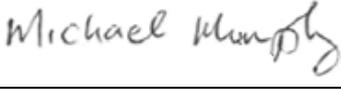


APPROPRIATE ASSESSMENT
Screening report
Cappamore Junction Improvement Scheme, Limerick

Requested By:	M.H.L. & Associates Ltd.
Prepared By:	Brendan O'Connor B.Sc. Southern Scientific Services Ltd
Date Reported:	16/06/2021
Our Reference:	20P - 153

Report Prepared By	Brendan O Connor	
Report Reviewed By	Noel Mulligan	
Reports Approved By	Michael Murphy	
Issue Date:	16/06/2021	
Comment:	Final Report to Client	
Revision:	00	

4park business centre | farranfore | county kerry | ireland | telephone+353 66 9763588 fax +353 66 9763589
email: info@southernscientificireland.com

Registered in Ireland No. 323196 VAT Reg. No. IE 6343196M

Contents

1. Introduction	1
1.1 Background	1
1.2 Brief Description of the Development Site	1
1.2.1 Outline of Project.....	1
1.2.2 Site Location	2
1.2.3 Site Description	4
2. Methodology.....	5
2.1 Regulatory Context.....	5
2.2 Desktop Review	6
2.3 Field Survey	7
3. Appropriate Assessment Screening	8
3.1 Description of the Project	8
3.2 Identification of Natura 2000 sites	8
3.3 Conservation Objectives.....	11
3.4 Natura 2000 sites potentially impacted by the development	12
3.5 Identification of potential impacts.....	13
3.5.1 Potential impairment of water quality	13
3.5.2 Habitat loss and alteration	14
3.5.3 Habitat or species fragmentation	14
3.5.4 Disturbance and/or displacement of protected species.....	15
3.5.5 Cumulative/In combination impacts	18
4. Screening Assessment Conclusion.....	19
4.1 Reasons for Conclusion.....	19
5. References.....	20
Appendix I – Site Layout	21
Appendix II – Site Photos.....	25
Appendix III.....	28
Appendix IV.....	33
Appendix V - Synopsis of Appropriate Assessment Report	34

1. Introduction

1.1 Background

Southern Scientific Services Ltd (SSSL) was commissioned by M.H.L. & Associates Ltd. to prepare an Appropriate Assessment Screening Report, which would identify potential impacts, if any, of the proposed scheme which includes new footpaths, new cycle lanes, new junction slip lanes, new controlled pedestrian crossings, new public lighting scheme, new surface water drainage system, improved road markings, new traffic signal control, signage and carriageway resurfacing at the junction between Dublin Road (R445) and Cappamore Road (R506) at Cappamore Junction, Limerick City on nearby Natura 2000 sites.

An Appropriate Assessment (AA) is an assessment of the potential impacts of a project or plan on nearby Natura 2000 sites and the development where necessary of mitigation and /or avoidance measures to preclude negative effects. The impacts assessed must include the direct, indirect and cumulative impacts of approving the project, together with any current or proposed activities and developments impacting on the site. The potential impacts of projects/developments outside the Natura 2000 sites, but potentially impacting upon them must also be included in the assessment.

1.2 Brief Description of the Development Site

1.2.1 Outline of Project

Limerick City & County Council proposes to carry out works which include the provision of new footpaths, new cycle lanes, new junction slip lanes, new controlled pedestrian crossings, new public lighting scheme, new surface water drainage system, improved road markings, new traffic signal control, signage and carriageway resurfacing.

The proposed scheme will have the following benefits:

- The project will address peak traffic congestion through the morning and evening peaks by constructing two new slip road and reconfiguration the existing traffic signals.
- The scheme will improve road safety for all road users and in particular the safety of vulnerable road users (i.e., pedestrians, cyclists).
- The proposed new LED street lighting scheme will provide an appropriate level of lighting along the length of the scheme ensuring a safer environment for all road users.
- The proposed surface water drainage works will ensure that road surface water is adequately catered for and removed from the road surface.

1.2.2 Site Location

The location of the proposed works is the junction between Dublin Road (R445) and Cappamore Road (R506) at Cappamore Junction, Limerick City, in the townland of Garraunykee and Woodstown (see Figure 1).

The site is located within the Lower Shannon WFD Catchment. It is located within Irish National Grid square R65, with a hydraulic connection to R55. Figure 2a & 2b shows the location of the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA in relation to the development site.

Water quality in the Mulkear River adjacent to the site is classified as “Good” under the River Waterbody WFD Status 2013-2018 (EPA, 2019) (see figure 3). According to Corine Land Cover 2018 (CLC) data (Copernicus, 2020), the proposed development site is situated in an area with Artificial Surfaces with discontinuous urban fabric.



Figure 1: Site Location (EPA.ie).

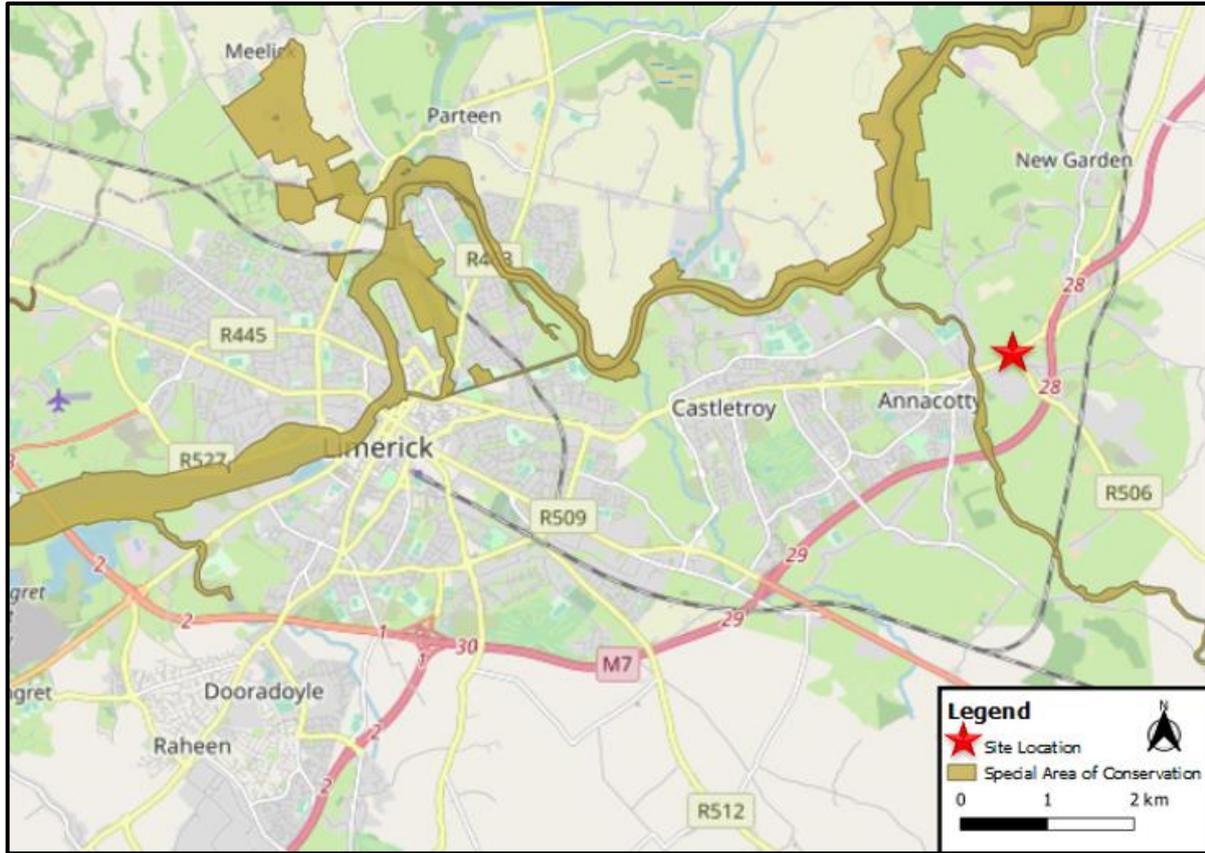


Figure 2a: Location of the site in relation to the Lower River Shannon SAC (EPA.ie).



Figure 2b Location of the site in relation to the River Shannon and River Fergus Estuaries SPA (EPA.ie).

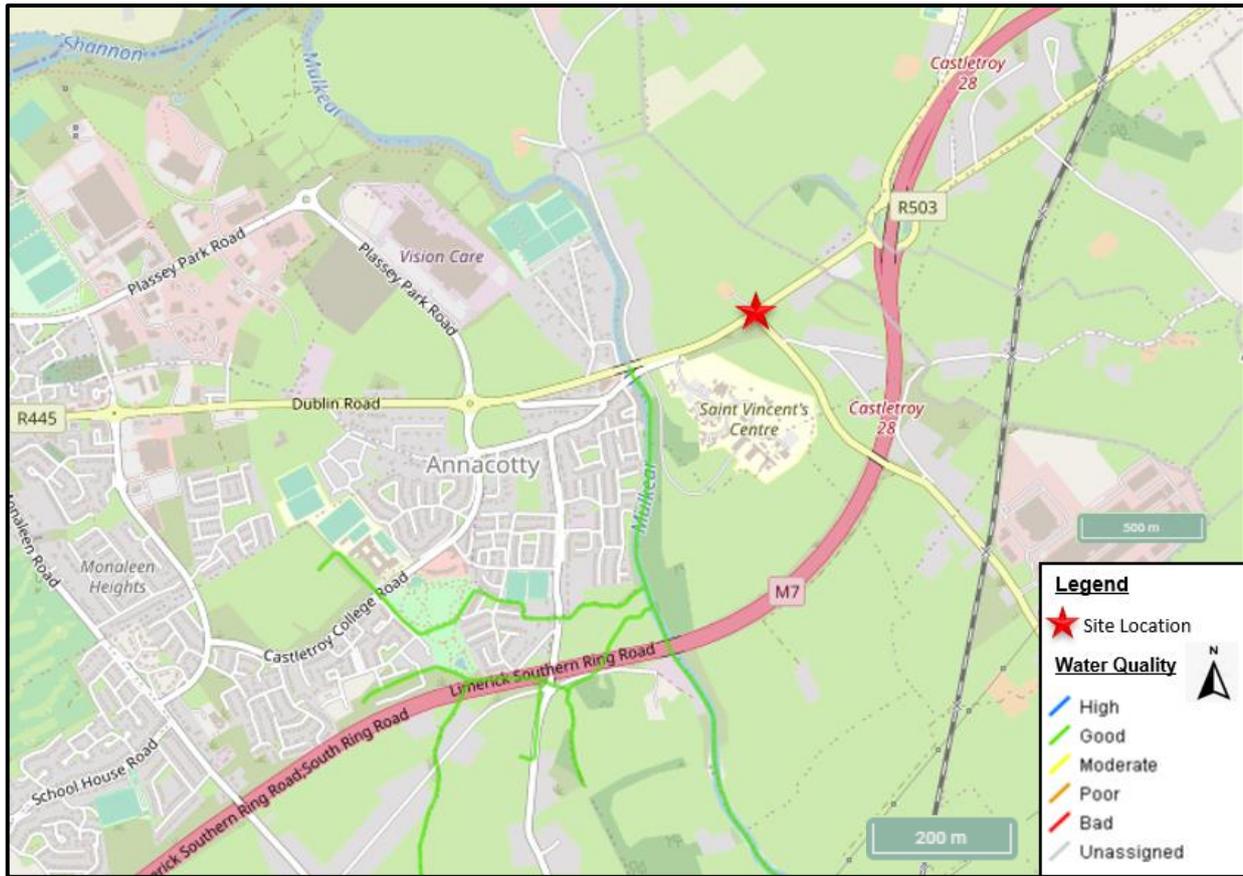


Figure 3: Location of development site in relation to nearby watercourses and their waterbody status (EPA.ie)

1.2.3 Site Description

The site of the proposed scheme is located at the existing junction of the R445 Dublin Road and the R506 Cappamore Road. It is located long a key urban traffic route linking the M8 with Limerick City. The Dublin Road acts as a link road between the city centre and the wider region to the east.

The proposed development site itself does not occur within a Natura 2000 designated site. Site photos and proposed site layout can be seen in Appendix I.

2. Methodology

2.1 Regulatory Context

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora – Habitats Directive – provides a legal framework for the protection of habitats and species of European importance. Articles 3 to 9 of this Council Directive provides the legislative means to protect habitats and species of community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000. Natura 2000 sites are those identified as sites of community importance, namely Special Areas of Conservation (SACs), under the Habitats Directive or classified as Special Protection Areas (SPAs) under the Conservation of Wild Birds Directive (79/409/EEC).

Articles 6(3) and 6(4) of the Habitats Directive outlines the decision-making tests for projects/plans likely to affect Natura 2000 sites. Article 6(3) establishes the requirement for Appropriate Assessment:

“Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent National Authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public”.

The Commission’s methodological guidance (EC, 2002) promotes a four-stage process to complete the AA. Stages 1-2 deal with the main requirements for assessment under Article 6(3), namely, ‘AA Screening’ and ‘Natura Impact Statement’. Stage 3 may be part of Article 6(3) or may be a necessary precursor to Stage 4. Stage 4 is the main derogation step of Article 6(4). Article 6(4) of the Directive deals with alternative solutions, the test of “imperative reasons of overriding public interest” and compensatory measures.

Stage 3 and Stage 4 of the AA are carried out by the appropriate authority if deemed necessary in Stages 1 & 2.

This assessment has been undertaken in accordance with the European Commission “*Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC*” and the European Commission Guidance on “*Managing Natura 2000 Sites*”.

In complying with the obligations under Article 6(3) and following the above guidelines, this assessment has been prepared using the following structure:

Stage 1: Screening

This includes:

- Description of the proposed development/project (and if the plan/project is necessary for the management of the Natura 2000 site(s)).
- Identification of all Natura 2000 sites potentially affected by the plan/project.
- Identification and description of individual and cumulative impacts likely to result from the plan/project.
- Assessment of the significance of the impacts identified above, on site integrity.
- Exclusion of sites where it can be objectively concluded that there will be no significant effects.

Determination of the necessity or otherwise for a Natura Impact Statement (NIS).

Screening for AA examines the likely effects of a project or plan, alone and in combination with other projects or plans, upon a Natura 2000 site and considers whether it can be objectively concluded that these effects will not be significant. If it is determined during screening that the development may have a significant effect on a Natura 2000 site, then a NIS will need to be prepared.

Stage 2: Appropriate Assessment (Natura Impact Statement)

This includes:

- Description of the Natura 2000 site(s) which will be considered further in the assessment.
- Impact Prediction: description of significant impacts on the integrity of the Natura 2000 site(s) as defined by the conservation objectives and status of the site(s).
- Recommendations and mitigation measures.

2.2 Desktop Review

To carry out the AA Screening Report it was essential to gather information on the existing environment. A desktop review was performed to identify features of ecological importance

within the study area and surrounding region. Information was sourced from a number of online sources which included:

- Limerick County Council (www.limerick.ie/council)
- OSI Aerial photography and 1:50000 mapping
- National Parks and Wildlife Service (NPWS) Maps & Databases
- National Biodiversity Data Centre (NBDC) (on-line map-viewer)
- Environmental Protection Agency (EPA) water quality data
- Water Framework Directive (www.catchments.ie)

2.3 Field Survey

A site visit was carried out on the 25th of November 2020. The purpose of the visit was:

- To identify potential pathways for pollutants to enter nearby watercourses
- To identify habitats and species within and surrounding the development site

3. Appropriate Assessment Screening

3.1 Description of the Project

This proposed Scheme is to upgrade the existing infrastructure at the Dublin Road (R445) and Cappamore Road (R506) at Cappamore Junction, Limerick City. It was determined that improvements to the pedestrian facilities were desirable due to the semi urban nature of the area, linking Annacotty Business Park with Limerick City. The scheme proposes to introduce new footpaths, controlled pedestrian crossings, new public lighting, new surface water drainage and carriageway resurfacing.

The following lists the principal features of the proposed scheme:

- Construction of new footpaths to ensure a continuous provision along Dublin Road/ Cappamore Road.
- Installation of controlled pedestrian crossings.
- Construction of new cycle lanes
- Installation of build outs at junctions.
- Installation of a new LED Public Lighting Scheme.
- Alterations to existing surface water drainage.
- Installation of new road markings and signage.
- Installation of new traffic signal aspects
- Carriageway resurfacing
- Provision of new boundary fencing/walls
- Alterations to existing boundary walls
- All necessary accommodation works

3.2 Identification of Natura 2000 sites

In relation to the proposed development at the Cappamore Junction a list of all Natura 2000 sites within a 15km radius of the site was compiled. Any potential impacts associated with the development were identified and any likely significant impacts assessed. Designated Natura 2000 sites within 15km of the site and their distance to the site are shown in Table 1 and Figure 5 below.

Table 1: Designated Natura 2000 sites within 15km of the site

Designated Site	Site Code	Straight line distance and direction from development site
Lower River Shannon SAC	002165	Approx. 0.43km west
River Shannon and River Fergus Estuaries SPA	004077	Approx. 7.7km west
Slievefelim to Silvermines Mountains SPA	004165	Approx. 8km East
Glenomra Wood SAC	001013	Approx. 10.km north

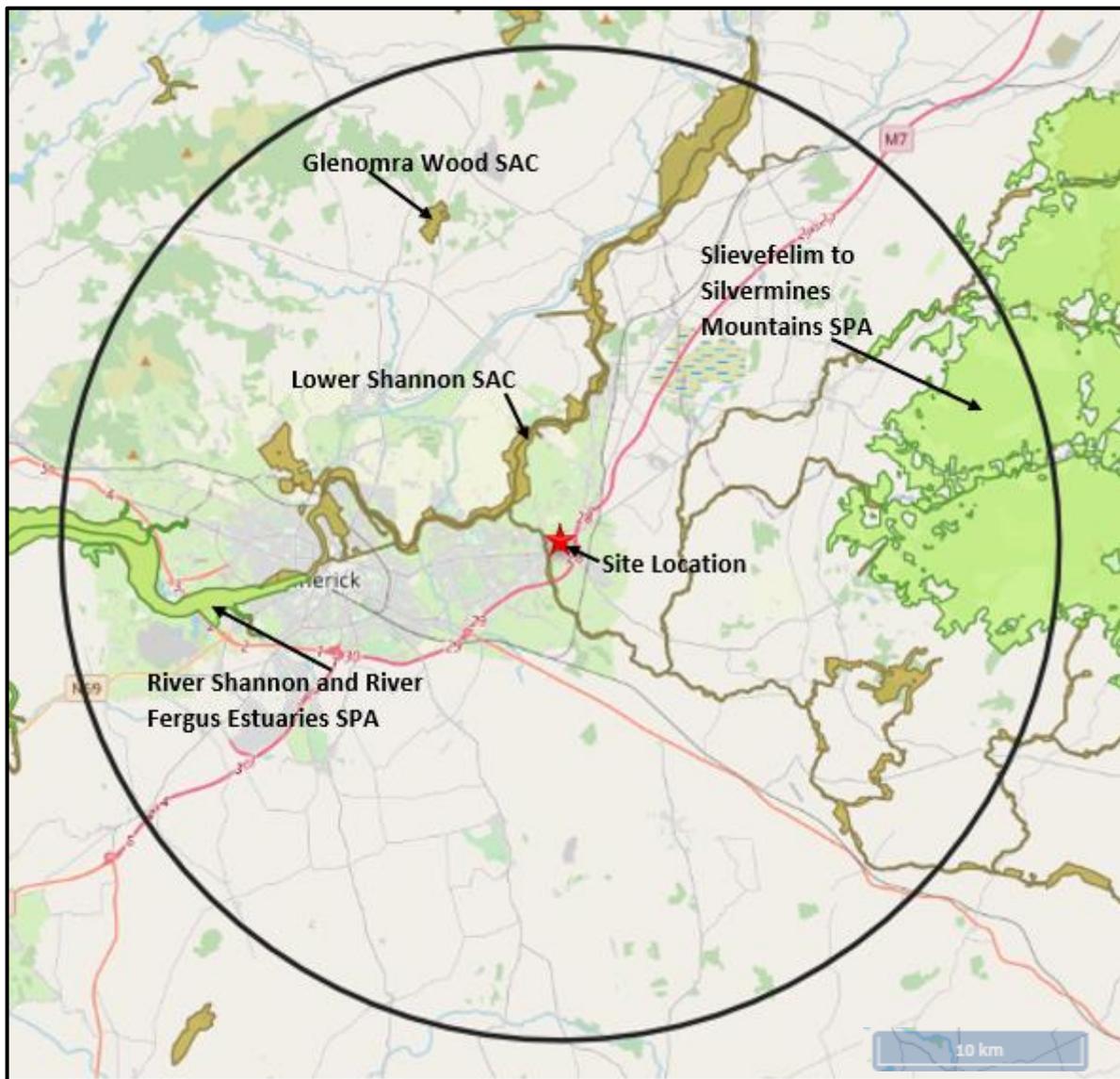


Figure 5: Natura 2000 sites (SAC- brown, SPA- green) located within a 15km radius of the proposed development site (red).

The proposed development site is sufficiently distant from, and not hydrologically linked with the Glenomra Wood SAC and Slievefelim to Silvermines Mountains SPA. Therefore, it is highly unlikely that the proposed development will impact upon their conservation objectives and so this site has been screened out and will not be discussed further.

The proposed development site is located 430m east of the Lower River Shannon SAC and 7.6km east of the River Shannon and River Fergus Estuaries SPA. Associated species within the River Shannon could be potentially impacted by the above-mentioned development as the construction phase of such projects usually creates potential for the generation of contaminated runoff.

Therefore, the Lower River Shannon SAC (Site code 002165) and River Shannon and River Fergus Estuaries SPA (Site Code 004077) are the only Natura 2000 sites considered to be potentially impacted by the development. A list of the qualifying features of conservation interest are shown in Table 2 below.

For full site synopsis and conservation objectives for the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA see Appendix II & III. Information pertaining to designated sites is from site synopses, conservation objectives, and other information available from the National Parks and Wildlife Service (NPWS) website (www.npws.ie).

Table 2: Designated sites with qualifying features of conservation interest.

Designated Site	Qualifying features of conservation interest
River Shannon SAC (002165)	<p>Habitats</p> <ul style="list-style-type: none"> [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* <p>Species</p> <ul style="list-style-type: none"> [1029] Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>) [1095] Sea Lamprey (<i>Petromyzon marinus</i>) [1096] Brook Lamprey (<i>Lampetra planeri</i>) [1099] River Lamprey (<i>Lampetra fluviatilis</i>) [1106] Atlantic Salmon (<i>Salmo salar</i>)

Designated Site	Qualifying features of conservation interest
	[1349] Bottle-nosed Dolphin (<i>Tursiops truncatus</i>) [1355] Otter (<i>Lutra lutra</i>)
River Shannon and River Fergus Estuaries SPA (004077)	Species [A017] Cormorant (<i>Phalacrocorax carbo</i>) [A038] Whooper Swan (<i>Cygnus cygnus</i>) [A046] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A048] Shelduck (<i>Tadorna tadorna</i>) [A050] Wigeon (<i>Anas Penelope</i>) [A052] Teal (<i>Anas crecca</i>) [A054] Pintail (<i>Anas acuta</i>) [A056] Shoveler (<i>Anas clypeata</i>) [A062] Scaup (<i>Aythya marila</i>) [A137] Ringed Plover (<i>Charadrius hiaticula</i>) [A140] Golden Plover (<i>Pluvialis apricaria</i>) [A141] Grey Plover (<i>Pluvialis squatarola</i>) [A142] Lapwing (<i>Vanellus vanellus</i>) [A143] Knot (<i>Calidris canutus</i>) [A149] Dunlin (<i>Calidris alpine</i>) [A156] Black-tailed Godwit (<i>Limosa limosa</i>) [A157] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A160] Curlew (<i>Numenius arquata</i>) [A162] Redshank (<i>Tringa tetanus</i>) A164 Greenshank (<i>Tringa nebularia</i>) [A179] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A999] Wetlands

3.3 Conservation Objectives

According to the Habitat's 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 Habitat's 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 biogeographic 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.

Conservation objectives for Natura sites, together with other designated site information, are available on <http://www.npws.ie/protectedsites/>.

3.4 Natura 2000 sites potentially impacted by the development

The Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA are the only Natura 2000 sites considered to have been potentially impacted by the development. The nearest point to the Lower River Shannon SAC is the Mulkear River which flows approximately 470m west of the proposed development site. The Mulkear River is located within the SAC and flows in a northerly direction before joining with the River Shannon approximately 2km north west of the site. The area around the site is relatively flat, however the gradient slopes down to the Mulkear River at the slip road for Annacotty approximately 300m west of the site. Therefore, a source-pathway-receptor linkage is present, and this presents the potential for significant impacts to occur within the SAC and SPA. In addition to the north east of the site the Rich Hill stream crosses under the R445 and flows initially north westerly before turning west and entering the Mulkear River after approximately 1.1km (see Figure 6). However, there is a significant distance between the proposed site and the Mulkear River and Rich Hill stream.

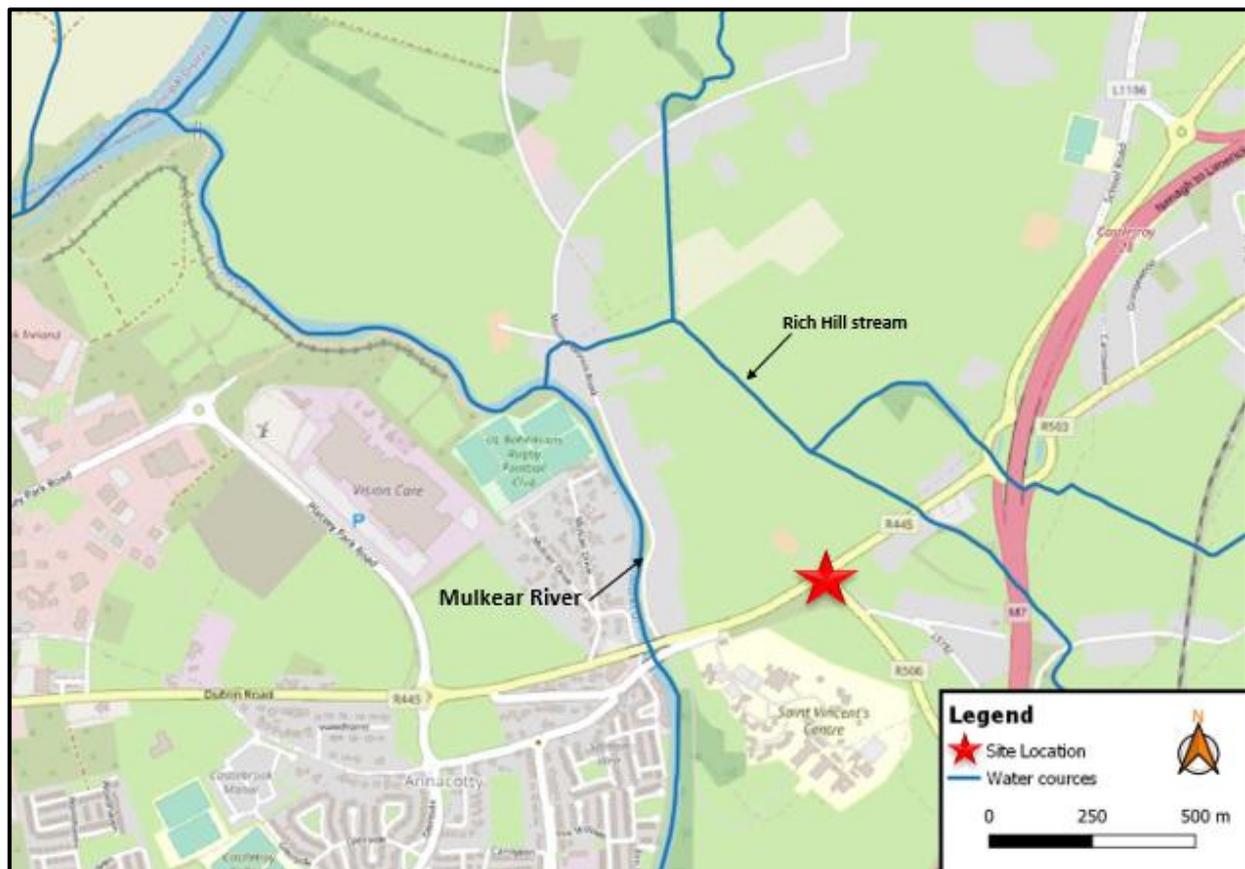


Figure 6. Showing water courses in relation to the proposed development site.

Associated species within the Mulkear river and Shannon River downstream of the site could be potentially impacted by the above-mentioned development as the construction phase of such projects creates potential for the generation of contaminated runoff from the site. Potential impacts associated with the development could arise from:

- The risk of contaminated runoff during earth moving works to facilitate construction of the slip road and footpath improvements.
- Increased activity and noise emissions during construction works.
- Use of heavy equipment, vehicles, and plant and the associated potential for hydrocarbon contamination.
- The risk of accidental spillages of fuels/oils during construction activities.

For full site synopsis for the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA see Appendix II & III.

3.5 Identification of potential impacts

Only those features of the development that have potential to impact on the integrity of the Natura 2000 site are considered. For screening purposes, the potential impacts from the proposed development are examined regarding the following:

- Potential impairment of water quality
- Habitat loss and alteration
- Habitat or species fragmentation
- Disturbance and/or displacement of protected species
- Cumulative impacts

3.5.1 Potential impairment of water quality

The Mulkear River is classified as “Good” under the Water Framework Directive (WFD 2013-2018) (see Figure 3) at the Annacotty Bridge (Station ID RS25M040590), however the water quality remains ‘Unassigned’ downstream of this point. In addition, the Rich Hill stream is ‘Unassigned’ under the Water Framework Directive (WFD 2013-2018) and at the confluence of the Mulkear and Shannon Rivers the water quality is also ‘Unassigned’ under the WFD.

With regard to this Scheme there is no direct hydrological link between the development site and the SAC or SPA. Furthermore, the separation distances which exist between the development site and the SAC boundary (approx. 410m to the west) and the nearest

watercourse (approx. 470m to the west) are considered sufficient to negate any risk of significant water quality impacts.

Generally, there is potential for water quality impacts to occur indirectly through surface water run-off during the construction of developments. However, it is considered unlikely that this development will result in any significant impacts to water quality due to the separation distance from watercourses, scale, and the specific nature and design of the work to be undertaken, as outlined above.

In addition, works will be carried out in accordance with CIRIA Guidelines – Control of Water Pollution from Construction Sites – Guide to Good Practice (2001) and Inland Fisheries Ireland – Guidelines on Protection of Fisheries during Construction Works in and adjacent to Waters (2016).

3.5.2 Habitat loss and alteration

The Lower River Shannon SAC has been designated for fourteen habitats types (see Table 2). Of these, eleven are coastal or halophytic in distribution, two are terrestrial and one is freshwater (DG of Environment, 2013). The development site is not located within a Natura 2000 site. The works will be restricted to the development site. Therefore, there will be no direct loss or alteration of any of the habitats for which the SAC or SPA have been designated. In summary, it has been objectively concluded that direct habitat loss within the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA is not likely as a result of the proposal considered in this report.

In relation to indirect habitat impacts which can occur via water quality impacts, it has been determined in section 3.5.1 above that significant water quality impacts as a result of the proposed development are not predicted or likely due to the distance from the SAC and SPA (0.5km & 8km respectively), the scale of development and the limited excavations required for the project.

It is therefore objectively concluded that significant impacts to any of the qualifying habitats for which the Lower River Shannon SAC is designated are not likely to occur and significant impacts to the Conservation Objectives of the SAC are not envisaged or likely as a result of the proposal.

3.5.3 Habitat or species fragmentation

The proposed development is located within an area with a combination of residential / commercial developments. Habitat or species fragmentation within the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA is unlikely to occur from the proposed

development. Direct barriers to aquatic species, such as otter, salmon, trout, or lamprey, will not result from the development. It is further noted that the River Shannon and its tributaries are not designated in the Salmonid Regulations (S.I. 293 / 1988). While indirect barriers to migration can sometimes occur through silted run-off from construction activities generally, it is considered that the location, scale, and the specific nature and design of the work to be undertaken along with other mitigating factors, as outlined above, mean that significant impacts are unlikely to occur as a result of the development.

3.5.4 Disturbance and/or displacement of protected species

Given the separation distance between the River Shannon and River Fergus Estuaries SPA and the proposed development site, it is highly unlikely that protected waterfowl species will be either directly or indirectly significantly impacted as a result of the construction or operational phases of the proposed development. The proposed development is far enough removed from the SPA and of such limited nature and scale, so as not to disturb or displace the avian species for which the SPA is designated.

In relation to the Lower Shannon SAC construction works will be minimal and consist of construction of a new slip lane and footpath improvements and will neither directly nor indirectly significantly impact on protected species for which the SAC has been designated. In addition, the proposed works are temporary in nature and transient as they move along the development site. It is estimated that the work will take approximately 3 months to complete.

Based on reviews of available published distribution maps and data (www.npws.ie), Table 3 and Table 4 lists the potential habitats and species which may be potentially impacted by the proposed development.

Table 3: Potential impacts on the Lower Shannon SAC

Qualifying Interest	Observations	Potential Direct/ In-situ Impacts	Potential Indirect/ Ex-situ Impacts
[1110] Sandbanks	As this habitat is not within the 10km grid squares R65 or R55 it is concluded that the proposed development does not pose a potential risk to the quality of the habitat (NPWS, 2019a).	No	No
[1130] Estuaries	This habitat is within the 10km grid square R55. However due to the lack of a potential impact pathway, it is concluded that the proposed development does not pose a potential	No	No

Qualifying Interest	Observations	Potential Direct/ In-situ Impacts	Potential Indirect/ Ex-situ Impacts
	risk to the quality of the habitat (NPWS, 2013a).		
[1140] Tidal Mudflats and Sandflats	As above	No	No
[1150] Coastal Lagoons*	As this habitat is not within the 10km grid squares R65 or R55 it is concluded that the proposed development does not poses a potential risk to the quality of the habitat (NPWS, 2019a).	No	No
[1160] Large Shallow Inlets and Bays	As above	No	No
[1170] Reefs	As above	No	No
[1220] Perennial Vegetation of Stony Banks	As above	No	No
[1230] Vegetated Sea Cliffs	As above	No	No
[1310] Salicornia Mud	As above	No	No
[1330] Atlantic Salt Meadows	As above	No	No
[1410] Mediterranean Salt Meadows	As above	No	No
[3260] Floating River Vegetation	This habitat is within the 10km grid square R55. However due to the lack of a potential impact pathway, it is concluded that the proposed development does not pose a potential risk to the quality of the habitat (NPWS, 2013a).	No	No
[6410] Molinia Meadows	As this habitat is not within the 10km grid squares R65 or R55 it is concluded that the proposed development does not poses a potential risk to the quality of the habitat (NPWS, 2019a).	No	No
[91E0] Alluvial Forests*	As above	No	No
[1029] Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>)	As this species is not within the 10km grid squares R65 or R55 it is concluded that the proposed development does not poses a potential risk to the species (NPWS, 2019b).	No	No
[1095] Sea Lamprey (<i>Petromyzon marinus</i>)	As above	No	No
[1096] Brook Lamprey (<i>Lampetra planeri</i>)	This species is within the 10km grid square R65. However due to the lack of a potential impact pathway, it is concluded that the proposed development does not pose a potential risk to this species (NPWS, 2019b).	No	No

Qualifying Interest	Observations	Potential Direct/ In-situ Impacts	Potential Indirect/ Ex-situ Impacts
[1099] River Lamprey (<i>Lampetra fluviatilis</i>)	As above	No	No
[1106] Atlantic Salmon (<i>Salmo salar</i>)	As above	No	No
[1349] Bottle-nosed Dolphin (<i>Tursiops truncatus</i>)	As this species is not within the 10km grid squares R65 or R55 it is concluded that the proposed development does not poses a potential risk to the species (NPWS, 2019b).	No	No
[1355] Otter (<i>Lutra lutra</i>)	This species is within the 10km grid square R65. However due to the lack of a potential impact pathway, it is concluded that the proposed development does not pose a potential risk to this species (NPWS, 2019b).	No	No

Table 4: Potential impacts on the River Shannon and River Fergus Estuaries SPA

Qualifying Interest	Observations	Potential Direct/ In-situ Impacts	Potential Indirect/ Ex-situ Impacts
[A017] Cormorant (<i>Phalacrocorax carbo</i>)	No potential impact pathway evident	No	No
[A038] Whooper Swan (<i>Cygnus cygnus</i>)	As above	No	No
[A046] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>)	As above	No	No
[A048] Shelduck (<i>Tadorna tadorna</i>)	As above	No	No
[A050] Wigeon (<i>Anas Penelope</i>)	As above	No	No
[A052] Teal (<i>Anas crecca</i>)	As above	No	No
[A054] Pintail (<i>Anas acuta</i>)	As above	No	No
[A056] Shoveler (<i>Anas clypeata</i>)	As above	No	No
[A062] Scaup (<i>Aythya marila</i>)	As above	No	No
[A137] Ringed Plover (<i>Charadrius hiaticula</i>)	As above	No	No
[A140] Golden Plover (<i>Pluvialis apricaria</i>)	As above	No	No
[A141] Grey Plover (<i>Pluvialis squatarola</i>)	As above	No	No
[A142] Lapwing (<i>Vanellus vanellus</i>)	As above	No	No

Qualifying Interest	Observations	Potential Direct/ In-situ Impacts	Potential Indirect/ Ex-situ Impacts
[A143] Knot (<i>Calidris canutus</i>)	As above	No	No
[A149] Dunlin (<i>Calidris alpina</i>)	As above	No	No
[A156] Black-tailed Godwit (<i>Limosa limosa</i>)	As above	No	No
[A157] Bar-tailed Godwit (<i>Limosa lapponica</i>)	As above	No	No
[A160] Curlew (<i>Numenius arquata</i>)	As above	No	No
[A162] Redshank (<i>Tringa tetanus</i>)	As above	No	No
A164 Greenshank (<i>Tringa nebularia</i>)	As above	No	No
[A179] Black-headed Gull (<i>Chroicocephalus ridibundus</i>)	As above	No	No
[A999] Wetlands	As the location of the development is c.8.0km upstream of the SPA it is concluded that the proposed development does not pose a significant risk to the water quality of the marine/estuarine SPA	No	No

3.5.5 Cumulative/In combination impacts

Activities that could potentially impact on ecological and water quality in combination with the planned development include other development/construction projects in the area, were also considered. A search was conducted in January 2021 of planning applications within the vicinity of the proposed development, using the Limerick City and County Council Planning Enquiry System. The search was limited to the five-year period preceding the date of issue of this report (due to the typical five-year lifetime of planning permission).

The in-combination effects of other project and plans have been assessed and it has been concluded that there will be no impact on Natura 2000 sites connected to the proposed development.

Potential impacts can be mitigated further by making sure that industry best practice is followed during construction activities (CIRIA, 2001). Additionally, any future plans or projects in the area should be subject to the Appropriate Assessment process. Therefore, cumulative, or in-combination impacts are unlikely to occur.

4. Screening Assessment Conclusion

This screening assessment was carried out to identify potential significant impacts, if any, arising from the planned development of a construction proposed works to provide footpath improvements and lane rearrangement at the junction of R506 and the R445 Dublin Road, known locally as the Cappamore Junction on nearby Natura 2000 sites.

The Lower Shannon SAC and River Shannon and River Fergus Estuaries SPA were considered to be the only Natura 2000 sites potentially impacted by the development. None of the threats, pressures or activities listed on the Natura 2000 Standard Data Forms for the SAC and SPA will occur either inside or outside of this site as a result of the proposed development. Due to the location, scale, duration, and nature of the development, it has been objectively concluded that significant impacts to the integrity of the following Natura 2000 sites are unlikely to occur as a result of the proposed development.

4.1 Reasons for Conclusion

- The proposed development is small in scale, the excavation requirement is limited, the works are not complex in nature and the development site will be contained and controlled.
- The proposed site is not location within 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 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.

5. References

CIRIA, 2001. Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors. pp.1–27.

Copernicus, 2020. *Corine Land Cover (CLC) 2018*. [online] Available at: <<https://land.copernicus.eu/pan-european/corine-land-cover/clc2018>>.

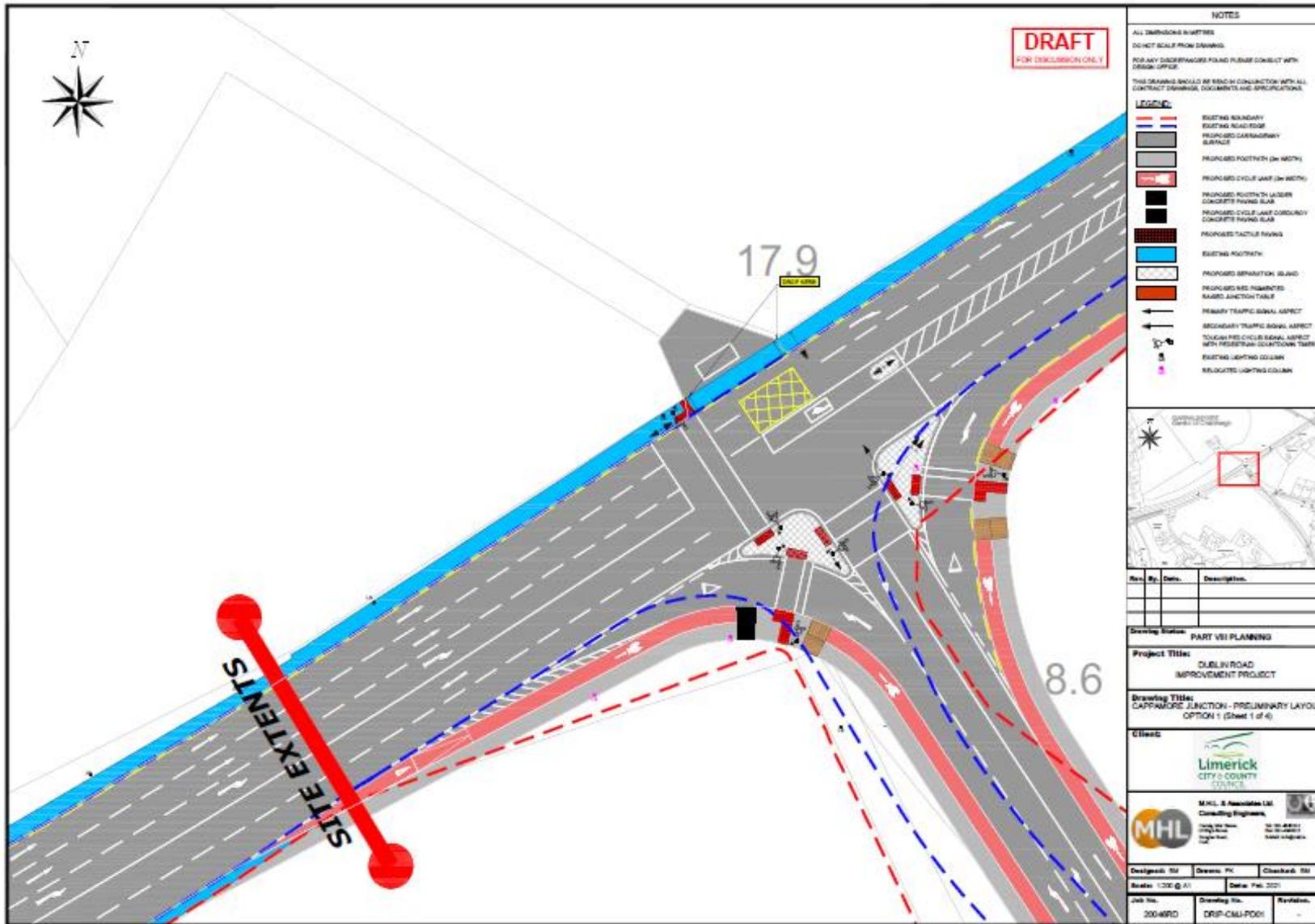
DG of Environment, 2013. *Interpretation Manual of European Union Habitats EU 28*. s.l.: European Commission Directorate General of Environment.

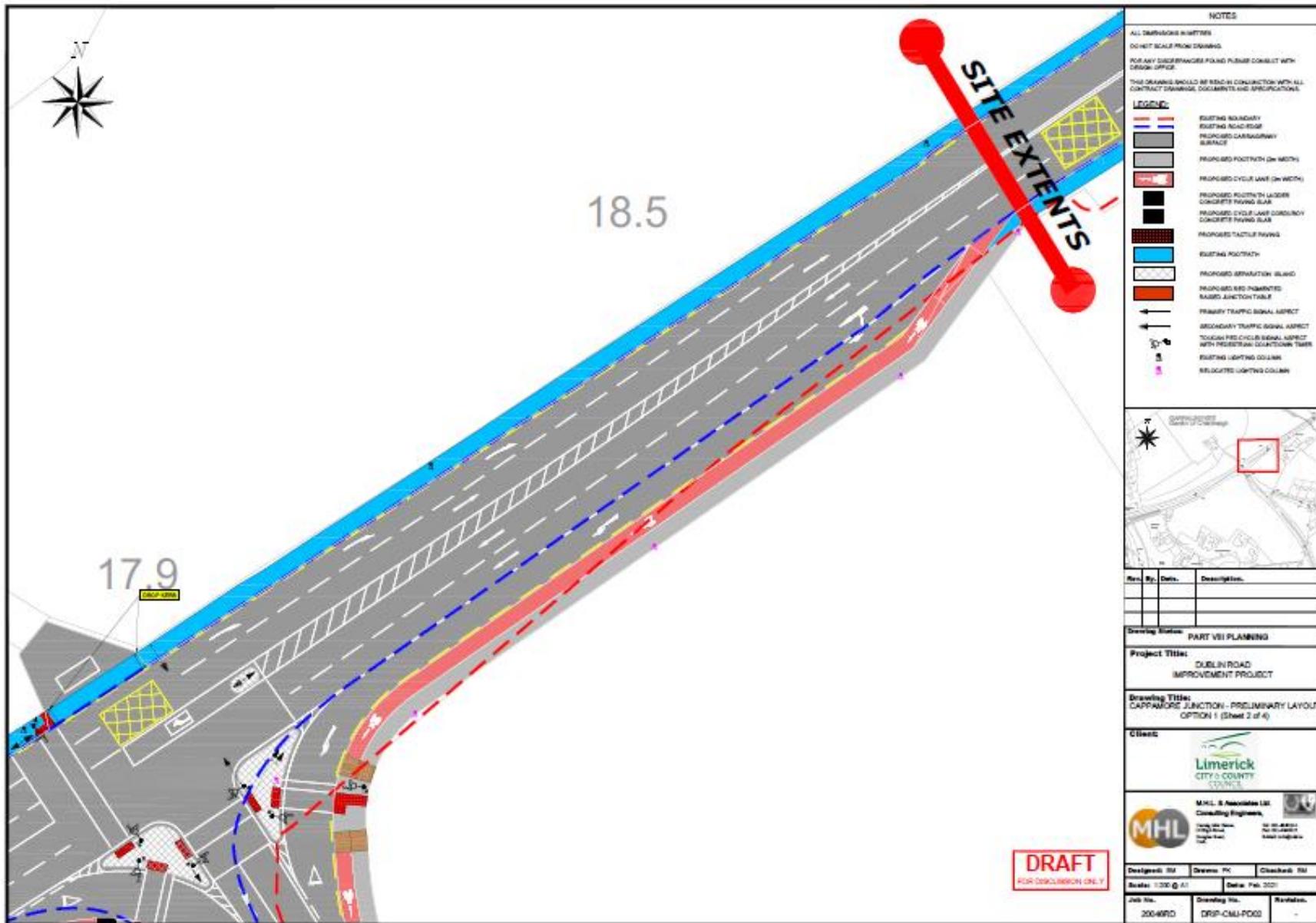
EPA, 2019. *EPA Water Quality in Ireland*. [online] Available at: <www.epa.ie>.

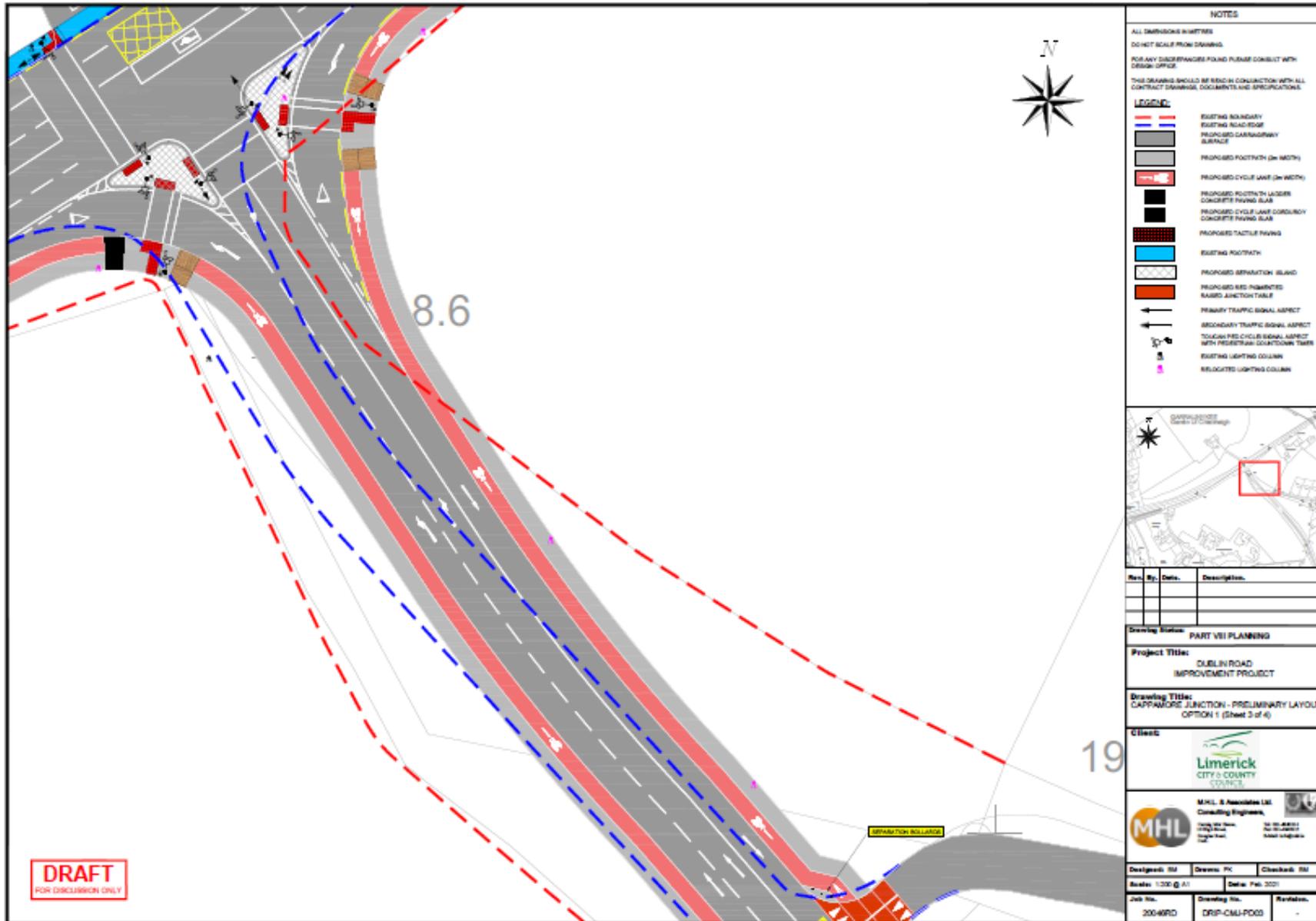
NPWS, 2019a. *The Status of EU Protected Habitats and Species in Ireland: Habitat Assessment Volume 2*.

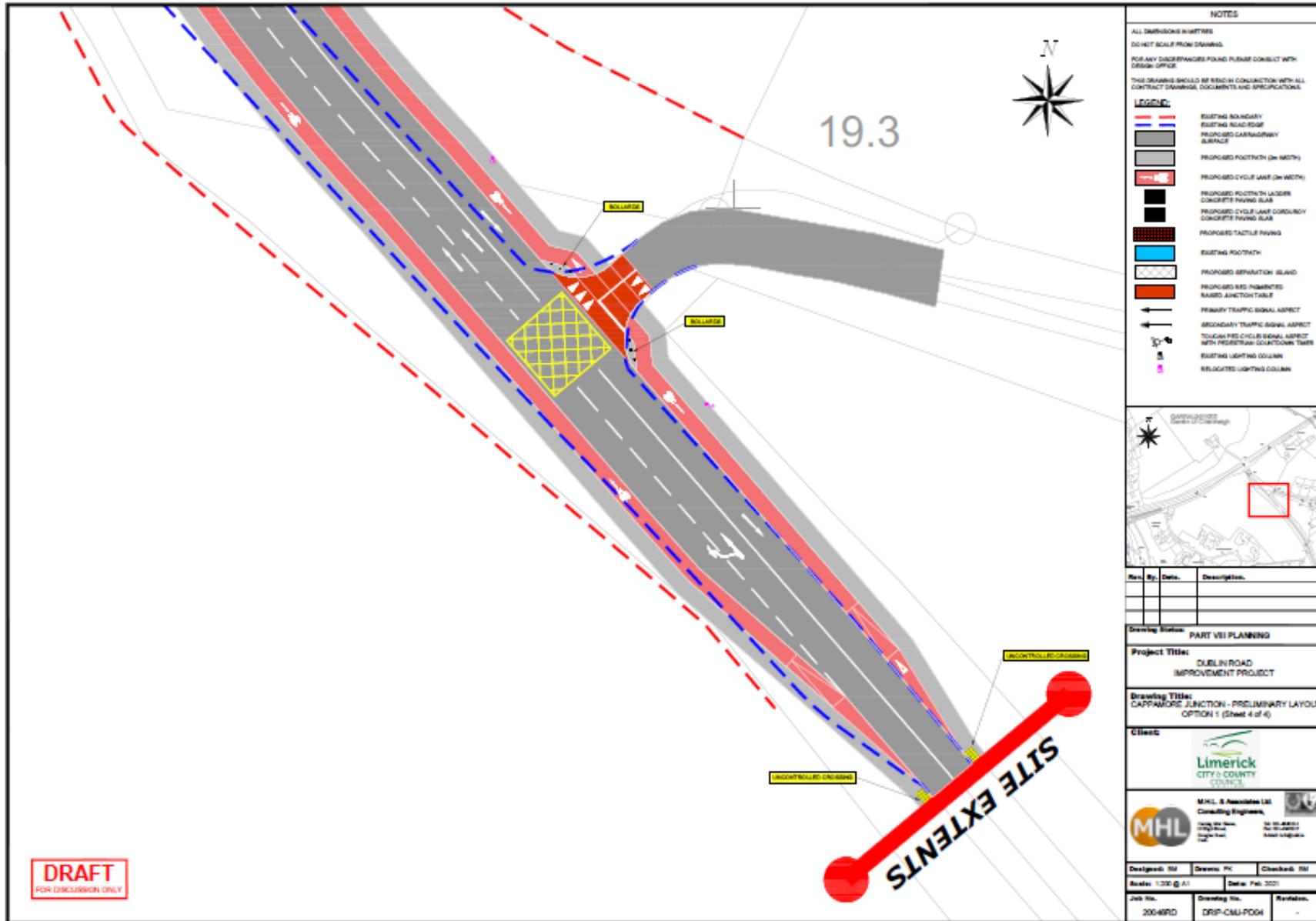
NPWS, 2019b. *The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments*. 3.

Appendix I – Site Layout









Appendix II – Site Photos



Plate 1. Existing road boundary (looking from North along R506 to junction with R445)



Plate 2. Looking East along R445 at current Cappamore Junction (R506)



Plate 3. Looking east at parkland adjacent to junction



Plate D. Looking east along R445 towards junction with R506 in background

Appendix III

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 Glenacarne. 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 Poulmasherry 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. Poulmarsh 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 *MacomaScrobicularia-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 triquetrus*), 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 Ringmoyle 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 sealavender, *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 *Fontinalis 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-herald 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 telmateia*) 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 Bartailed Godwit (476; 1995/96). In the past, three separate flocks of Greenland Whitefronted 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 Peregrine 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: RIVER SHANNON AND RIVER FERGUS ESTUARIES SPA
SITE CODE: 004077

The estuaries of the River Shannon and River Fergus form the largest estuarine complex in Ireland. The site comprises the entire estuarine habitat from Limerick City westwards as far as Doonaha in Co. Clare and Dooneen Point in Co. Kerry.

The site has vast expanses of intertidal flats which contain a diverse macroinvertebrate community, e.g. *Macoma-Scrobicularia-Nereis*, which provides a rich food resource for the wintering birds. Salt marsh vegetation frequently fringes the mudflats and this provides important high tide roost areas for the wintering birds.

Elsewhere in the site the shoreline comprises stony or shingle beaches. The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Cormorant, Whooper Swan, Lightbellied Brent Goose, Shelduck, Wigeon, Teal, Pintail, Shoveler, Scaup, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Knot, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Greenshank and Black-headed 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. The site is the most important coastal wetland site in the country and regularly supports in excess of 50,000 wintering waterfowl (57,133 - five year mean for the period 1995/96 to 1999/2000), a concentration easily of international importance. The site has internationally important populations of Light-bellied Brent Goose (494), Dunlin (15,131), Black-tailed Godwit (2,035) and Redshank (2,645). A further 17 species have populations of national importance, i.e. Cormorant (245), Whooper Swan (118), Shelduck (1,025), Wigeon (3,761), Teal (2,260), Pintail (62), Shoveler (107), Scaup (102), Ringed Plover (223), Golden Plover (5,664), Grey Plover (558), Lapwing (15,126), Knot (2,015), Bar-tailed Godwit (460), Curlew (2,396), Greenshank (61) and Black-headed Gull (2,681) - figures are five year mean peak counts for the period 1995/96 to 1999/2000. The site is among the most important in the country for several of these species, notably Dunlin (13 % of national total), Lapwing (6% of national total) and Redshank (9% of national total). The site also supports a nationally important breeding population of Cormorant (93 pairs in 2010). Other species that occur include Mute Swan (103), Mallard (441), Red-breasted Merganser (20), Great Crested Grebe (50), Grey Heron (38), Oystercatcher (551), Turnstone (124) and Common Gull (445) - figures are five year mean peak counts for the period 1995/96 to 1999/2000. Apart from the wintering birds, large numbers of some species also pass through the site whilst on migration in spring and/or autumn. The River Shannon and River Fergus Estuaries SPA is an internationally important site that supports an assemblage of over 20,000 wintering waterbirds. It holds internationally important populations of four species, i.e. Light-bellied Brent Goose, Dunlin, Black-tailed Godwit and Redshank. In addition, there are 17 species that have wintering populations of national importance.

The site also supports a nationally important breeding population of Cormorant. Of particular note is that three of the species which occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Whooper Swan, Golden Plover and Bar-tailed Godwit. Parts of the River Shannon and River Fergus Estuaries SPA are Wildfowl Sanctuaries.

Appendix V - Synopsis of Appropriate Assessment Report

Description of Project	<p>The client, M.H.L & Associates Ltd, proposes to provide footpath improvements and lane rearrangement at the junction of R506 and the R445 Dublin Road, known locally as the Cappamore Junction.</p>
Description of Natura 2000 site	<p>The Lower Shannon SAC and River Shannon and River Fergus Estuaries SPA are sites of great ecological interest. It is of special conservation interest for several Annex listed species of the EU Birds Directive.</p>
Description of Individual Elements of the Project likely to give rise to Impacts on the Natura 2000 Site	<ul style="list-style-type: none"> • None identified
Description of Likely Direct, Indirect or Secondary Impacts of the Project on the Natura site	<ul style="list-style-type: none"> • No potential for significant direct habitat loss/alteration, disturbance/displacement of species, negative impacts on water quality or cumulative/in combination impacts arising as a result of the proposed development.
Description of Likely Changes to the site arising as a result of: <ul style="list-style-type: none"> • Reduction of habitat area • Disturbance to key species • Habitat or species fragmentation • Reduction in species density • Changes in key indicators of conservation value 	<ul style="list-style-type: none"> • None identified
Description of Likely Impacts on the Natura 2000 site as a whole in terms of: <ul style="list-style-type: none"> • Interference with key relationships that define the structure of the site 	<ul style="list-style-type: none"> • None identified

<ul style="list-style-type: none"> • Interferences with key relationships that define the function of the site 	
<p>Indicators of Significance as a result of the identification of effects set out above in terms of:</p> <ul style="list-style-type: none"> • Loss • Fragmentation • Disruption • Disturbance • Change to Key Elements of the site (e.g. water quality etc) 	<ul style="list-style-type: none"> • None identified