodland (WD1) which is of low local ecological value. The central grassland elements of the fallow fields that were historically managed have become rank and are succeeding to scrub including willow, gorse and large areas of Rosebay willowherb (*Chamerion angustifolium*) with Willow patches growing out to become early woodland. The riparian zone of the Three Trouts stream is comprised of Alder woodland and is of higher ecological value.

There were no Third schedule invasive species recorded in the proposed Project area.

Fauna

Otters

There will be no direct or indirect impacts on otters.

Badgers

There will be no direct or indirect impact on badgers.

Bats

There is limited development proposed for the riparian zone of the Three Trouts stream where the proposed access road will be culverted over the stream. The potential commuting corridor will not be significantly affected.

The mature trees in the small pocket of woodland at the north-western corner of the site have potential for roosting bats.

Lighting from the proposed residential scheme is unlikely to affect commuting bats given the buffer distance from the Project site to the riparian woodland.

The proposed pedestrian crossing is located at an area that is currently used as a rough fording point on the stream and the canopy is relatively open in this area. There would be no impact on commuting bats as a results of placing a footbridge in this area.

Birds

Any vegetation to be cut will be done so outside the bird nesting season 1st March – 31st August.

5.2.2. Indirect Impacts

The construction phase of the proposed Project will involve some ground disturbance and construction activity. .

The proposed access road will clear span the stream and there will be no instream works and works will be limited to the upper riparian zone and amenity grassland to the north and agricultural grassland to the south.

In line with standard engineering design to comply with the Surface Water Regulations, the construction of the access road and placement of the culvert will be subject to specific construction management measures to avoid direct and indirect impacts on the Three Trouts Steam. These measures are specific to the protection of water quality in the stream and have no bearing on the European site located on the coast. The distance to the sea is approximately 1.7 river kilometres and the distance to the nearest

coastal European site, The Murrough SAC is over 2.3 km along the coast. The potential for a significant impact to occur in the absence of control measures is unlikely. Thus the control measures are specific to the protection of water quality under Surface Water Regulations.

There will be no direct or indirect impacts on the Glen of the Downs SAC woodland located c. 530 m to the north.

In terms of the operational phase, wastewater from the proposed scheme will be directed to municipal sewer. Wastewater from the proposed development will be directed to the Greystones WWTP which has the capacity to assimilate the additional load. There will be no indirect impacts from wastewater on European sites identified in the potential zone of impact of the proposed Project.

5.2.3. Cumulative Impacts

Cumulative impacts or effects are changes in the environment that result from numerous human-induced, small-scale alterations. Cumulative impacts can be thought of as occurring through two main pathways: first, through persistent additions or losses of the same materials or resource, and second, through the compounding effects as a result of the coming together of two or more effects.
A review of data made available through the planning section of the Wicklow County Council website indicates that, within the last three years, there have been 385 applications for planning permission in the vicinity of the proposed Project. This is based on a search for planning applications that contain the following terms in their address details: 'Greystones'.

There are no predicted in-combination effects given that it is predicted that the proposed Project will have no effect on any European sites.

6. MITIGATION MEASURES

6.1.1. Water Quality

In line with standard engineering design to comply with the Surface Water Regulations, the construction of the access road and placement of the culvert will be subject to specific construction management measures to avoid direct and indirect impacts on the Three Trouts Steam. These measures are specific to the protection of water quality in the stream and have no bearing on the European site located on the coast.

6.1.2. Bats & Birds

Potential impacts on birds will be avoided by cutting of vegetation outside the bird nesting season March 1st to August 31st.

Mature trees, which are to be removed will be felled in the period early September to late October, or early November, in order to avoid the disturbance of any roosting bats as per Transport Infrastructure Ireland (TII and formerly the National Roads Authority) guidelines (NRA 2006a and 2006b). Tree felling will be completed by Mid-November at the latest because bats roosting in trees are vulnerable to disturbance during their hibernation period (November – April). Ivy-covered trees, once felled, will be left intact onsite for 24 hours prior to disposal to allow any bats beneath the foliage to escape overnight.

A bat specialist will survey mature trees to be felled for roosting bats prior to felling and will provide detailed measures for any roosts found at that time.

The mature trees that are to be removed, should, due to the passage of time, again be surveyed for bat presence by a suitably experienced specialist on the day of felling. If several bats are found within any one tree, that specific tree should be left *in-situ* while an application for a derogation licence is made to the *National Parks and Wildlife Service* to allow its legal removal.

The trees identified as having potential for use by bats will be felled carefully to avoid hard shocks which may injure any bats within. Large mature trees with bat roosting potential such as those onsite will essentially be felled by gradual dismantling by tree surgeons. Care will be taken when removing larger branches as removal of loads may cause cracks or crevices to close, crushing any animals within. Such cracks will be wedged open prior to load removal. If single bats are found during tree felling operations, they will be transferred to the previously erected bat boxes onsite (see below).

To offset the loss of any tree roost a bat box scheme should be provided onsite. Bat boxes have been proven to be acceptable alternatives for bats and these are readily occupied. Boxes could be mounted on large retained trees.

7. CONCLUSIONS

There are no significant impacts predicted from the proposed development on habitats, flora, fauna or biodiversity.

There will be no direct or indirect impacts on European sites identified in the potential zone of impact of the proposed Project.

The proposed Project includes a Landscape Plan which includes planting of native locally sourced species and the retention of surrounding scrub and woodland habitats.

8. REFERENCES

CIEEM (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland. Second Ed. Jan 2016.

Department of the Environment, Heritage and Local Government (2010) Guidance on Appropriate Assessment of Plans and Projects in Ireland (as amended February 2010).

EC (2000) Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.

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

EC (2007) Guidance document on Article 6(4) of the 'Habitats Directive '92/43/EEC: Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interests, compensatory measures, overall coherence and opinion of the Commission. European Commission, Brussels.

EC (2018) Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.

EPA (2017) EPA Draft Guidelines on Information to be contained in an EIAR; EPA, August 2017.
Fossitt, J. (2000) A Guide to Habitats in Ireland. The Heritage Council.

Nairn, R. and J. Fossitt (2004) The Ecological Impacts of Roads, and an Approach to their Assessment for National Road Schemes. In: J. Davenport and J.L Davenport (eds) The Effects of Human Transport on Ecosystems: Cars and Planes, Boats and Trains, 98-114. Dublin. Royal Irish Academy.

NRA (2008) Ecological Surveying Techniques for Protected Flora & Fauna. Available at: http://www.nra.ie/Environment/

NRA (2009) Guidelines for Assessment of Ecological Impacts of National Road Schemes. Dublin: National Roads Authority. Available at: http://www.nra.ie/Environment/

Parnell, J. and T. Curtis (2012) Webb's An Irish Flora. Cork University Press.

Smith, G.F., O'Donoghue, P., O'Hora, K. and E. Delaney (2011) Best Practice Guidance for Habitat Survey and Mapping. The Heritage Council.

Appendix 1

TII Evaluation of Habitats

Ecological valuation: Examples

International Importance:

- 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation.
- Proposed Special Protection Area (pSPA).
- Site that fulfills the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended).
- Features essential to maintaining the coherence of the Natura 2000 Network.[4]
- Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive.
- Resident or regularly occurring populations (assessed to be important at the national level)[5] of the following:
  - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or
  - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive.
- Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971).
- World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972).
- Biosphere Reserve (UNESCO Man & The Biosphere Programme).
- Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979).
- Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).
- Biogenetic Reserve under the Council of Europe.
- European Diploma Site under the Council of Europe.
- Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).[6]

National Importance:

- Site designated or proposed as a Natural Heritage Area (NHA).
- Statutory Nature Reserve.
- Refuge for Fauna and Flora protected under the Wildlife Acts.
- National Park.
- Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park.
- Resident or regularly occurring populations (assessed to be important at the national level)[7] of the following:
  - Species protected under the Wildlife Acts; and/or
  - Species listed on the relevant Red Data list.
- Site containing 'viable areas'[8] of the habitat types listed in Annex I of the Habitats Directive.

County Importance:

- ☐ Area of Special Amenity.[9]
- ☐ Area subject to a Tree Preservation Order.
- ☐ Area of High Amenity, or equivalent, designated under the County Development Plan.
- ☐ Resident or regularly occurring populations (assessed to be important at the County level)[10] of the following:
  - ☐ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
  - ☐ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
  - ☐ Species protected under the Wildlife Acts; and/or
  - ☐ Species listed on the relevant Red Data list.
- ☐ Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.
- ☐ County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP,[11] if this has been prepared.
- ☐ Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.
- ☐ Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.

Local Importance (higher value):

- ☐ Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared;
- ☐ Resident or regularly occurring populations (assessed to be important at the Local level)[12] of the following:
  - ☐ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
  - ☐ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
  - ☐ Species protected under the Wildlife Acts; and/or
  - ☐ Species listed on the relevant Red Data list.
- ☐ Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality;
- ☐ Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.

Local Importance (lower value):

- ☐ Sites containing small areas of semi-natural habitat that are of some local importance for wildlife;
- ☐ Sites or features containing non-native species that are of some importance in maintaining habitat links.

Appendix 2

Site Photos

Photo 1. Showing the central site development area with remnant grassland areas.

Photo 2. Three Trouts Stream at the point of crossing of the potential greenway.

Photo 3. Looking north over the crossing area of the access road over the Three Trouts Stream.

Photo 4. Amenity grassland and landscaped areas in the adjacent Burnaby Court estate.