

## **Appendix 6.1 Habitats Directive Assessment Stage 1 - Screening Matrix and Habitats Directive Assessment Stage 2 – Appropriate Assessment for the Blackwater River (Cork/Waterford) cSAC with regard to the proposed M20 Cork – Limerick Motorway Scheme**

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### Habitats Directive Assessment – Stage 1 (SCREENING MATRIX)

Stage 1: SCREENING MATRIX FOR THE PROPOSED M20 CORK – LIMERICK MOTORWAY SCHEME WITH REGARD TO POTENTIAL IMPACTS ON BLACKWATER RIVER (CORK/WATERFORD) cSAC (SITE CODE 002170) - NATURA 2000 SITE (candidate Special Conservation Area) \* (cSAC).  
 \*(Following Article 6 (3) of the European Union Habitats Directive (92/43/EEC))

\*\*Assessment of the effects of the proposed M20 Cork – Limerick Motorway Scheme on the integrity of the Blackwater River (Cork/Limerick) candidate Special Area of Conservation (Site Code 000163).

1. Description of the project or plan	
Location	The proposed M20 Cork – Limerick Motorway Scheme will extend from the town of Blarney, Co. Cork to the town of Patrickswell, Co. Limerick, bypassing the towns of Mallow, Buttevant, Charleville and Croom.
Distance from designated site	The proposed M20 Cork – Limerick Motorway Scheme crosses the Blackwater River (Cork/Limerick) cSAC (Site Code 002170) at five locations; a crossing of the Greenhill Stream along the existing N20 near Mourneabbey, a crossing of the Peastinagh River near Mourneabbey, a crossing of the River Blackwater at Carrigoon/Ballymagooley, a crossing of the Awbeg River at Lag and a second crossing of the Awbeg at Ballynadrideen. In addition to these crossings the western edge of the land acquisition boundary of the proposed road development overlaps slightly with the cSAC boundary at Velvetstown.  The proposed road development also crosses twenty-two watercourses and/or drainage outfalls to rivers connected to the cSAC upstream of the Blackwater River (Cork/Limerick) cSAC. These have the potential to impact indirectly on water quality within the River Blackwater system and as such the protection of water quality in these rivers is equally as important as in the designated channels. The locations of these crossings/drainage outfalls along the proposed road development and their distance from the cSAC boundary are detailed in Section 6.4.1.7 of the EIS.  Full details of the proposed road scheme are presented on 6.001 – 6.050 of the EIS.
Brief Description of the project or plan	The proposed M20 Cork – Limerick Motorway Scheme comprises approximately 80km of motorway carriageway with associated junctions, interchanges and local road upgrades/realignments.
Is the plan directly connected with or necessary to the Natura 2000 site management for nature conservation?	No

\* A candidate Special Area of Conservation is designated under the EU Habitats Directive (92/43/EEC) for the protection of certain habitats and species as listed in the Directive.

\*\* Prepared in accordance with documents: European Commission (2000) Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. European Commission (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC and European Commission (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/49/EEC; clarification of the concepts of: Alternative solutions, Imperative reasons of overriding public interest, Compensatory Measures, Overall Coherence, Opinion of the Commission. Article 6(3) of the EU Habitats Directive (92/43/EEC) states that "the competent national authority shall agree to the plan or project only after having ascertained that it will not adversely integrity of the site concerned". The information provided in this EIS and in this HDA is being provided to assist An Bord Pleanála (the competent national authority in Ireland) in performing an appropriate assessment pursuant to Regulation 30 of the Natural Habitats Regulations (1997).

The information on the Natura 2000 site is taken from the site synopsis<sup>1</sup>.

2. Brief Description of the Natura 2000 site	
Name	Blackwater River (Cork/Limerick) cSAC (Site Code 002170)
Site designation status	<ul style="list-style-type: none"> <li>Designation: Candidate Special Area of Conservation (Site Code 002170)</li> <li>Basis: EU Habitats Directive (92/43/EEC)</li> </ul>
Natura 2000 Site description	The River Blackwater is one of the largest rivers in Ireland, draining a major part of Co. Cork and five ranges of mountains. The site consists of the freshwater stretches of the River

2. Brief Description of the Natura 2000 site	
	Blackwater as far upstream as Ballydesmond, the tidal stretches as far as Youghal Harbour and many tributaries, the larger of which includes the Licky, Bride, Flesk, Chimneyfield, Finisk, Araglin, Awbeg (Buttevant), Clyda, Glen, Allow, Dalua, Brogeen, Rathcool, Finnow, Owentraglin and Awnaskirtaun. The site is selected for a range of Annex I woodland, river, estuarine and intertidal habitats along with a number of Annex II species (as listed in the EU Habitats Directive 92/43/EEC). The site is also considered to be of high conservation value for the populations of several bird species listed under Annex I of the EU Birds Directive which use the site. Additionally the importance of the site is enhanced by the presence of a number of rare plant species, a number of which are protected under the Flora (Protection) Order, 1999.
Qualifying species	<ul style="list-style-type: none"> <li>Sea lamprey (Petromyzon marinus)</li> <li>Brook lamprey (Lampetra planeri)</li> <li>River lamprey (Lampetra fluviatilis)</li> <li>Otter (Lutra lutra)</li> <li>Twaite shad (Alosa fallax)</li> <li>White-clawed crayfish (Austropotamobius pallipes)</li> <li>Atlantic salmon (Salmo salar)</li> <li>Freshwater pearl mussel (Margaritifera margaritifera)</li> <li>Killarney fern (Trichomanes speciosum)</li> </ul>
Qualifying habitats	<ul style="list-style-type: none"> <li>Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) (91E0)†</li> <li>Taxus baccata woods of the British Isles (91J0)†</li> <li>Old sessile oak woods with Ilex and Blechnum in British Isles (91A0)</li> <li>Watercourses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation (3260)</li> <li>Estuaries (1130)</li> <li>Salicornia and other annuals colonising mud and sand (1310)</li> <li>Mudflats and sandflats not covered by seawater at low tide (1140)</li> <li>Atlantic salt meadows (Glauco-Puccinellietalia maritimae) (1330)</li> <li>Mediterranean salt meadows (Juncetalia maritimi) (1410)</li> <li>Perennial vegetation of stony banks (1220)</li> </ul> <p>†priority habitat on Annex I of the EU Habitats Directive (92/43/EEC)</p>
Non-qualifying habitats and species of interest	<p>Non-qualifying habitats of interest include:</p> <ul style="list-style-type: none"> <li>Wet willow-alder-ash woodland</li> <li>Wet grassland</li> <li>Marsh</li> <li>Semi-natural deciduous woodlands</li> <li>Old estate woodlands</li> <li>Reed and large sedge swamps</li> <li>Lowland depositing rivers with floating aquatic vegetation (Ranunculus spp.) which has links to the Annex I habitat Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation</li> <li>Blanket bog</li> <li>Heath</li> </ul> <p>Five Red Data Book<sup>2</sup> plant species, in addition to the Killarney fern, have been recorded within the site and are listed below. Of these the Killarney fern, starved wood sedge and pennyroyal are protected under the Flora (Protection) Order 1999.</p> <ul style="list-style-type: none"> <li>Starved wood sedge (Carex depauperata)</li> <li>Pennyroyal (Mentha pulegium)</li> <li>Bird's-nest orchid (Neottia nidus-avis)</li> <li>Golden dock (Rumex maritimus)</li> <li>Bird cherry (Prunus padus)</li> </ul> <p>Fauna species protected under the Wildlife Act, 1976 and Wildlife (Amendment) Act, 2000:</p> <ul style="list-style-type: none"> <li>All bat species*</li> <li>Common frog (Rana temporaria)</li> <li>Badger (Meles meles)</li> <li>Pine marten (Martes martes)*</li> <li>Irish hare (Lepus timidus hibernicus)</li> </ul> <p>Annex I (EU Birds Directive, 79/409/EEC)bird species of interest:</p>

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	<ul style="list-style-type: none"> <li>Barn owl (<i>Tyto alba</i>)</li> <li>Kingfisher (<i>Alcedo atthis</i>)</li> <li>Hen harrier (<i>Circus aeruginosus</i>)</li> <li>Peregrine falcon (<i>Falco peregrinus</i>)</li> </ul> <p>A wide range of other Annex I (EU Birds Directive, 79/409/EEC) waterfowl species are also found in the site in internationally important numbers such as Whooper swan (<i>Cygnus cygnus</i>), Bewick's swan (<i>Cygnus bewickii</i>) and black-tailed godwit (<i>Limosa limosa</i>). However, these species are predominantly associated with the Blackwater Estuary and Blackwater Callows and will not be adversely impacted by the proposed road development.</p>
Unit size	Approx. 15049 ha
Condition	<p>Overall, the River Blackwater is of considerable conservation significance for the occurrence of good examples of habitats and of populations of plant and animal species that are listed on Annexes I and II of the E.U. Habitats Directive respectively; furthermore it is of high conservation value for the populations of bird species that use it. Two Special Protection Areas, designated under the E.U. Birds Directive, are also located within the site - Blackwater Callows and Blackwater Estuary. Additionally, the importance of the site is enhanced by the presence of a suite of uncommon plant species.</p> <p>The main threats to the site and current damaging activities include high inputs of nutrients into the river system from agricultural run-off and several sewage treatment works, dredging of the upper reaches of the Awbeg, overgrazing within the woodland areas, and invasion by non-native species, for example Cherry Laurel. The Munster Blackwater pearl mussel population is in decline due to depressed river quality from nutrient enrichment and siltation from agriculture, forestry, sewage and industry and is deemed to be at unfavourable conservation status in the catchment<sup>3</sup>.</p>

3. Assessment Criteria	
Describe the individual elements of the plan (either alone or in combination with other plans or projects) likely to give rise to impacts on the Natura 2000 sites.	<p><b>Construction phase;</b></p> <ul style="list-style-type: none"> <li>Construction of bridges and drainage outfalls at the crossing points of the proposed road scheme has the potential to impact on the riparian and in-stream habitats along the River Blackwater and its tributaries.</li> <li>Works to install bridges/culverts and temporary crossings on watercourses and drainage channels connected hydrologically to the River Blackwater (Cork/Limerick) cSAC have the potential to impact on the water quality of the cSAC.</li> <li>The inappropriate storage and handling of toxic compounds used in the construction of a road scheme (hydrocarbons such as oil and diesel, concrete/cement etc.) have the potential to adversely affect the water quality within the River Blackwater (Cork/Limerick) cSAC.</li> <li>The site clearance phase of the proposed road construction has the potential to adversely affect the water quality within the River Blackwater (Cork/Limerick) cSAC resulting from increased sediment loads in watercourses due to inappropriate vegetation and topsoil removal and storage.</li> <li>The removal of bankside/river substrate material during the construction of bridges/culverts has the potential to impact directly on aquatic Annex II species (as listed above in Section 2) within the cSAC.</li> </ul> <p><b>Operational phase;</b></p> <ul style="list-style-type: none"> <li>There is the potential for contamination of groundwater and surface water from toxic compounds (such as heavy metals) and hydrocarbons associated with the operational phase of a motorway scheme. During operation, increased runoff from hard surfaces (roadways, pavements etc.) will occur and could enter adjacent surface water drainage.</li> </ul> <p>These elements are also likely to give rise to impacts in combination with other road schemes connected to the proposed M20 Cork – Limerick Motorway Scheme; the N21 Adare Bypass and the Cork Northern Ring Road schemes.</p>
Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the Natura 2000 site by virtue of:	<ul style="list-style-type: none"> <li>There will be direct loss of habitat within the River Blackwater (Cork/Limerick) cSAC boundary resulting from the construction of the road carriageway and the associated bridge/culvert structures at the locations listed above in Section 1.</li> <li>These works have the potential to impact on floating vegetation within the site as a result of bridge/culvert construction within the site. This habitat has links to the Annex I habitat 'Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation'.</li> <li>There is the potential for accidental discharge of silt to the river system as a result of inappropriate vegetation/topsoil clearance and storage at the locations listed above in Section 1.</li> <li>Frequent or prolonged siltation events can cause a build up of silt in the system leading to a</li> </ul>

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<ul style="list-style-type: none"> <li>or key features of the site;</li> <li>Resource requirements;</li> <li>Emissions;</li> <li>Excavation requirements;</li> <li>Transportation requirements;</li> <li>Duration of construction, operation etc.;</li> <li>Others.</li> </ul>	<p>reduction in available, suitable freshwater pearl mussel habitat, crayfish habitat and spawning habitat for lamprey and Atlantic salmon (a species which is intrinsically linked to the reproductive cycle of the freshwater pearl mussel and as a result any impact on the salmon population in the river system could have knock on impacts on pearl mussel recruitment). Such events can also kill sensitive aquatic species such as the freshwater pearl mussel and crayfish.</p> <ul style="list-style-type: none"> <li>There is the potential for accidental discharge of toxic compounds associated with the construction of a road scheme, such as oil, diesel, hydraulic fluids and concrete/cement, to watercourses within and connected to the cSAC.</li> <li>Deteriorating water quality resulting from contamination events during the construction or operation phases could have negative impacts on the qualifying aquatic Annex II species (as listed above in Section 2) of the River Blackwater (Cork/Limerick) cSAC.</li> <li>Releases of highly toxic compounds such as concrete/cement to drainage channels or watercourses within, or connected to, the cSAC could have severe negative impacts on all aquatic life in the river.</li> <li>Any impacts which could negatively affect salmonid populations or crayfish populations within the site (increased suspended solid loads, pollution events etc.) could have knock on effects on other populations due to a reduction in prey densities.</li> <li>There is the potential for contamination of groundwater and surface water from toxic compounds (such as heavy metals) and hydrocarbons associated with the operational phase of a motorway scheme.</li> <li>None of the Annex I habitats listed under the EU Habitats Directive, for which the Blackwater River (Cork/Limerick) cSAC is designated, will be impacted by the proposed road development.</li> <li>There will be impacts (loss and/or fragmentation) on some of the non-qualifying habitats and species of interest within the Blackwater River (Cork/Limerick) cSAC, as listed above in Section 2.</li> </ul>
Describe any likely changes to the site arising as a result of:	<ul style="list-style-type: none"> <li>Reduction of habitat area;</li> <li>Disturbance of key species;</li> <li>Habitat or species fragmentation;</li> <li>Reduction in species density;</li> <li>Changes in key indicators of conservation value;</li> <li>Climate change.</li> </ul> <ul style="list-style-type: none"> <li>There is the potential for direct loss and fragmentation of habitat (both riparian habitats and in-stream habitats) in the cSAC within the footprint of the proposed road development. However, this will be minor in comparison to the total area of the cSAC and will not impact directly on any of the Annex I habitats for which the cSAC is designated.</li> <li>Deteriorating water quality resulting from contamination events during the construction or operation phases could have negative consequences for the qualifying aquatic Annex II species listed above. A reduction in water quality through sedimentation would impair aquatic plant growth, fish stocks and impact on freshwater pearl mussel populations and salmonid spawning habitat downstream of the proposed development site. This would have knock-on effects further up the food chain on invertebrates, birds, fish and mammals. Contamination by pollutants would directly affect all aquatic plant and animal life. This potential disturbance to key species could result in a significant reduction of species density within the site.</li> <li>It is estimated that climate change will result in more extended but less frequent wet and dry periods and warmer water temperatures, as rainfall patterns in Ireland are changing. This could result in precipitation increases of over 10% in the winter months, and decreases of approximately 25% in the summer, and annual temperature increases<sup>4</sup>. However, there is insufficient information to predict the effects on the site as these will be more closely related to localised rainfall events.</li> </ul>
Describe any likely impacts on the Natura 2000 site as a whole in terms of:	<ul style="list-style-type: none"> <li>Interference with the key relationships that define the structure of the site;</li> <li>Interference with key relationships that define the function of the site.</li> </ul> <p>Any impacts of the proposed M20 Cork – Limerick Motorway Scheme which would have the capacity to adversely affect water quality within the Blackwater River (Cork/Limerick) cSAC have the potential to negatively impact on populations of the protected aquatic species for which the site has been designated. The relationship between these aquatic species and habitats and the water quality in the river is the key relationship that defines the function of the site.</p> <p>The fact that the Blackwater River (Cork/Limerick) cSAC is a linear hydrological feature in the landscape is the key feature that defines the physical structure of the site. Any impacts of the proposed M20 Cork – Limerick Motorway Scheme directly to the habitats or on the connectivity of the habitats (both the riparian habitats and the river channel itself) along the river corridor of the cSAC resulting from bridge/culvert construction have the potential to negatively impact on the structure of the site.</p>
7. Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale of magnitude of impacts is not known.	<p>It has been concluded that significant impacts on the water quality of the River Blackwater and the riparian habitats along the river, cannot be ruled out as a result of the elements of the proposed road development. Therefore, a Habitats Directive Assessment – Stage 2 (Appropriate Assessment) is required to determine the level of significance of the potential impacts of the proposed development on the Blackwater River (Cork/Limerick) cSAC.</p> <p>Mitigation measures have not been considered in the Screening process and can only be taken into account in the Appropriate Assessment phase. It is anticipated that an appropriate site management plan, design of the road infrastructure, works method statements and mitigation can eliminate the impacts identified.</p>

1. National Parks and Wildlife Service (2006). *Blackwater River (Cork/Waterford) candidate Special Area of Conservation (Site Code 002170)*. Department of the Environment, Heritage and Local Government, Dublin.
2. Curtis, T.G.F and McGough, H.N. (1988). *The Irish Red Data Book*. 1. Vascular Plants. Wildlife Service, Stationary Office, Dublin.
3. NS2 (2009). *Freshwater Pearl Mussel, Draft Munster Blackwater Sub-Basin Management Plan*. Department of the Environment, Heritage and Local Government, Dublin.
4. EPA (2003). *Climate Change Scenarios and Impacts for Ireland*. ERTDI report Series No. 15. Environmental Protection Agency, Wexford.

## Habitats Directive Assessment - Stage 2 (APPROPRIATE ASSESSMENT)

Stage 2: APPROPRIATE ASSESSMENT FOR THE PROPOSED M20 CORK – LIMERICK MOTORWAY SCHEME WITH REGARD TO POTENTIAL IMPACTS ON BLACKWATER RIVER (CORK/WATERFORD) cSAC (SITE CODE 002170)  
 NATURA 2000 SITE (candidate Special Conservation Area) \* (cSAC).  
 \*(Following Article 6 (3) of the European Union Habitats Directive (92/43/EEC))

** Assessment of the effects of the proposed M20 Cork – Limerick Motorway Scheme on the integrity of the Blackwater River (Cork/Limerick) candidate Special Area of Conservation (Site Code 000163).	
1. Describe the elements of the plan that are likely to give rise to significant effects on the site	<p><b>Construction phase;</b></p> <ul style="list-style-type: none"> <li>▪ Construction of bridges and drainage outfalls at the crossing points of the proposed road scheme has the potential to impact on the riparian and in-stream habitats along the River Blackwater and its tributaries.</li> <li>▪ Works to install bridges/culverts and temporary crossings on watercourses and drainage channels connected hydrologically to the River Blackwater (Cork/Limerick) cSAC have the potential to impact on the water quality of the cSAC.</li> <li>▪ The inappropriate storage and handling of toxic compounds used in the construction of a road scheme (hydrocarbons such as oil and diesel, concrete/cement etc.) have the potential to adversely affect the water quality within the River Blackwater (Cork/Limerick) cSAC.</li> <li>▪ The site clearance phase of the proposed road construction has the potential to adversely affect the water quality within the River Blackwater (Cork/Limerick) cSAC resulting from increased sediment loads in watercourses due to inappropriate vegetation and topsoil removal and storage.</li> <li>▪ The removal of bankside/river substrate material during the construction of bridges/culverts has the potential to impact directly on aquatic Annex II species (as listed above in Section 2) within the cSAC.</li> </ul> <p><b>Operational phase;</b></p> <ul style="list-style-type: none"> <li>▪ There is the potential for contamination of groundwater and surface water from toxic compounds (such as heavy metals) and hydrocarbons associated with the operational phase of a motorway scheme. During operation, increased runoff from hard surfaces (roadways, pavements etc.) will occur and could enter adjacent surface water drainage.</li> </ul>

\* A candidate Special Area of Conservation is designated under the EU Habitats Directive (92/43/EEC) for the protection of certain habitats and species as listed in the Directive.

\*\*Prepared in accordance with documents: European Commission (2000) Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. European Commission (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC and European Commission (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/49/EEC; clarification of the concepts of: Alternative solutions, Imperative reasons of overriding public interest, Compensatory Measures, Overall Coherence, Opinion of the Commission. Article 6(3) of the EU Habitats Directive (92/43/EEC) states that "the competent national authority shall agree to the plan or project only after having ascertained that it will not adversely integrity of the site concerned". The information provided in this EIS and in this HDA is being provided to assist An Bord Pleanála (the competent national authority in Ireland) in performing an appropriate assessment pursuant to Regulation 30 of the Natural Habitats Regulations (1997).

* Assessment of the effects of the proposed M20 Cork – Limerick Motorway Scheme on the integrity of the Blackwater River (Cork/Limerick) candidate Special Area of Conservation (Site Code 000163).	
2. Set out the conservation objectives of the site	<p>European and national legislation places a collective obligation on Ireland and its citizens to maintain at favourable conservation status areas designated as candidate Special Areas of Conservation. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.</p> <p>According to the EU Habitats Directive, favourable conservation status of a habitat is achieved when:</p> <ul style="list-style-type: none"> <li>▪ its natural range, and area it covers within that range, is stable or increasing, and</li> <li>▪ the ecological factors that are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and</li> <li>▪ the conservation status of its typical species is favourable as defined below.</li> </ul> <p>The favourable conservation status of a species is achieved when:</p> <ul style="list-style-type: none"> <li>▪ population data on the species concerned indicate that it is maintaining itself, and</li> <li>▪ the natural range of the species is neither being reduced or likely to be reduced for the foreseeable future, and</li> <li>▪ there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.</li> </ul> <p>The conservation objectives of the Blackwater River (Cork/Limerick) cSAC (Site Code 002170) are as follows;</p> <ul style="list-style-type: none"> <li>▪ To maintain the Annex I habitats for which the cSAC has been selected at favourable conservation status: Estuaries; Mudflats and sandflats not covered by seawater at low tide; Perennial vegetation of stony banks; Salicornia and other annuals colonising mud and sand; Atlantic salt meadows (Glauco-Puccinellietalia maritima); Mediterranean salt meadows (Juncetalia maritimi); Water courses of plain to montane levels with the Ranunculus fluitans and Callitriche-Batrachion vegetation; Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno - Padion, Alnion incanae, Salicion albae); Old sessile oak woods with Ilex and Blechnum in the British Isles; Taxus baccata woods of the British Isles.</li> <li>▪ To maintain the Annex II species for which the cSAC has been selected at favourable conservation status: sea lamprey (Petromyzon marinus), brook lamprey (Lampetra planeri), river lamprey (Lampetra fluviatilis), otter (Lutra lutra), twaite shad (Alosa fallax), white-clawed crayfish (Austropotamobius pallipes), Atlantic salmon (Salmo salar), freshwater pearl mussel (Margaritifera margaritifera) and the Killarney fern (Trichomanes speciosum).</li> <li>▪ To maintain the extent, species richness and biodiversity of the entire site.</li> <li>▪ To establish effective liaison and co-operation with landowners, legal users and relevant authorities.</li> </ul>
3. Describe how the plan will affect key species and key habitats	<p>The proposed M20 Cork – Limerick Motorway Scheme crosses the Blackwater River (Cork/Limerick) cSAC (Site Code 002170) at five locations; a crossing of the Greenhill Stream along the existing N20 near Mourneabbey, a crossing of the Peastinagh River near Mourneabbey, a crossing of the River Blackwater at Carrigoon/Ballymagooley, a crossing of the Awbeg River at Lag and a second crossing of the Awbeg at Ballynadrideen. In addition to these crossings the western edge of the land acquisition boundary of the proposed road development also overlaps slightly with the cSAC boundary at Velvetstown.</p> <p>The proposed road development also crosses twenty-two watercourses and/or drainage outfalls to rivers connected to the cSAC upstream of the Blackwater River (Cork/Limerick) cSAC. These have the potential to impact indirectly on water quality within the River Blackwater system and as such the protection of water quality in these rivers is equally as important as in the designated channels. The locations of these crossings/drainage outfalls along the proposed road development and their distance from the cSAC boundary are detailed in Section 6.4.1.7 of the EIS.</p> <p>Full details of the proposed road scheme are presented on Figure 6.001 – 6.050 of the EIS.</p> <p>The qualifying Annex II species of the Blackwater River (Cork/Limerick) cSAC (Site Code</p>

* Assessment of the effects of the proposed M20 Cork – Limerick Motorway Scheme on the integrity of the Blackwater River (Cork/Limerick) candidate Special Area of Conservation (Site Code 000163).	
	<p>002170) are as follows;</p> <ul style="list-style-type: none"> <li>Sea lamprey (<i>Petromyzon marinus</i>)</li> <li>Brook lamprey (<i>Lampetra planeri</i>)</li> <li>River lamprey (<i>Lampetra fluviatilis</i>)</li> <li>Otter (<i>Lutra lutra</i>)</li> <li>Twaite shad (<i>Alosa fallax</i>)</li> <li>White-clawed crayfish (<i>Austropotamobius pallipes</i>)</li> <li>Atlantic salmon (<i>Salmo salar</i>)</li> <li>Freshwater pearl mussel (<i>Margaritifera margaritifera</i>)</li> <li>Killarney fern (<i>Trichomanes speciosum</i>)</li> </ul> <p>The Killarney fern is the only plant species listed above. There are no records of the Killarney fern from any of the 10km grid squares crossed by the proposed road development which therefore, will not have any impact on this species.</p> <p>The remainder are aquatic species and are susceptible to impacts from the proposed road scheme arising from a reduction in water quality from the following sources;</p> <ul style="list-style-type: none"> <li>accidental discharge of silt to the river system as a result of inappropriate vegetation/topsoil clearance and storage. Frequent or prolonged siltation events can cause a build up of silt in the system leading to a reduction in available, suitable freshwater pearl mussel habitat, crayfish habitat and spawning habitat for lamprey and Atlantic salmon (a species which is intrinsically linked to the reproductive cycle of the freshwater pearl mussel and as a result any impact on the salmon population in the river system could have knock on impacts on pearl mussel recruitment). Such events can also kill sensitive aquatic species such as the freshwater pearl mussel and crayfish.</li> <li>accidental discharge of toxic compounds associated with the construction of a road scheme, such as oil, diesel, hydraulic fluids and concrete/cement, to watercourses within and connected to the cSAC. Releases of highly toxic compounds such as concrete/cement to drainage channels or watercourses within, or connected to, the cSAC could have severe negative impacts on all aquatic life in the river.</li> <li>any impacts which could negatively affect salmonid populations or crayfish populations within the site (increased suspended solid loads, pollution events etc.) could have knock on effects on otter populations due to a reduction in prey densities.</li> <li>direct impacts on the aquatic habitat of these species during the construction of bridges/culverts at the crossing points.</li> <li>contamination of groundwater and surface water from toxic compounds (such as heavy metals) and hydrocarbons associated with the operational phase of a motorway scheme.</li> </ul> <p>The qualifying Annex I Habitats of the Blackwater River (Cork/Limerick) cSAC (Site Code 002170) are as follows;</p> <ul style="list-style-type: none"> <li>Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) (91E0)<sup>†</sup></li> <li><i>Taxus baccata</i> woods of the British Isles (91J0)<sup>†</sup></li> <li>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in British Isles (91A0)</li> <li>Watercourses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation (3260)</li> <li>Estuaries (1130)</li> <li>Salicornia and other annuals colonising mud and sand (1310)</li> <li>Mudflats and sandflats not covered by seawater at low tide (1140)</li> <li>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) (1330)</li> <li>Mediterranean salt meadows (<i>Juncetalia maritimi</i>) (1410)</li> <li>Perennial vegetation of stony banks (1220)</li> </ul> <p><sup>†</sup>priority habitat on Annex I of the EU Habitats Directive (92/43/EEC)</p> <p>From the results of the habitat survey work undertaken in the preparation of both the Route Selection and EIS reports for the proposed M20 Cork – Limerick Motorway Scheme, none of the Annex I habitats listed above will be directly impacted by the proposed works (refer to the habitat map for the proposed road scheme, Figure 6.001 – 6.050 of the EIS). The cSAC crossings of the Rivers Blackwater and Awbeg will be clearspan bridges. The crossings of the Peastinagh River will be arch (bottomless) culverts and therefore, the river bed will not be directly impacted.</p> <p>Five Red Data Book<sup>2</sup> plant species, in addition to the Killarney fern, have been recorded within the site and are listed below. Of these the Killarney fern, starved wood sedge and pennyroyal are protected under the Flora (Protection) Order 1999. None of these species will be impacted by the proposed road development.</p> <ul style="list-style-type: none"> <li>Starved wood sedge (<i>Carex depauperata</i>)</li> </ul>

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	<ul style="list-style-type: none"> <li>Pennyroyal (<i>Mentha pulegium</i>)</li> <li>Bird's-nest orchid (<i>Neottia nidus-avis</i>)</li> <li>Golden dock (<i>Rumex maritimus</i>)</li> <li>Bird cherry (<i>Prunus padus</i>)</li> </ul> <p>A number of the other non-qualifying habitats and species located along the route of the proposed road development (habitats such as semi-natural deciduous woodland and wet grassland and species such as badger and bats) will be impacted. With regard to the habitats, the impact will be loss and severance of habitat within the land acquisition boundary. With regard to faunal species such as the badger the impacts will be loss of and severance of habitat and disturbance of breeding/resting places due to construction activities. Comprehensive and detailed mitigation measures to reduce or offset impacts on these species and habitats are described in Section 6.5 Mitigation of the proposed M20 Cork – Limerick Motorway Scheme EIS.</p>
4. Describe how the integrity of the site (determined by structure and function and conservation objectives) is likely to be affected by the project or plan (e.g. loss of habitat, disturbance, disruption, chemical changes, hydrological changes etc).	<ul style="list-style-type: none"> <li>There will be some direct loss and fragmentation of habitat (both riparian habitats and in-stream habitats) in the cSAC within the footprint of the proposed road development. However, as discussed in Section 6.4.1 of the EIS, the habitats impacted are of a local importance and are of a low/moderate ecological value, the total area of habitat lost will be minor in comparison to the total area of the cSAC and the proposed road development will not impact directly on any of the Annex I habitats for which the cSAC is designated.</li> <li>Deteriorating water quality resulting from contamination events during the construction or operation phases could have negative consequences for the qualifying aquatic Annex II species listed above. A reduction in water quality through sedimentation could impair aquatic plant growth, fish stocks and impact on freshwater pearl mussel populations and salmonid spawning habitat downstream of the proposed development site. This would have knock-on effects further up the food chain on invertebrates, birds, fish and mammals. Contamination by pollutants would directly affect all aquatic plant and animal life. This potential disturbance to key species could result in a significant reduction of species density within the site.</li> </ul>
5. Describe mitigation measures that are to be introduced to avoid, reduce or remedy the adverse effects on the integrity of the site	<p>As discussed above under Section 3 and 4 there are potential impacts from the proposed road development on the water quality of the watercourses crossed by the scheme, which in turn could have significant negative impacts on the Annex II species for which the Blackwater River (Cork/Limerick) cSAC is designated.</p> <p>Comprehensive mitigation measures to ensure that the water quality in the affected watercourses is maintained and to minimise the impact on affected habitats during the construction and operational phases of the proposed road development are detailed in Section 6.5 of the M20 Cork – Limerick Motorway Scheme EIS.</p> <p>These mitigation measures deal with the following issues in detail:</p> <ul style="list-style-type: none"> <li>The protection of existing habitats and ecological features (for example, trees) along and adjacent to the land acquisition boundary of the proposed road development.</li> <li>The protection of watercourses from contamination events during the construction phase of the proposed road development (such as increases in suspended solids entering surface water and the pollution of watercourses from accidental spillage of hazardous/toxic compounds) and during the operational phase of the proposed road development (such as suspended solid and contaminant loading of watercourses generated from impermeable road surfaces).</li> <li>The protection of terrestrial and aquatic faunal species (including badger, otter, bats, Atlantic salmon, lamprey species, white-clawed crayfish and freshwater pearl mussel) during the construction and operational phases of the proposed development.</li> </ul>
Conclusion	<p>It has been concluded that, provided the mitigation measures, referred to above (and detailed in the M20 Cork – Limerick Motorway Scheme EIS, Section 6.5 Mitigation), are fully implemented, there will be no significant negative effects on the Blackwater River (Cork/Limerick) cSAC (Site Code 002170), and therefore no adverse effect on the integrity of the Natura 2000 site or on its conservation objectives as a result of the proposed road development.</p> <p>There remains a risk that the mitigation measures set out in the M20 Cork – Limerick Motorway Scheme EIS will not be adequately implemented or monitored during both the construction and operational phases of the proposed road development. To address this risk, the implementation and success of the mitigation measures, at key stages in the construction and operational phases of the proposed road development, will be subject to a certification process under the Environmental Operating Plan. This process should be carried out in consultation with the relevant statutory bodies.</p>

Results of key consultations	
Name of relevant agencies consulted in of the preparation of the M20 Cork – Limerick Motorway Scheme EIS and this Habitats Directive Appropriate Assessment	Summary of Response
Southern Regional Fisheries Board (SRFB) – Mr Andrew Gillespie	Enclosed copy of the SRFB guidance document <i>Maintenance and Protection of the Inland Fisheries Resource During Road Construction and Improvement Works. Southern Regional Fisheries Board</i> . Stated the requirement of the Board that free angler passage be provided at the proposed bridge structures at the crossing point of the Awbeg River east of Buttevant and the crossing point of the River Blackwater. Highlighted the importance of the minor watercourses within the catchment crossed by the proposed road development.
South-Western Regional Fisheries Board (SWRFB) – Mr Michael McPartland	Stated the importance of the Blarney and Martin Rivers for salmon and brown trout. Requested that more detailed design and maps are provided to the Board to further assess the potential impacts on fisheries.
Shannon Regional Fisheries Board (ShRFB) - Mr Michael Fitzsimons	Stated the importance of the River Maigue and its tributaries for salmonid species. Provided details of the requirements of the ShRFB in relation to watercourse crossings and construction mitigation. Enclosed copy of the ShRFB guidance document <i>Protection and Conservation of Fish, Aquatic Habitat and Biodiversity on Road Construction and Improvement Schemes, Requirements of the Shannon Regional Fisheries Board</i> .
National Parks and Wildlife Service (NPWS) of the Department of Environment, Heritage and Local Government – Dr Jervis Good (Divisional Ecologist)	Ongoing consultations throughout the design process from Route Selection through to EIS. Meeting held on the 31 <sup>st</sup> March 2009 where the following issues were discussed; <ul style="list-style-type: none"> <li>▪ scope of the Habitats Directive Assessment</li> <li>▪ potential impacts on freshwater pearl mussel</li> <li>▪ potential impacts on white-clawed crayfish</li> <li>▪ potential impacts on otter</li> <li>▪ impacts on habitats within cSAC</li> <li>▪ vegetation removal during bird breeding season</li> <li>▪ construction and operational mitigation measures</li> <li>▪ adjacent designated areas (Ardamadane Wood pNHA, Blarney Bog pNHA, Kilcolman Bog SPA/pNHA and Eagle Lough pNHA)</li> <li>▪ impacts on other species (barn owl, kingfisher, badger and bats)</li> </ul>
BirdWatch Ireland – Ms Olivia Crowe, Mr John Lusby.	Provided records for kingfisher and for barn owl nest sites along the alignment of the proposed road development.
Irish Raptor Study Group – Mr Tony Nagle	Provided records of known hen harrier breeding sites along the alignment of the proposed road development.
Bat Conservation Ireland – Dr Tina Aughney	Provided records of known bat roosts along the alignment of the proposed development.
Cork County Bat Group – Mr Conor Kelleher	Provided records of known bat roosts along the alignment of the proposed development.

