



MERC Consultants
environmental and conservation services

Appropriate Assessment Screening and Natura Impact Statement

Rosses Point, Sewerage Scheme Co. Sligo

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1. Introduction

All EU Member States are obliged to establish a network of sites of conservation importance known as the Natura 2000 network. The network is made up of Special Areas of Conservation (SAC's) established under the EU Habitats Directive (92/43/EEC) and Special Protection Areas (SPA's) established under Directive (2009/147/EC). Under Article 6 (3) of the Habitats Directive, Member States are required to consider the potential effects of any project or plan on the conservation objectives of an SAC or SPA before a decision can be made to allow that project or plan to proceed.

Appropriate Assessment (AA) is the process whereby the potential impacts of a project or plan are assessed in view of the sites conservation objectives. The first step in the process is to conduct AA screening to determine, on the basis of a preliminary assessment and objective criteria, whether the project or plan, alone or in combination with other projects or plans could have significant effects on the conservation objectives of a Natura 2000 site. Where significant effects are likely, uncertain or unknown at the screening stage a Natura Impact Statement (NIS) is required to enable a consent authority to carry out an appropriate assessment.

Appropriate Assessment Screening for the project was carried out and is presented in section 7 of this report. The Screening assessment concluded that in the absence of mitigation e.g. an environmental management plan for the construction phase of the proposed project and further assessment of the potential for impacts from storm overflows during the operational phase, uncertainty relative to residual risks on the conservation objectives of Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Cummeen Strand SPA and Lough Gill SAC remained. Therefore, applying the Precautionary Principle and in accordance with Article 6(3) of the Habitats Directive, Appropriate Assessment was required.

A Natura Impact Statement was subsequently prepared and is presented in section 11 of this report.

The Screening assessment and NIS was prepared by Dr. Louise Scally MCIEEM of MERC Consultants Ltd.

2. Statement of authority

Louise Scally is a professional ecologist with a wide range of experience in the field of conservation biology, habitat mapping, aquatic ecology and taxonomy. She completed a M.Sc. in ecology and taxonomy at the Botany Department Trinity College Dublin in 1989 and a Ph.D. in taxonomy also at the Botany Department Trinity College Dublin in 2001. For the last 15 years she has specialised in the ecology of marine ecosystems.

She has conducted field surveys and assessments for a range of habitats over the last 15 years for private and public sector clients including the National Parks and Wildlife Service, The Marine Institute, Inland Fisheries Ireland, Coillte Teo. Environmental Protection Agency, and ESB Networks Ltd.

She was the senior ecologist and field survey team member of the 2015-2018 NPWS national monitoring of marine Annex I habitats for compliance under Article 17 of the EU Habitats Directive. In this context

she was responsible for the assessment and reporting of marine Annex I habitats and was lead author of all Article 17 reports and the overarching site monitoring reports.

She was a scientific team member of MERC consultant's habitat mapping surveys carried out in a number of marine Special Area of Conservation from 2005-2010 for the National Parks and Wildlife Service and was the Project Manager and scientific team leader for the 2009 to 2011 programme of marine surveys conducted by MERC Consultants on behalf of the Marine Institute for their current programme of Appropriate Assessment of designated sites.

She was a member of the National Parks and Wildlife Service peatland ecology field team in 1990. In this capacity she was part of a field team that mapped, recorded and reported on the botanical composition and features of extensive tracts of blanket bog habitat in Co. Donegal. She was also part of the National Parks and Wildlife Service Native woodland field team (under the management of BEC Consultants Ltd) in 2004. In this capacity she was part of a field team that mapped and recorded the botanical and structural composition of a range of native woodlands in Counties Sligo and Leitrim.

In addition to her scientific expertise she has an in-depth knowledge of Irish and European Environmental legislation and policy. In 2011 she prepared the text describing Activities Requiring Consent (ARCs) for inclusion in a handbook detailing the regulatory framework for all developments within designated sites in Ireland on behalf of the National Parks and Wildlife Service. She has also produced numerous Conservation Management Plans for the same department. To-date she has conducted in excess of 70 ecological reports in support of Appropriate Assessment under Article 6(3) of the EU Habitats Directive.

3. Methods

This report has been prepared with reference to the following European Directives, national legislation and guidance on the appropriate assessment of projects and plans with regard to the implementation of the provisions of Article 6(3) and (4) of the EU Habitats Directive 92/43/EEC.

- *Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild flora and fauna.* Official Journal of the European Communities.
- *Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds* (codified version).
- *European Communities (Birds and Natural Habitats) Regulations 2011.* SI No. 477 of 2011.
- *Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.* European Commission 2018. 7621 final. Office for Official Publications of the European Communities, Luxembourg.
- *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.* European Commission, 2002;
- Department of Environment, Heritage and Local Government Circular Letter PD 2/07 and NPWS 1/07, 2007;
- Department of Environment, Heritage and Local Government Circular Letter 1/08 and NPWS 1/08, February 2008;

- Department of Environment, Heritage and Local Government Circular Letter L8/08, September, 2008;
- *Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities.* DoEHLG, 2009.
- Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan (the National Roads Authority (NRA), 2007) [1].

A review of the available literature for the area and potential project related impacts, consultation with project engineers and field site surveys were undertaken.

For the ecological assessment of the project, the literature consulted included the available National Parks and Wildlife Service data sources for all Natura 2000 sites within a 15km radius of the project area. This included the individual site synopsis for each designated area, standard Natura 2000 data forms, conservation objectives and GIS layers (habitats, species and marine community mapping). The focus of the literature survey was concentrated on the information available for Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Cummeen Strand SPA and Lough Gill SAC, which are immediately adjacent to the proposed project area.

Recent literature and best practice guidelines relative to road works and the impacts of storm overflows and Urban Waste Water Treatment were also reviewed.

Site walkovers were conducted in May 2019 and involved a detailed survey of the habitats within the zone of influence of the proposed project area (see section 7 for further details). Weather conditions during the time of the site surveys were optimum with calm, dry and bright weather. The tidal height during the survey of intertidal habitats was between 0.7 and 0.9 meters

4. Details of proposed project

4.1 Background to the proposed project

Irish Water has identified a need to pump sewage from the Rosses Point sewerage scheme for treatment at the Sligo Main Drainage Wastewater Treatment Plant. The scheme extends from Colmcille Drive in Rosses Point Village (Node ST1.01) to the existing Teesan Lisnalurg pumping station at Node E1.30. See figure 4.1 for an overview of the proposed project location.

All of the proposed project components are outside of any designated site. However, due to mapping anomalies, some elements of the proposed project appear to be within the adjacent SAC. Mapping artefacts are inherent in many of the NPWS Natura 2000 boundary shapefiles. This has resulted in mapping errors which are particularly obvious near site boundaries.

The Development Application Unit (DAU) was contacted on 28/5/2019 for guidance on dealing with site boundary issues. In a response received on 11/6/2019 NPWS stated that *“The boundary for Cummeen Strand/Drumcliff Bay cSAC 627 was publicly notified in 1997 and the boundary was mapped using Irish Grid co-ordinates on reduced scale six-inch maps. As a result, cSAC boundaries may not align correctly with*

the appropriate boundary features when overlaid on aerial images. NPWS are in the process of transposing the boundaries of all Natura 2000 sites from Irish Grid/six-inch maps to ITM/1:5000 maps but this process has not yet been completed for Cummeen Strand/Drumcliff Bay cSAC 627”.

NPWS further commented that at Cummeen Strand/Drumcliff Bay cSAC 627, the cSAC boundary is mapped to the southern side of the R291 road. (Communication from NPWS Nature Conservation unit, 11/6/2019).

4.2 Scope of works

A summary of the various components of the project is provided in table 4.1.

Table 4.1. Scope of works summary

Component	Works description
1	Upgrade 146m of 150mm diameter sewer on Colmcille Drive to 225mm diameter.
2	Construct a new 111m long, 375mm diameter and 569m long, 450mm diameter relief foul sewer between CSO No. 1 and Pumping Station PS E3.
3	Upgrade existing Pumping Station PS E3 and construct new 275m ³ storm storage tank.
4	Construct a new network Pumping Station (PS2) at the existing treatment works in Rosses Point and decommission the existing WwTP. Construct a new 257m long, 80mm diameter rising main The new rising main will connect to the existing gravity sewer which discharges into PSE3 in Rosses Point.
5	Upgrade the access road between PS2 and Regional Road (R291).
6	Construct a new 3.6km long, 180mm diameter rising main from PSE3 to the proposed gravity sewer at Catchment E in Ballincar.
7	Construct a new 2.48km long, 375mm diameter gravity sewer serving Catchment E (including the Radisson Hotel and Cregg House).

The proposed project requires the trenching of public roads and the installation and or decommissioning of a number of structures. In all cases the opening of public roads will be carried out in compliance with the *Guidelines for opening, backfilling and reinstatement of openings in public roads* (Department of transport, tourism and sport, 2017).

A description of the various project components and their distance from the nearest Natura 2000 sites (Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC and Cummeen Strand SPA) is provided below. Distances are to the southern side of the R291 to be coincident with the true boundary of for Cummeen Strand/Drumcliff Bay SAC as advised by NPWS and where applicable Cummeen Strand SPA.

Component No. 1– Upgrade 146m of 150m diameter sewer to 225mm diameter on Colmcille Drive.

This is a short section of sewer upgrade constructed in road at Rosses Point. The nearest point of the proposed sewer upgrade will be approximately **30m** from Sligo Harbour and the associated Natura 2000 sites (Cummeen Strand/ Drumcliff Bay (Sligo Bay) SAC and Cummeen Strand SPA) as shown in **Appendix A1.1**. Road excavations to install the sewer will involve the creation of a trench between 1m and 4m deep and 0.8m and 1.5m wide. Some of the material excavated will be used for backfilling and supplemented by imported clause 804 stone. Any excavated material not used for backfilling will be removed from the site and disposed of off-site at a licenced facility.

Component No. 2 – New 111m Long, 375mm Diameter Sewer and 569m of 450mm diameter sewer.

This involves the construction of a new 111m Long, 375mm diameter sewer and 569m of 450mm diameter sewer from an existing Storm Overflow Manhole **CSO No. 1** to the existing pumping station **PS E3**. The new sewer will remove/decommission. **4 no.** non-compliant networks storm overflows. The sewer will be constructed between **0.5m** and **3m** below the existing ground level and approximately **25m** from Sligo Harbour and the associated Natura 2000 designations as shown in **Appendix A1.1**. The sewer will be constructed in road and in a green area between the upper and lower (R291) roads at Rosses Point. Excavations and backfilling at this location will be the same as described for component 1 above. The green area will be reinstated to match the existing area by backfilling with the excavated soil.

Component No. 3 – Upgrade Existing Pumping Station PS E3 and new 275m³ Storm Storage Tank

This existing pumping station will be the new Main Pumping Station for Rosses point and will pump flows forward for treatment to the Sligo Town Waste Water Treatment Plant (WwTP). The upgrade works include a full M&E upgrade, site works, new retaining wall and construction of a new **18m** long x **7m** wide x **6.5m** deep, **275m³** underground storm storage tank as shown in **Appendix A1.1**. Overflow from PSE3 will be screened through a 6 mm screen and passed through the storm storage tank where there will be retention of solids due to settlement. The existing overflow will be retained and used as the storm overflow from the new storm storage tank.

Component No. 4 – New Pumping Station (PS2) and Decommission the Existing WwTP

This will be a small network Pumping Station that will pump wastewater through a new **80mm** internal diameter rising main into the existing gravity sewer on Regional Road R291 which discharges into PSE3. The rising main will be approximately **1.2m** below the existing ground level and will be laid in the existing/proposed access road. This new pumping station will consist of a new **1.9m** diameter x **3m** deep circular precast structure, associated pipework and **225mm** diameter emergency overflow that will connect to the existing sea outfall. The existing WwTP will be decommissioned. See **Appendix A1.2** for works location.

Site investigations, conducted in February 2020, have indicated ground water levels within the confines of the pumping station compound to be 1.85m. This will result in ground water being encountered during excavations. Engineering calculations have concluded that a settlement pond and associated soakaway will be required to deal with this groundwater. Further, it has been calculated that there is sufficient available space within the area of the compound to facilitate the aforementioned settlement ponds at the required capacity.

Component No. 5 – Upgrade Access Road to the new Network Pumping Station (PS2)

The existing access road will be upgraded. See **Appendix A1.2** for works location.

Component No. 6

Component No. 6 involves the construction of a new **3.85km, 180mm** diameter rising main from the Main Pumping Station to a manhole at the head of the proposed gravity sewer opposite the Radisson Hotel. The rising main will be laid approximately **1.2m** below the existing ground level and will be constructed in the road/verge. Excavations and backfilling at this location will be the same as described for component 1 above. See **Appendix A1.3 to A1.6** for works location.

Component No. 7

Component No. 7 involves the construction of a new **2.48km, 375mm** diameter gravity sewer from the Radisson Hotel to the existing Teesan/Lisnalurg Pumping Station. The gravity sewer will be laid between **1.0m** and **4.5m** below the existing ground level. Approximately **1.9km** will be constructed in Road/Road verge and approximately **0.5km** will be constructed in fields. All excavations will be as described for

component 1 and where the route crosses agricultural grassland, backfilling with the excavated soil will be carried out. See **Appendix A.1.6 to A1.7** for works location.

Site investigations in this area have shown that high groundwater ingress is likely during construction of the proposed sewer in Catchment E, specifically along the route of the sewer, from manholes FMH 25 to FMH 28 on Scotsmans Walk to Teesan Lisnalurg Pumping Station (See **Appendix A1.6 to A.1.7**).

Analysis of two trial pits show the levels of groundwater in the trial pits correlate, approximately, with the tide levels at the time of excavation of the pits, confirming the water table is influenced by the tides. A comparison was carried out between the proposed invert levels of the sewer pipe (i.e. the base interior level of the sewer) and 2019 tidal data for Sligo Harbour. The comparison showed that tide levels will exceed the invert level of the sewer for most of the construction through the agricultural grassland at this location. In the first 200m of the field the tide levels exceed the invert level (ranging from 1.7 mOD to 1.0 mOD) for approximately 70% of the time. For the remaining approximately 300 metres the tide levels exceed the invert level (ranging from 1.0 mOD to 0.0 mOD) 100% of the time. Therefore, it is assumed groundwater levels will similarly exceed the invert level of the sewer at this location. The section of sewer along Scotsman's Walk is not impacted by the tides to the same degree. The tide levels are below the sewer invert levels for the majority of the proposed sewer route at Scotsman's Walk.

It is proposed that groundwater is managed in this area by the installation of sheet piling along the trench route between FMH28 and Teesan Lisnalurg PS and by dewatering of the trench. The amount of groundwater likely to require management will vary along the route depending on invert of excavations and tidal conditions at the time of excavation. The volume of groundwater encountered is expected to increase as construction approaches the Teesan Lisnalurg Pumping Station as the depth of the sewer increases.

Groundwater will be managed by dewatering the pipeline trench using suitably sized pumps connected to silt bags. It is proposed to drain the silt bags into the channel running through the lower field adjacent to the R291 which ultimately drains into Sligo Harbour. The specification for the silt dewatering bags is provided in appendix 3. If dewatering is required at a distance considered too far from the channel for the emptying of silt dewatering bags, pumping will be directed to a tanker which will discharge the water offsite.

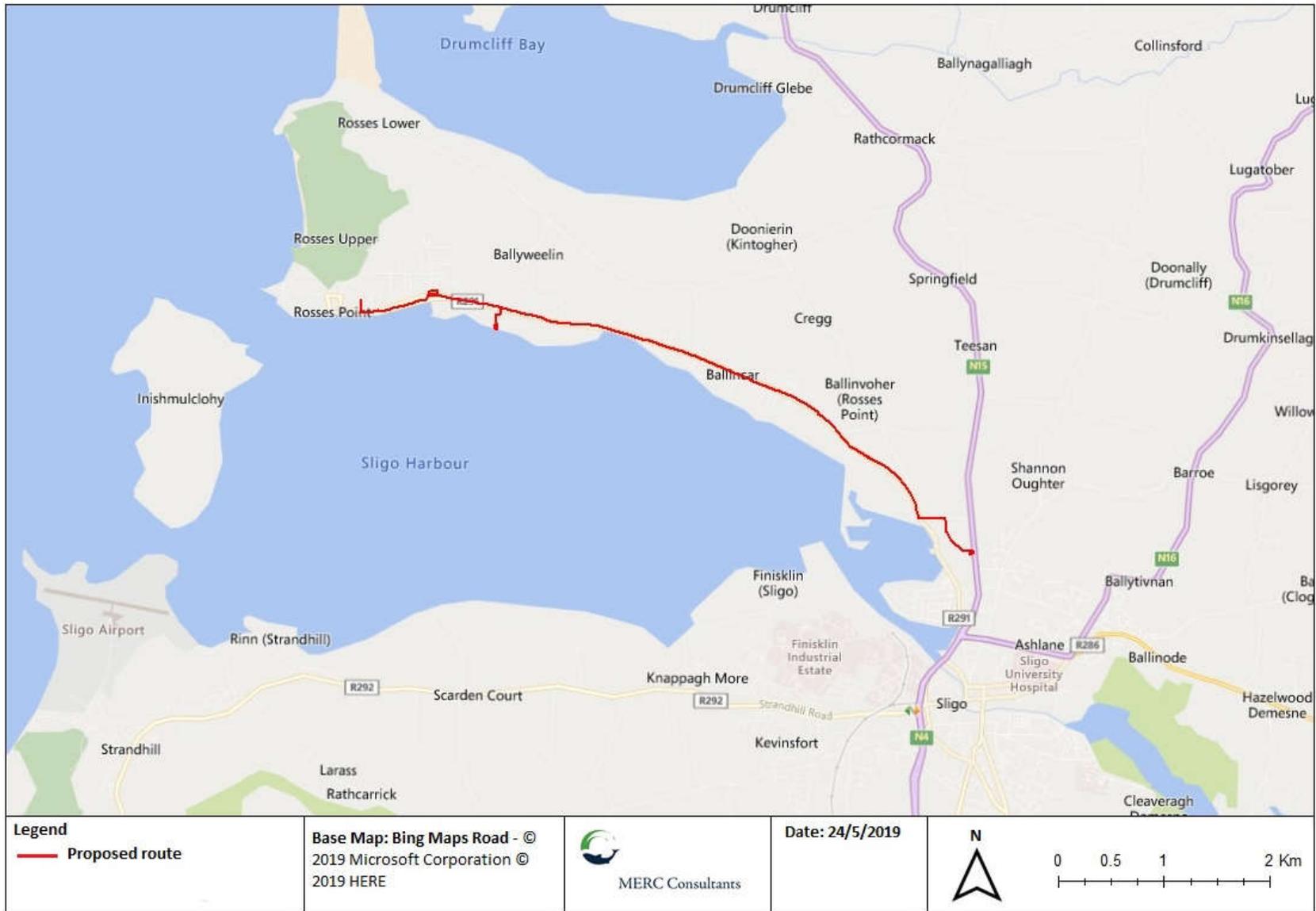


Figure 4.1 Overview of proposed project location

5. Receiving environment

5.1 Overview

The proposed project is located on the north side of Sligo Harbour on Rosses Point peninsula which extends west from Sligo town to Rosses Point. For the most part, the proposed project which is located along the south side of the peninsula, follows the route of the R219 coast road from the N15 public road north of Sligo town west to Rosses Point. This area is semi-rural in character and a ribbon like development of housing and a number of medium sized housing developments occur along this road.

Rosses Point peninsula is relatively low-lying with a maximum altitude of 33m and dominated by improved agricultural grassland. The underlying geology is dominated by Dinantian Limestones with areas of Precambrian Quartzites, Gneisses & Schists. Subsoils are comprised of till derived from metamorphic rocks in mosaic with shale and sandstone till. These subsoils are of moderate permeability and overlain by well-drained soil.

Sligo Harbour lies on the southern side of the peninsula and Drumcliff Bay on the north. Coney Island, situated at the mouth of Sligo harbour, provides protection from the prevailing westerly wind and swell. Drumcliff bay is also sheltered by a finger like projection of land across the entrance of the bay.

The marine habitat within Sligo harbour is characterised by a range of benthic community types dominated by intertidal and subtidal soft sediments with sections of intertidal reef fringing the majority of the perimeter. Transitional Waterbody Status results recorded in accordance with European Communities (Water Policy) Regulations 2003 (SI no. 722/2003) for the area within Sligo Harbour (Garavoge Estuary, Transitional Water Body) was defined as “Good” for the period 2010-2015 (EPA, 2015). However, the water quality for the area which encompasses the Garavoge Estuary Transitional Water Body is current under review relative to its approved “Risk” assessment. Risk assessments examine current water quality and trends and are used to highlight waterbodies that are at risk of deteriorating or being at less than “Good” status in the future. The coastal waterbody in Sligo Bay (west of Coney Island) is classified as “High” for the period 2010-2015 (EPA, 2015) and its approved risk score is recorded as “not at risk”.

Bathing water quality for Rosses Point beach is recorded as “Excellent” for 2019 (beaches.ie, 2019).

5.2 Ecology of the receiving environment

A site walkover was conducted on May 21st and 22nd 2019 to review the ecology of the site in the context of the proposed project.

Component 1

Travelling west to east, the project commences at Colmcille drive, a small road with domestic housing on either side (Buildings and artificial surfaces: BL3). At this location the road will be opened to upgrade the sewer. At its nearest point this section of the project is 30 meters distant from the boundary of Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC and Cummeen Strand SPA and is separated from it by a

minor road (the upper R219), a grass verge and main R219 coast road. See figure A.1.1. No species or habitats of conservation importance were recorded at this location.

Component 2

This section of the project follows a route through a grass verge (Amenity grassland (improved): GA2) which is managed by the local authority for landscaping (Figure 5.1). It is regularly mown and no species of conservation importance are present. The grass verge and minor sections of the road between the upper and lower (R291) roads will be opened to construct the new sewer. Trenching to carry out this work will include the digging of a trench approximately 0.5-3m deep and 1m wide in the road and grass verge. In the areas where the trench passes through the grass verge the excavated material will be used for backfilling and the surface sod will be reinstated. Any material not used for back filling will be removed from the site and disposed of at a licenced facility. This section of the proposed project is 20 meters from the relevant SAC and SPA boundary at its nearest point, and separated from it by the R291 coast road, a foot path and low sea wall along the seaward boundary. See figure Appendix.1.1.



Figure 5.1. Upper R291 and amenity grassland adjacent to PS E3.

Component 3

This component involves the upgrading of the existing pumping station (PS E3). The pumping station is located within a walled area adjacent to the upper R291 road and backed by a steep grassy bank (figure 5.2). The area within the confines of the existing pumping station is characterised by Buildings and artificial surfaces (BL3) on the level ground surrounded by an area of Scrub (WS1) with scattered trees on the upper section of the surrounding slope. Typical species include sycamore (*Acer pseudoplatanus*), Elder (*Sambucus nigra*), Escallonia (*Escallonia rubra*) and ivy (*Hedera helix*). No species of conservation importance were recorded at this location. This area is approximately 58 meters from the relevant SAC

and SPA boundary and is separated from it by the upper and lower R291 roads, an area of amenity grassland, a footpath and low sea wall along the seaward boundary. See figure Appendix 1.1.



Figure 5.2. Existing PS E3 pumping station.

Component 4 and 5

This element of the project involves the demolition of an existing waste water treatment plant and construction of a new network pumping station (PS E2) that will pump wastewater into the existing sewer on the R291 road. The existing waste water treatment plant is situated within in a fenced compound (figure 5.3) surrounded by improved agricultural grassland (GA1) on the north, east and west sides and an area of intertidal reef to the south. The habitat surrounding the existing pumping station, within the compound, is comprised of Buildings and artificial surfaces (BL3) and Amenity grassland (improved) GA2). This site is accessed by an existing narrow tarmac road with a grass verge on either side (GS2) which grades into an area of improved agricultural grassland (GA1) currently used for grazing. No species of conservation importance were noted at any of the terrestrial habitats at the site or along the access road. A narrow band of intertidal reef (EU habitat code: 1170) characterises the shoreline to the south of the site (figure 5.4). Here the shoreline is comprised of gravel, coarse sand and cobble and dominated by Bladder wrack (*Fucus vesiculosus*) with Knotted wrack (*Ascophyllum nodosum*), Siphon weed (*Polysiphona lanosa*) and occasional Gut weed (*Enteromorpha* sp.). The reef at this location is moderately sheltered and the overflow pipe from the existing waste water treatment plant exits through this area of reef and an adjacent area of intertidal fine sand with *Peringia ulvae* and *Pygospio elegans* community complex before discharging in the subtidal community type Sand to mixed sediment with amphipods community. The latter two community types are components of the EU Habitat Mudflats and sandflats not covered by seawater at low tide (EU Habitat code 1140). The reef and sediment communities described above are common around the coast of Ireland. No rare or unusual

species are known to occur in this area and none were observed during a walkover of the intertidal area as part of this survey.

A low soft sediment bank (corresponding to the EU Habitat: Vegetated sea cliffs of the Atlantic and Baltic coasts: 1230) runs along the area above high water with an access gate to the existing waste water treatment plant compound. See figure Appendix 1.2.



Figure 5.3. Existing waste water treatment plant.



Figure 5.4. Sheltered intertidal reef to the south of the existing waste water treatment plant.

Component 6

This section of the proposed project follows the route of the R291 from the main pumping station to a manhole opposite the Radisson Hotel, see figures in Appendix A.1.3 and A.1.4. For the majority of its route, the road and proposed works along its route, are separated from the sea by an area of improved agricultural grassland (GA1) and domestic housing (BL3). At one location, the road comes to within 10 meters of the marine intertidal area, but here it is separated from it by a low sea wall. The general environs along this section of the route are characterised by a ribbon of domestic development fronting the R291 and extensive areas of improved agricultural grassland. No suitable habitats or habitats for species of conservation importance occur at this location.

Component 7

Component 7 involves construction of a new sewer from the Radisson Hotel to the existing Teesan/Lisnalurg pumping station. This section of the project follows the route of the R291 east through an area similar to that described for component 6. The road here is surrounded by domestic housing and improved agricultural grassland.

At the junction of the R291 and Scotsman's Walk the proposed sewer will follow Scotsman's walk north for a distance of approximately 235 meters before cutting through a number of fields to the existing pumping station at Teesan/Lisnalurg (see figures in Appendix A.1.5, A.1.6 and A.1.7). This system of fields is characterised by a mosaic of improved agricultural grassland (GA1), Wet grassland (GS4), Hedgerows (WL1), Drainage ditches (FW4) and depositing lowland rivers (FW2). The western sections of the fields close to the R291 are lower lying and appear to be frequently flooded by seawater. Site investigations in this area, conducted to inform the engineering design, have indicated that ground water in this area is influenced by tidal levels. The area also is also known to flood with seawater during storm surges and an area of muddy sediment lies adjacent to a perimeter wall adjacent to the coast road. The surrounding area is characteristic of wet grassland (GS4) and dominated by Soft rush (*Juncus effusus*) with frequent Yellow Iris (*Iris pseudacorus*). While this area may, historically, have had the potential to host saltmarsh habitats, it appears to be too heavily modified to currently host such habitats. While the area is frequently inundated by seawater, it does not have the characteristics of Upper saltmarsh to be classified as such. A small unnamed first order stream is obvious in this area and also from historic mapping. This stream drains under the R291 public road into Sligo Harbour. The eastern section of this area is drier and dominated by improved agricultural grassland (GA1) and used for cattle and sheep grazing.

The Willsborough Stream (FW2), a fourth order stream, drains the southern boundary of the field system entering Sligo Harbour under the R291 (figure 5.5). Two invasive alien species, Japanese knotweed (*Fallopia japonica*) and butterfly-bush (*Buddleja davidii*) were recorded in the area close to the road and along the stream margins on the east side of the road during the ecological site survey (figure 5.6). This area has not been treated by Sligo County Council under the Japanese knotweed control programme, although the area has signage indicating its presence. It appears some control (possibly by the land owner) may have been carried out on the north side of the road. However, living plants of Japanese knotweed remain and a number of individuals were also recorded on the west side of the road along

the banks of the Willsborough Stream where it entered Sligo harbour within the confines of Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC and Cummeen Strand SPA (See figure 5.6).

The section of the proposed sewer that passes through this field system follows a route along a section of higher dry ground of improved agricultural grassland and separated from the wet grassland by a hedgerow. At its nearest point it is just over 200 meters distant from any recorded individuals of Japanese knotweed. The Willsborough Stream is 116 meters distant from the proposed works at its nearest point.



Figure 5.5. Willsborough Stream near R291 before entering Sligo Harbour.



Figure 5.6. Japanese knotweed adjacent to the Willsborough Stream entering Sligo Harbour.

6. European Sites

To provide an overview of European sites adjacent to, and within an extended radius of the proposed project, all European sites within a 15km radius of the proposed project site have been identified (see table 6.1).

The zone of influence of a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This has the potential to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries. In the marine environment, zones of influence can be extensive and lead to effects well beyond the construction site (CIEEM, 2018). This is particularly relevant in the case of sediment and nutrient transport in marine habitats.

Within the zone of influence those receptors that are sensitive to change must be identified and considered. While the zone of influence may be large, many of the constituent habitats and species may not represent receptors sensitive to change. Furthermore, in the case of Appropriate Assessment Screening only those habitats and species for which a European site is designated are considered further.

Following a review of the project scope of works, construction methods and post construction operation, the zone of influence of the proposed project is considered to include all habitats within the direct footprint of the construction site, and the habitats and species within Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Cummeen Strand SPA and Lough Gill SAC. The features of interest for those sites under consideration are provided in table 6.2.

This zone of influence has been decided based on expert judgement relative to the scale and scope of the project, corridors of connectivity (hydrological links and indirect source-path-receptor links) and potential cumulative impacts during the construction and operation of the proposed project. No source-path-receptor links have been identified between the proposed project and any additional European sites. Therefore, with due consideration to the scale and scope of the project, impacts on the conservation objectives of these additional sites are not considered possible and have not been further considered in this report.

Table 6.1. Natura 2000 sites within a 15km radius of the proposed project site.

Site code	Site name	Distance to project site (Km)
000627	Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	Immediately adjacent*
001976	Lough Gill SAC	1.4
000623	Ben Bulben, Gleniff And Glenade Complex SAC	5.0
001669	Knockalongy and Knockachree Cliffs SAC	15.0
01680	Streedagh Point Dunes SAC	9.5
000625	Bunduff Lough & Machair/Trawalua/Mullaghmore SAC	12.6
001898	Unshin River SAC	8.3
004187	Sligo/Leitrim Uplands SPA	4.3
004031	Drumcliff Bay SPA	1.1
004035	Cummeen Strand SPA	Immediately adjacent*
004129	Ballysadare Bay SPA	5.1
004234	Ballintemple and Ballygilgan SPA	3.4
004133	Aughris Head SPA	13.5

Table 6.2: Features of interest for which all sites within a 15km radius of the proposed project site are selected.

Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC (Site code: 000627)
Estuaries [1130]
Mudflats and sandflats not covered by seawater at low tide [1140]
Embryonic shifting dunes [2110]
Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]
Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
<i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]
Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]
Petrifying springs with tufa formation (Cratoneurion) [7220]
<i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]
<i>Petromysea lampreyzon marinus</i> (Sea Lamprey) [1095]
<i>Lampetra fluviatilis</i> (River Lamprey) [1099]
<i>Phoca vitulina</i> (Harbour Seal) [1365]
Cummeen Strand SPA (Site code: 004035)
Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]
Oystercatcher (<i>Haematopus ostralegus</i>) [A130]
Redshank (<i>Tringa totanus</i>) [A162]
Wetland and Waterbirds [A999]
Lough Gill SAC (Site code: 004035)
Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150]
Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]
Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, <i>Alnion incanae</i> , <i>Salicion albae</i>) [91E0]
<i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092]
<i>Petromyzon marinus</i> (Sea Lamprey) [1095]
<i>Lampetra planeri</i> (Brook Lamprey) [1096]
<i>Lampetra fluviatilis</i> (River Lamprey) [1099]
<i>Salmo salar</i> (Salmon) [1106]
<i>Lutra lutra</i> (Otter) [1355]

Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC is a large coastal site largely comprised of two estuarine bays, Sligo Harbour and Drumcliff Bay. These are the estuaries of the Garavogue and Drumcliff rivers respectively. Both bays are well sheltered and have extensive intertidal sand and mud flats. Coney Island provides the main shelter for Sligo Harbour, while a land spit protrudes from the Rosses peninsula and provides shelter for inner Drumcliff Bay. The site continues to the north-west of Drumcliff Bay to include the shallow marine waters of Brown's Bay. A number of coastal habitats; including sand dunes, and saltmarshes occur within the site. Terrestrial habitats include small areas of grassland and Juniper scrub. Petrifying springs with tufa formations occur on the south side of Rosses Peninsula along a section of soft sea cliffs. Localised areas of wetland also occur within the site and include a fresh water lake and pockets of fen, marsh and wet grassland.

A number of species of conservation importance occur within the site including Harbour seal, Sea lamprey, River lamprey and Narrow-mouthed whorl snail. A small section of inner Drumcliff Bay contains an area of intertidal eelgrass (*Zostera noltei*).

Figure 6.1 shows the distribution of marine community types that characterise the SAC, many of which provide a critical feeding resource for the bird species that use the site.

The trophic status of the estuarine and coastal waters within Sligo harbour are recorded as unpolluted (EPA, 2017).

Cummeen Strand SPA is of conservation importance for the presence of three species listed under Annex I of the EU Birds Directive; Light-bellied Brent Goose, Oystercatcher and Redshank. The site is also notable for the diversity of additional bird species it supports which includes Shelduck, Wigeon, Teal, Mallard, Red-breasted Merganser, Golden Plover, Lapwing, Knot, Sanderling, Dunlin, Bar-tailed Godwit, Curlew, Greenshank and Turnstone. The wetland habitats of the bay which provide a feeding and roosting resource for these species is of critical importance (See figure 6.1).

Lough Gill SAC is an important example of a lake which appears to be naturally eutrophic. Significant areas of alluvial forest occur along the Garvogue River and at the mouth of the River Bonnet. Old oak woodland of varying quality is well scattered along the shoreline and on some of the islands and is an important example of this habitat for western Ireland. At least six Red Data Book plant species have been recorded from site. The site has three species of lamprey and *Austropotamobius pallipes*. The lake and its associated rivers support an important population of Salmon. Otter is also present within the site. A wide range of rare or scarce invertebrates are known from the site, as well as several Red Data Book mammal species, including pine marten.

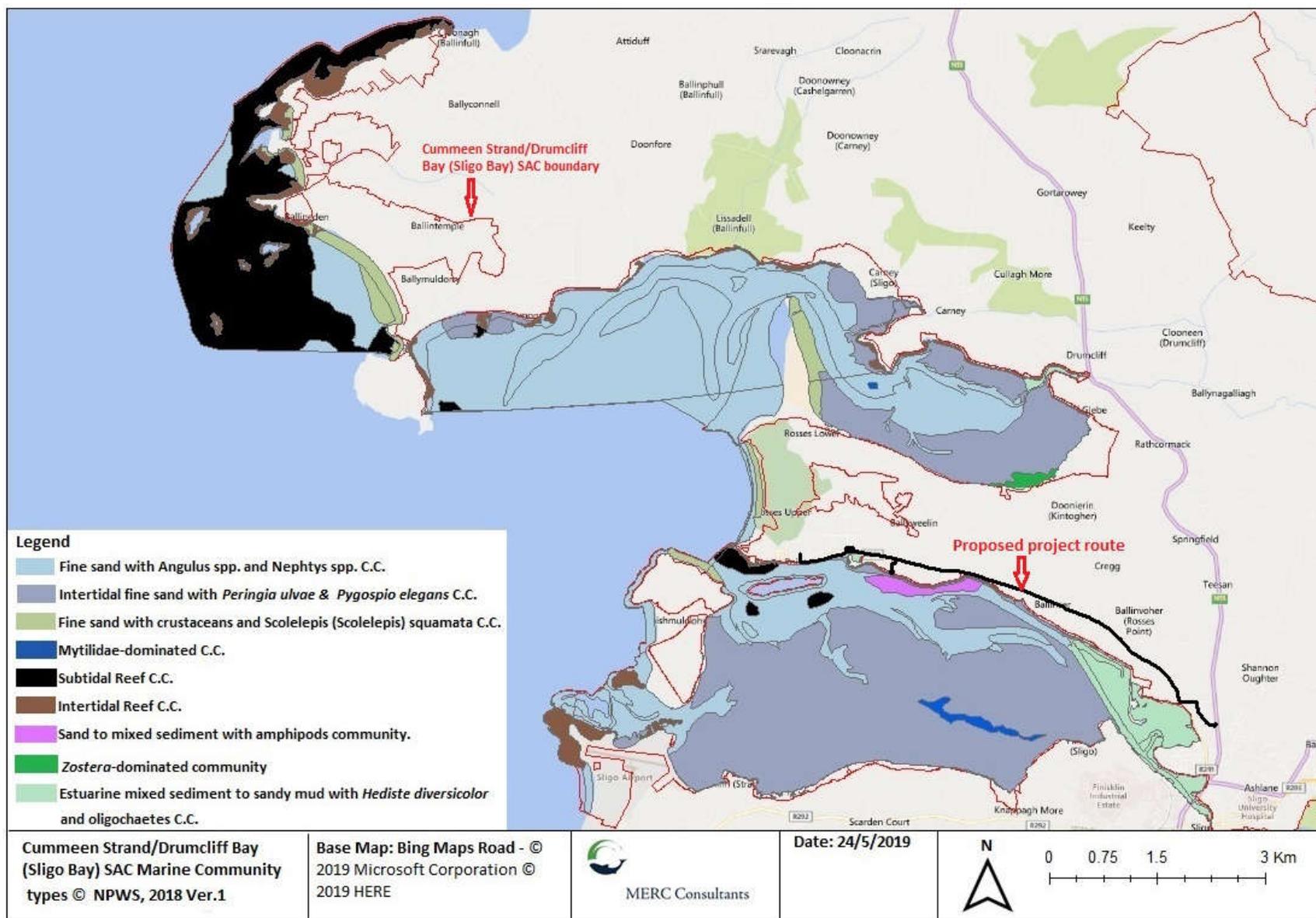


Figure 6.1. Marine Community Types of Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC.

7. Appropriate Assessment Screening

7.1 Impact prediction

This section identifies and considers potential impacts; direct and secondary, on the conservation status of the qualifying interests of Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Cummeen Strand SPA and Lough Gill SAC as a result of the proposed project. Direct and indirect impacts related to the construction and operation phase are discussed in section 7.2. Cumulative impacts are considered under section 7.3.

7.2 Direct and Indirect impacts

There is no direct spatial overlap between any element of the proposed project and the features of interest for which Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Cummeen Strand SPA and Lough Gill SAC are selected. All components of the proposed project are restricted to public roads, amenity grassland and improved agricultural land outside of any designated site. Indirect impacts may occur as a result of direct or indirect linkages to those habitats within the zone of influence of a proposed project. The zone of influence of this project is considered to be the habitats which occur within Sligo Harbour and species utilising Sligo Harbour to access Lough Gill SAC. This zone of influence has been decided based on expert judgement relative to the scale and scope of the project, corridors of connectivity and potential cumulative impacts pre, post and during the construction phase of the project.

Three Annex I habitats occur within the vicinity of the proposed project site: Estuaries [1130], Mudflats and sandflats not covered by seawater at low tide [1140] and Petrifying springs with tufa formation (Cratoneurion) [7220]. These habitats occur to south of the R291 and are within 25, 20 and 255 meters respectively of the proposed project at its nearest point. Resting and breeding sites for Harbour seal (*Phoca vitulina*) [1365] occur within Sligo Harbour. Three species; Sea Lamprey (*Petromyzon marinus*), River Lamprey (*Lampetra fluviatilis*) and Salmon (*Salmo salar*) migrate through Sligo Harbour to access Lough Gill. Otter (*Lutra lutra*) occurs in Lough Gill SAC and suitable habitat for this species also occurs in the Sligo Harbour area.

A review of the potential for impact, relative to construction works and post-construction operation on those habitats and species considered to be within the zone of influence of the proposed project, is provided in table 7.1

Table 7.1 Summary of impact prediction

Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC (Site code: 000627)			
Feature of interest	Potential for impact	Assessment of impact	Screening assessment
Estuaries [1130]	<p>Sediment mobilisation and surface run-off as a result of in road trenching and construction of the new pumping stations.</p> <p>Certain marine communities are vulnerable to impacts from changes in sediment structure and eutrophication. Such changes can arise from an increase in both sediment deposition and associated nutrient/chemical load.</p>	<p><u>Construction</u></p> <p>At its nearest point the proposed project is within 15-20 meters of the intertidal habitats of Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC and Cummeen Strand SPA. Material excavated from all construction work will be removed from the site at the time of excavation and disposed of at a licenced facility. The location of the excavations are separated from the intertidal areas by low sea walls, housing and agricultural grassland depending on the location of the works.</p> <p>However, in the absence of a construction environmental management plan to address issues such as (but not limited to) surface run-off, hydrocarbon management, storage of materials, waste management, screening of top soil for backfilling and storage of materials including waste, the potential for impact on estuarine habitats is uncertain.</p> <p>It is considered that impacts on the conservation objectives of this habitat may arise as a result of:</p> <ul style="list-style-type: none"> • Sediment mobilisation resulting from the construction of the new pumping station at PS E2 with the potential to impact on certain marine communities. Sediment mobilisation as a result of deep excavations reaching ground water levels has the potential to lead to run-off and associated sediment transport into the estuary habitat. • Sediment mobilisation resulting from trenching in the area between Scotsman’s Walk and the Teesan/Lisnalurg pumping station has the potential to lead to run-off and associated sediment transport into the estuary habitat. 	Potential for impact uncertain without mitigation.

		<ul style="list-style-type: none"> The management of groundwater (disposal of collected groundwater) in this area has the potential to impact the estuarine habitat if not appropriately discharged. Sediment and surface run-off leading to the transport of noxious pollutants, e.g. from hydrocarbon spillage, into the estuary habitat. 	
	Increased eutrophication of estuarine habitat due to storm overflow discharges.	<p><u>Post construction emergency storm overflow</u> Discharge from PSE3 has a combined overflow from a holding tank designed to have no more than 7 spills per bathing season. The emergency overflow from PSE2 will be connect to the existing sea outfall.</p> <p>However, changing rainfall patterns are considered likely to further increase pressure on storm overflows in the future. Discharges associated with such events (and from leakage) are currently unknown. In the absence of further assessment of the relevant data, non-compliance cannot be measured. Therefore, uncertainty relative to future potential impacts of discharges on estuarine habitats exists.</p>	Potential for impact uncertain
Mudflats and sandflats not covered by seawater at low tide [1140]	<p>Sediment mobilisation and surface run-off as a result of in road trenching and construction of the new pumping stations.</p> <p>Certain marine communities are vulnerable to impacts from changes in sediment structure and eutrophication. Such changes can arise from an increase in both sediment deposition and associated nutrient/chemical load.</p>	<p><u>Construction</u> At its nearest point the proposed project is within 15-20 meters of the intertidal habitats of Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC and Cummeen Strand SPA. Material excavated from all trenching work will be removed from the site at the time of excavation and disposed of at a licenced facility. The location of the excavations are separated from the intertidal areas by low sea walls, housing and agricultural grassland depending on the location of the works.</p> <p>However, in the absence of a construction environmental management plan to address issues such as (but not limited to) surface run-off, hydrocarbon management, storage of materials, waste management, screening of top</p>	Potential for impact uncertain without mitigation.

		<p>soil for backfilling and storage of materials including waste, the potential for impact on Mudflats and sandflats habitats is uncertain.</p> <p>It is considered that impacts on the conservation objectives of this habitat may arise as a result of:</p> <ul style="list-style-type: none"> • Sediment mobilisation resulting from the construction of the new pumping station at PS E2 with the potential to impact on certain marine communities. Sediment mobilisation as a result of deep excavations reaching ground water levels has the potential to lead to run-off and associated sediment transport into the Mudflats and sandflats habitat. • Sediment mobilisation resulting from trenching in the area between Scotsman’s Walk and the Teesan/Lisnalurg pumping station has the potential to lead to run-off and associated sediment transport into the Mudflats and sandflats habitat. • The management of groundwater (disposal of collected groundwater) in this area has the potential to impact the Mudflats and sandflats habitat if not appropriately discharged. • Sediment and surface run-off leading to the transport of noxious pollutants, e.g. from hydrocarbon spillage, into the Mudflats and sandflats habitat. 	
	<p>Increased eutrophication of mudflats and sandflats habitat due to storm overflow discharges.</p>	<p><u>Post construction emergency storm overflow</u> Discharge from PSE3 has a combined overflow from a holding tank designed to have no more than 7 spills per bathing season. The emergency overflow from PSE2 will connect to the existing sea outfall.</p> <p>However, changing rainfall patterns are considered likely to further increase pressure on storm overflows in the</p>	<p>Potential for impact uncertain</p>

		future. Discharges associated with such events (and from leakage) are currently unknown. In the absence of further assessment of the relevant data, non-compliance cannot be measured. Therefore, uncertainty relative to future potential impacts of discharges on Mudflats and sandflats exists.	
Embryonic shifting dunes [2110]	No potential for impact. Habitat does not occur within the zone of influence of the proposed project.	N/A	No Impact predicted
Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No potential for impact. Habitat does not occur within the zone of influence of the proposed project.	N/A	No Impact predicted
Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No potential for impact. Habitat does not occur within the zone of influence of the proposed project.	N/A	No Impact predicted
<i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]	No potential for impact. Habitat does not occur within the zone of influence of the proposed project.	N/A	No Impact predicted
Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]	No potential for impact. Habitat does not occur within the zone of influence of the proposed project.	N/A	No Impact predicted
Petrifying springs with tufa formation (Cratoneurion) [7220]	Sediment mobilisation as a result of trenching to install the new sewer and construction of the new pumping station at PS E2.	This habitat occurs adjacent to the shoreline along a seepage line in the sedimentary (soft) sea cliffs at Ballincar. At its nearest point it is 255 meters south of the proposed project and separated from it by an area of improved agricultural grassland. Construction works on the sewer and associated structures at this location do not have the potential to impact this habitat. The project elements are considered too distant from this habitat and of too small a scale to lead to any impacts.	No Impact predicted
<i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]	No potential for impact. Species does not occur within the zone of influence of the proposed project.	N/A	No Impact predicted

<p><i>Petromyzon marinus</i> (Sea Lamprey) [1095]</p>	<p>As this SAC includes only marine/estuarine habitats the NPWS conservation objectives for the site indicate that it is not anticipated that it contains suitable spawning or nursery habitat for Sea Lamprey. Migrating adult lamprey pass through the site en route to/from the Garavoge River, which flows out of Lough Gill. Lough Gill SAC, which is adjacent to this SAC, encompasses the freshwater elements of sea lamprey habitat. Potential barriers for migrating lamprey include anthropogenic physical barriers and chemical barriers e.g. oxygen depletion or discharge of noxious pollutants.</p>	<p><u>Construction</u> The proposed project will not carry out any work in the marine area and therefore no physical (structural) barriers will occur.</p> <p>The potential for sediment and surface run-off including the release of noxious pollutants e.g. form hydrocarbon spillage) leading to a chemical barrier is unknown in the absence of a Construction Environmental Management Plan for the project.</p>	<p>Potential for impact uncertain without mitigation.</p>
		<p><u>Post construction emergency storm overflow</u> Discharge from PSE3 has a combined overflow from a holding tank designed to have no more than 7 spills per bathing season. The emergency overflow from PSE2 will connect to the existing sea outfall. However, it is not considered likely that, following seawater dilution, intermittent overflow events would have a significant impact on migratory species transiting through the area en route to Lough Gill SAC. Therefore impacts on the conservations objectives of this species are not considered to be significant.</p>	<p>No Impact predicted</p>
<p><i>Lampetra fluviatilis</i> (River Lamprey) [1099]</p>	<p>As this SAC includes only marine/estuarine habitats the NPWS conservation objectives for the site indicate that it is not anticipated that it contains suitable spawning or nursery habitat for River Lamprey. Migrating adult lamprey pass through the site en route to/from the Garavogue River, which flows out of Lough Gill. Lough Gill SAC, which is adjacent to this SAC, encompasses the freshwater elements of sea lamprey habitat. Potential barriers for</p>	<p><u>Construction</u> The proposed project will not carry out any work in the marine area and therefore no physical (structural) barriers will occur.</p> <p>The potential for sediment and surface run-off including the release of noxious pollutants e.g. form hydrocarbon spillage) leading to a chemical barrier is unknown in the absence of a Construction Environmental Management Plan for the project.</p>	<p>Potential for impact uncertain without mitigation.</p>
		<p><u>Post construction emergency storm overflow</u> Discharge from PSE3 has a combined overflow from a holding tank designed to have no more than 7 spills per</p>	<p>No Impact predicted</p>

	migrating lamprey include anthropogenic physical barriers and chemical barriers e.g. oxygen depletion or discharge of noxious pollutants.	bathing season. The emergency overflow from PSE2 will connect to the existing sea outfall. However, it is not considered likely that, following seawater dilution, intermittent overflow events would have a significant impact on migratory species transiting through the area en route to Lough Gill SAC. Therefore impacts on the conservations objectives of this species are not considered to be significant.	
<i>Phoca vitulina</i> (Harbour Seal) [1365]	Disturbance	Construction noise will not reach a level significantly higher than the background noise for this location which is already a relatively heavily trafficked area along the R291 coast road and with significant housing and agricultural activity. Harbour seal at this location, within Sligo Harbour, will have become habituated to the activity and noise levels in the surrounding area and it is not considered that the proposed project, by way of its distance, scale and scope, has the potential to lead to disturbance to this species.	No Impact predicted
Cummeen Strand SPA (Site code: 004035)			
Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]	Disturbance	No construction work will take place within the intertidal flats utilised by this species and no barriers to flightpaths will occur. Construction noise will not reach a level significantly higher than the background noise for this location which is already a relatively heavily trafficked area along the R291 coast road and with significant housing and agricultural activity. Light-bellied Brent Goose at this location, within Sligo Harbour, will have become habituated to the activity and noise levels in the surrounding area and it is not considered that the proposed project, by way of its distance, scale and scope, has the potential to lead to disturbance to this species.	No Impact predicted
Oystercatcher (<i>Haematopus ostralegus</i>) [A130]	Disturbance	No construction work will take place within the intertidal flats utilised by this species and no barriers to flightpaths will occur. Construction noise will not reach a level significantly higher than the background noise for this	No Impact predicted

		location which is already a relatively heavily trafficked area along the R291 coast road and with significant housing and agricultural activity. Oystercatcher at this location, within Sligo Harbour, will have become habituated to the activity and noise levels in the surrounding area and it is not considered that the proposed project, by way of its distance, scale and scope, has the potential to lead to disturbance to this species.	
Redshank (<i>Tringa totanus</i>) [A162]	Disturbance	No construction work will take place within the intertidal flats utilised by this species and no barriers to flightpaths will occur. Construction noise will not reach a level significantly higher than the background noise for this location which is already a relatively heavily trafficked area along the R291 coast road and with significant housing and agricultural activity. Redshank at this location, within Sligo Harbour, will have become habituated to the activity and noise levels in the surrounding area and it is not considered that the proposed project, by way of its distance, scale and scope, has the potential to lead to disturbance to this species.	No Impact predicted
Wetland and Waterbirds [A999]		See potential for impacts described under Estuaries [1130] and Mudflats and sandflats not covered by seawater at low tide [1140]. Impacts on wetlands as a result of changes in marine community types as a result of the potential for impact from construction work (in the absence of an environmental management plan) and from storm overflow discharge are uncertain and may present a threat to this habitat and its utility as a feeding resource for some bird species.	Potential for impact uncertain
Lough Gill SAC (Site code: 004035)			
Natural eutrophic lakes with Magnopotamion or	No potential for impact. Habitat does not occur within the zone of influence of the proposed project.	N/A	No Impact predicted

Hydrocharition - type vegetation [3150]			
Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]	No potential for impact. Habitat does not occur within the zone of influence of the proposed project.	N/A	No Impact predicted
Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	No potential for impact. Habitat does not occur within the zone of influence of the proposed project.	N/A	No Impact predicted
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	No potential for impact. Habitat does not occur within the zone of influence of the proposed project.	N/A	No Impact predicted
<i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092]	No potential for impact. Habitat does not occur within the zone of influence of the proposed project.	N/A	No Impact predicted
<i>Petromyzon marinus</i> (Sea Lamprey) [1095]	Deterioration of water quality resulting from run-off due to construction activities.	<p>The Garavogue River drains into Sligo Harbour to the south of the proposed project. Therefore there is no potential to impact on the freshwater habitats of Lough Gill.</p> <p>Migrating adult Sea lamprey pass through Sligo Harbour en route to Lough Gill SAC. Any impact on the water quality of Sligo Harbour (as described above for Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC) could result in impacts on this species.</p> <p>It is considered that impacts on the conservation objectives of this species may arise as a result of the following:</p> <ul style="list-style-type: none"> • Sediment and surface run-off including the transport of noxious pollutants e.g. from hydrocarbon spillage forming a chemical barrier 	Potential for impact uncertain without mitigation.

		<p>potentially preventing the passage of protected migratory fish species.</p> <ul style="list-style-type: none"> • Deterioration of water quality resulting from run-off due to construction activities impacting protected migratory fish species. 	
<i>Lampetra planeri</i> (Brook Lamprey) [1096]	No potential for impact. Species does not occur within the zone of influence of the proposed project.	N/A	No Impact predicted
<i>Lampetra fluviatilis</i> (River Lamprey) [1099]	Deterioration of water quality resulting from run-off due to construction activities.	<p>The Garavogue River drains into Sligo Harbour to the south of the proposed project. Therefore there is no potential to impact on the freshwater habitats of Lough Gill.</p> <p>Migrating adult River lamprey pass through Sligo Harbour en route to Lough Gill SAC. Any impact on the water quality of Sligo Harbour (as described above for Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC) could result in impacts on this species.</p> <p>It is considered that impacts on the conservation objectives of this species may arise as a result of the following:</p> <ul style="list-style-type: none"> • Sediment and surface run-off including the transport of noxious pollutants e.g. from hydrocarbon spillage forming a chemical barrier potentially preventing the passage of protected migratory fish species. • Deterioration of water quality resulting from run-off due to construction activities impacting protected migratory fish species. 	Potential for impact uncertain without mitigation.
<i>Salmo salar</i> (Salmon) [1106]	Deterioration of water quality resulting from run-off due to construction activities.	The Garavogue River drains into Sligo Harbour to the south of the proposed project. Therefore there is no potential to impact on the freshwater habitats of Lough Gill.	Potential for impact uncertain without mitigation.

		<p>Salmon pass through Sligo Harbour en route to Lough Gill SAC. Any impact on the water quality of Sligo Harbour (as described above for Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC) could result in impacts on this species.</p> <p>It is considered that impacts on the conservation objectives of this species may arise as a result of the following:</p> <ul style="list-style-type: none"> • Sediment and surface run-off including the transport of noxious pollutants e.g. from hydrocarbon spillage forming a chemical barrier potentially preventing the passage of protected migratory fish species. • Deterioration of water quality resulting from run-off due to construction activities impacting protected migratory fish species. 	
<i>Lutra lutra</i> (Otter) [1355]	Disturbance during construction	<p>Otters utilise both Freshwater and coastal/marine habitats. While Otter is not listed as a feature of interest for Sligo Harbour (Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC), there are a number of records for Otter within this area including along the southern shore of Rosses Peninsula. It is possible that otters move between Sligo Harbour and the area defined as Lough Gill SAC (which is designated for otter). However suitable habitat for otter only occurs in the area surrounding Component 7, adjacent to the Willsborough stream and no signs of otter were recorded at this location during site surveys. Therefore it is considered highly unlikely that any disturbance to otter will occur.</p>	No Impact predicted

7.3 Cumulative Impacts

While a single development may not in itself cause a significant impact on the conservation objectives of a site, a combination of projects within a localised area may cause a negative impact on a site. Therefore the cumulative impacts of a project or plan in association with other projects and plans must be taken into consideration when assessing the possible impacts of a development.

Development

The Sligo Main Drainage Scheme has provided Sligo City and the surrounding areas with adequate treatment and drainage capacity to serve up to 50,000 PE (population equivalent), thereby allowing for future development and growth (Sligo Co. Co. 2017). It is considered that future development within the catchment of the main drainage scheme is adequately provided for by this scheme and cumulative impacts with development are not predicted.

Anthropogenic impacts

The proposed project is located within the Sligo Bay & Drowse Catchment. This catchment includes all streams entering tidal water in Sligo Bay and between Lenadoon Point and Aughrus Point, Co. Donegal. The Garavoge Estuary transitional water body intersects spatially with river and lake waterbodies in three sub-catchments (Drumcliff-Coastal, Garavoge and Coastal 04) within this catchment. Risks identified for this area include forestry, urban run-off, diffuse sources run-off, combined sewer overflows and unknown anthropogenic pressures (catchments.ie).

In the absence of mitigation (environmental management plan and assessment of potential discharges from storm overflows) the potential for cumulative impacts with anthropogenic impacts is unknown and could have the potential to lead to a cumulative impact on the conservation objectives of Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC and Cummeen Strand SPA.

8. Invasive alien species

It is considered that there is no potential for impact relative to the spreading of invasive alien Species on the conservation objectives of Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC and Cummeen Strand SPA as a result of the proposed project. However, it is considered that, in the absence of mitigation, imported top soil could lead to further spread of IAS in the terrestrial habitats surrounding the aforementioned sites.

9. Concluding statement

Post construction, all discharges of treated effluent will be through Sligo waste water treatment plant. This treatment plant provides extensive treatment in the form of primary settlement, biological secondary treatment, final settlement and final recycled water UV disinfection. Furthermore, non-compliant CSO's will be removed and/or replaced. Therefore, it is clear that the proposed project will improve the likelihood of untreated discharges from discharging into Sligo Harbour and thereby have a positive impact on the conservation objectives of the adjacent Natura 2000 sites. However, in the absence of mitigation e.g. an environmental management plan for the construction phase of the proposed project and further

assessment of the potential for impacts from storm overflows during the operational phase, uncertainty relative to residual risks on the conservation objectives of Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Cummeen Strand SPA and Lough Gill SAC remains.

10. Screening statement

Based on this screening assessment the proposed project has the potential to lead to impacts on the the conservation objectives of Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Cummeen Strand SPA and Lough Gill SAC alone and in combination with other projects. Therefore, applying the Precautionary Principle and in accordance with Article 6(3) of the Habitats Directive, Appropriate Assessment is required.

11 Natura Impact Statement

11.1 Overview

The Appropriate Screening determined that:

1. A construction environmental management plan for the project was required to further examine potential construction related impacts and develop appropriate mitigation measures to ensure no construction related impacts on the conservation objectives of Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Cummeen Strand SPA and Lough Gill SAC.
2. Further assessment of the potential for impacts from storm overflows during the operational phase to remove uncertainty relative to potential residual risks on the conservation objectives of Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Cummeen Strand SPA and Lough Gill SAC was required.

These two points and additional mitigation measures to ensure the risks outlined in the Appropriate Assessment Screening are fully mitigated are detailed in section 12.

12 Mitigation

12.1 Construction environmental management plan

An outline construction environmental management plan (CEMP) for the project should be prepared to further examine potential construction related impacts and develop appropriate mitigation measures to ensure no construction related impacts on the conservation objectives of Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Cummeen Strand SPA and Lough Gill SAC.

Specifically, the outline CEMP and subsequent contractor CEMP should:

- Detail the establishment of a site compound for the storage of plant, machinery and materials during the construction phase of the project. The CEMP will consider the location of the off-site compound with due regard for the receiving environment at the off-site location.
- Ensure all plant and machinery are refuelled at the off-site compound at the start of each working day.
- Ensure all plant and machinery are be regularly checked for leaks;



- Ensure no hydrocarbons will be stored at the project site.
- Ensure a spill kit is available at the project site for accidental leaks.
- Detail measures to mitigate silt mobilisation and subsequent potential for runoff as specified under section 12.3 below.
- Detail the roles and responsibilities of construction and associated staff regarding the protection of the receiving environment.

12.2 Analysis of potential for impact from stormwater overflows

A detailed analysis of the potential for impact from stormwater overflows during the operation phase of the project should be prepared so that appropriate mitigation can be developed if required.

12.3 Management of silt

The first step to prevent silt from entering protected habitats is to minimise the generation of silt laden runoff through planning of construction activities by working during clement weather and minimising the storage of sediment producing material. Where silt laden runoff is generated it should be prevented from entering sensitive habitats. Specifically, the following actions should be taken:

- Excavation should be undertaken during clement weather to minimise runoff.
- Back fill trenching as work proceeds and remove excess material.
- Where possible, minimise areas stripped of vegetation using a phased approach during construction.
- Avoid stockpiles of excavated earth to control silt runoff.
- Backfilling shall, wherever practicable, be undertaken immediately after the specified operations preceding it have been completed.
- Reseeding of previously grassed areas will take place as soon as possible following construction.
- Silt fencing should be erected along the seaward boundary at PS E2 (see appendix 2). This will mitigate any sediment run-off resulting from excavations at this location entering the adjacent marine habitats (intertidal and subtidal).
- Silt fencing should be erected around the final agreed position of the settlement pond.
- Silt fencing should be erected along the channel and Willsborough stream at the location of component 7 (between Scotsman's Walk and the existing Teesan/Lisnalurg pumping station. (see appendix 2).

12.4 Management of groundwater

All groundwater pumped from the proposed construction trench between Scotsman's Walk and the existing Teesan/Lisnalurg pumping station will be passed through silt bags (as per the specification provided in appendix 3) before discharging into the channel (shown in appendix 2). Where it is not feasible to pass groundwater through silt bags, the remaining water will be discharged to a tanker and transported off the site and discharged at an appropriate facility to be agreed with the Contractor in advance.

12.5 Ecological supervision

Prior to commencement of works a suitably qualified ecologist should be appointed to act as an ecological clerk of works (ECoW). THE ECoW should:

- Review and input to the final contractor CEMP in respect of environmental and ecological matters. Including a review of the agreed point of discharge from all dewatering activities (i.e. the location of tanker discharges).
- Provide advice on all relevant mitigation measure set out in the outline CEMP, contractor CEMP and NIS.
- Carry out regular inspection and monitoring of the construction work, particularly in relation to ensuring the implementation of the proposed silt fencing and groundwater discharge location/s to ensure no impacts on the conservation objectives of any Natura 2000 site.
- Have the authority to halt works in the event of any non-compliance or failure of the mitigation measures detailed in the NIS.

12.6 Invasive Alien Species

The Appropriate Assessment Screening concluded that there was no potential for impact relative to the spreading of IAS on the conservation objectives of Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC and Cummeen Strand SPA as a result of the proposed project. However, it considered that, in the absence of mitigation, imported top soil could lead to further spread of IAS in the terrestrial habitats surrounding the aforementioned sites.

In line with good practice, methods for the prevention of spread of IAS should ensure that the following guidelines are implemented:

- Kelly, J., Maguire, C.M. and Cosgrove, P.J., Muir, R.A. (2015). Best Practice Management Guidelines Japanese knotweed *Fallopia japonica*. Prepared for NIEA and NPWS as part of Invasive Species Ireland.
- and**
- NRA Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (2010).

In addition:

- Any plant, vehicles or equipment that may have worked in areas of the project footprint where invasive species are known to occur (MERC, 2019a) should be suitably cleaned by a high pressure hose prior to leaving an invested area.
- All fill and material sourced or relocated within the site should be screened at source for the presence of invasive species by the ECoW to prevent the spread of these species along the road corridor. This is in line with the guidance for the control of non-native invasive species set out in the NRA publication '*Guidelines on the Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads*' (NRA, 2010) to be employed by the contractor.

13. Implementation of proposed mitigation

13.1 Construction environmental management plan

An outline Construction Environmental Management Plan (CEMP) for the project has not been prepared (MERC, 2019). The CEMP sets out the procedures, standards, work practices and management responsibilities to address potential environmental effects that may arise from construction and decommissioning works of the proposed project. In line with the specific mitigation measures detailed in the NIS, the CEMP has considered the potential construction related impacts, including the management and mitigation of surface run-off, hydrocarbon management, storage of materials, waste management, screening of top soil for backfilling and storage of materials including waste.

The CEMP details how environmental impacts of the proposed sewerage scheme upgrade are likely to be managed during construction and proposes mitigation where required. It also provides for the inclusion of further detail by the construction contractor (Contractor CEMP) once appointed and prior to works commencing on site.

The CEMP examined the potential for impact on the ecology within the zone of influence of the proposed project and detailed measures and work practices to avoid siltation and hydrocarbon run-off into the receiving environment in line with specific mitigation detailed in the NIS.

13.2 Uncertainty relating to impact from storm overflows

During high rainfall events the capacity of a combined sewer system may be exceeded leading to discharges into the receiving waters. Recent research (EPA, 2018) notes that SWO discharges have been recognised as a potential cause of receiving water impairments including reductions in chemical and ecological status. Recently published data (NPWS 2019) notes that Estuaries surrounded by urban settlements are vulnerable to the impact of run-off from storm water and may also be impacted by on-going discharge of inadequately treated water.

Analysis of stormwater overflows during the operation phase of the project has been conducted and the results of that analysis are provided below.

Analysis of potential nutrient loads to Sligo Harbour

The proposed project plans to direct sewage and water to the WwTp in Sligo town via a combined sewer system. The stormwater overflow (SWO) at PSE3 will be upgraded by the addition of a new storm tank to make this overflow compliant. This SWO overflow will divert excess flows from the sewer network to the subtidal area of Cummeen Strand/Drumcliff Bay (Sligo Bay). The design of the SWO (at PSE3) is based on the outfalls discharging into recreational waters as defined in the Irish Water Technical Standard for Storm Water Overflows which provides for a maximum 7 spills per bathing season. A bathing season being the period from June 1st to September 15th each year. As part of the design, the overflow from PSE3 will be screened through a 6 mm screen and passed into an underground storm storage tank where there will be retention of solids due to settlement. The existing overflow will be retained and used as the storm

overflow from the new storm storage tank. The capacity of the storm storage tank is designed to be compliant with the maximum of 7 spills per bathing season. At PSE2 an emergency overflow will be included to address the potential for pump failures. This overflow will be connected into the existing overflow from the current WwTp on site, while the WwTp itself will be decommissioned. Here no screening or storage of waste/stormwater will occur. Discharge at this location will only occur in the event of failure of the pumping system.

EPA catchment characterisation carried out in support of the 2018 River Basin Management Plan (RBMP) assumes, in the absence of data indicating lesser nutrient loads, that up to 3% of the nutrient load reaching a WwTp may be lost to receiving waters (Mockler & Bruen, 2018).

The Source Load Apportionment Model (SLAM) is the flexible framework developed by the Catchment Tools project to estimate the nutrient load from various sectors entering water bodies, following attenuation or treatment. The results generated by the SLAM quantify nutrient losses from both point discharges (municipal wastewater treatment plants, industry and septic tank systems) and diffuse sources (pasture, arable, forestry, peatlands, etc.) (Mockler *et al* 2016).

Applying the methodology as per the Catchment Characterisation approach Irish Water have calculated SWO nutrient loss to Sligo Harbour from the Rosses Point and Sligo Agglomerations (table 13.1). This calculation has included the contribution resulting from diffuse pollution within the catchment (Garavogue River contribution) (table 13.2). Calculations have assumed a 3% loss of nutrient influent load to receiving waters as per the SLAM model. These data estimate that the total nutrient contribution from the Sligo and Rosses Point agglomerations, including the SWO's, will amount to a Total Nitrogen (TN) loss of 0.05% and a total Phosphate (TP) loss of 0.19% entering Sligo Harbour.

Table 13.1. Irish water calculation of nutrient loads to Sligo Harbour.

WwTp and SWO loads			
Rosses Point		PE: 2,000	
		TN	TP
Agglomeration Influent	kg/day	18	5
Agglomeration Influent	kg/year	6,570	1,825
Estimated SWO Nutrient loss to Sligo Bay from Rosses Point Agglomeration		197	55
Sligo		PE: 50,000	
		TN	TP
WWTP influent @ Max capacity	kg/day	450	125
WWTP influent @ Max capacity	kg/year	164,250	45,625
WWTP Effluent @ Max Capacity	kg/year	52,560	15,513
Estimated SWO Nutrient loss to Sligo Harbour from Sligo Agglomeration		4,928	1,369
Totals			
Sligo WWTP Contribution	kg/year	52,560	15,513
Garavogue River Contribution	kg/year	335,879	11,561
Rosses Point SWOs	kg/year	197	55
Sligo SWOs	kg/year	4,928	1,369
Total Annual Nutrient Contributions to Sligo Harbour	kg/year	393,563	28,497
Rosses Point SWOs as % of total		0.05%	0.19%

Table 13.2. Irish water calculation of nutrient loads to Sligo Harbour.

Garavogue River Catchment contribution*		
	TN	TP
Kilo Tonnes Year	0.33588	0.01156
Kg/year	335,879	11,561

*Garavogue River RID data. Extract from OSPAR Riverine Input Data (2017 data from EPA TraCs team- latest available data).

14 Assessment of impacts with mitigation

The marine community types and their extent (area in hectares) recorded within Cummeen Strand/Drumcliff Bay SAC are shown in table 14.1. NPWS marine community type mapping (NPWS, 2013, a; c) indicates that the proposed discharge from PSE3 enters the receiving water below the MHWS mark in an area of *Fine sand with Angulus spp. and Nephtys spp. community complex*. The emergency overflow from PSE2 enters the receiving water below the MHWS mark in an area of *Sand to mixed sediment with amphipods community*. The outfall pipes from both structures cross through an area of *Intertidal reef*. However, no work is proposed on the existing pipes and therefore no impacts on the intertidal reef habitat are possible.

Additional benthic survey work in this area (Aquafact, 2017) indicated that faunal community at the discharge point of PSE2 contained elements of the *Sand to mixed sediment with amphipods community* as described in the NPWS marine community mapping (NPWS, 2013, a & c) and also elements of the *Intertidal fine sand with Peringia ulvae and Pygospio elegans community complex*. The latter forms an extensive community in the intertidal sections of the SAC. Aquafact (2017) suggest this may represent a transition zone between the two community types. However, variations to the NPWS marine community mapping are not uncommon. For this reason, community complex targets were developed for areas possessing similar abiotic features but recording a number of biological communities that are not regarded as being sufficiently stable and/or distinct temporally or spatially to become the focus of conservation efforts. In the case of Cummeen Strand/Drumcliff Bay SAC a number of biological communities whose species composition overlapped significantly were identified (NPWS, 2013c). Such biological communities were grouped together into what experts considered are sufficiently stable units (i.e. a complex) for conservation targets.

Table 14.1. The community types recorded in Cummeen Strand/Drumcliff Bay SAC and their occurrence in the Annex I habitats and the SPAs (NPWS, 2013).

Community Type	Estuaries	Mudflats and sandflats not covered by seawater at low tide	SPA	Area (Ha)
Intertidal fine sand with <i>Peringia ulvae</i> and <i>Pygospio elegans</i> community complex	✓	✓	✓	1,423
Estuarine mixed sediment to sandy mud with <i>Hediste diversicolor</i> and oligochaetes community complex	✓	✓	✓	102
Fine sand with crustaceans and <i>Scolecopsis (Scolecopsis) squamata</i> community complex	✓	✓	✓	90
<i>Zostera</i> -dominated community	✓	✓		11
Mytilidae-dominated community complex	✓	✓	✓	18
<i>Fine sand with Angulus spp. and Nephtys spp. community complex</i>	✓	✓	✓	644
<i>Sand to mixed sediment with amphipods community</i>	✓		✓	22
Intertidal reef community	✓		✓	13
Subtidal reef community			✓	24*

* Derived from NPWS marine community mapping

NPWS conservation objectives for the site include ensuring that the community distribution (area in hectares within the bay) of both of these marine community types is conserved in a natural condition. It is recognised that the structure and function of marine sediment communities varies significantly both temporarily and spatially. Anthropogenic disturbance may be considered significant when it causes a change in biotic and/or abiotic variables in excess of what could reasonably be envisaged under natural processes.

The Department of Arts, Heritage and the Gaeltacht has taken a prioritised approach to conservation of structure and function in marine Annex I habitats. In the case of sediment communities, as described above, the Department takes the view that:

1. *“Significant anthropogenic disturbance may occur with such intensity and/or frequency as to effectively represent a continuous or ongoing source of disturbance over time and space (e.g. effluent discharge within a given area). Drawing from the principle outlined in the European Commission’s Article 17 reporting framework that disturbance of greater than 25% of the area of an Annex I habitat represents unfavourable conservation status, this Department takes the view that licensing of activities likely to cause continuous disturbance of each community type should not exceed an approximate area of 15%. Thereafter, an increasingly cautious approach is advocated. Prior to any further licensing of this category of activities, an inter-Departmental management review (considering inter alia robustness of available scientific knowledge, future site requirements, etc.) of the site is recommended”.*

2. *“Some activities may cause significant disturbance but may not necessarily represent a continuous or ongoing source of disturbance over time and space. This may arise for intermittent or episodic activities for which the receiving environment would have some resilience and may be expected to recover within a reasonable timeframe relative to the six-year reporting cycle (as required under Article 17 of the Directive). This Department is satisfied that such activities could be assessed in a context-specific manner giving due consideration to the proposed nature and scale of activities during the reporting cycle and the particular resilience of the receiving habitat in combination with other activities within the designated site”.*

The potential discharges from PSE2 and PSE3 do not comprise a continuous discharge, rather they represent potential intermittent or episodic discharges. Currently a number of non-compliant structures discharge into Sligo Harbour. The proposed project will remove these non-compliant storm overflows, resulting in future potential overflows limited to PSE2 and PSE3 and the associated potential for nutrient losses into Sligo Harbour of 0.05% and 0.19% for TN and TP respectively.

The *Fine sand with Angulus spp. and Nephtys spp. community complex* (into which PSE3 may discharge) is extensive within Cummeen Strand/Drumcliff Bay SAC, accounting to 644ha of the total area of the site. At the point of potential discharge from PSE3 this marine community complex is influenced by strong currents and the influence of the outflow from the Garavogue River.

It is considered that the potential intermittent discharge and associated low nutrient discharge associated with this SWO together with the strong tidal currents at this location does not have the potential to cause

significant disturbance. Spill durations which are generally in the range of 3-6 hours are likely, at worst, to lead to a small and localised effect and this community complex. No continuous impact would result from PSE3 and with due consideration of the nature (low nutrient load, strong tidal currents) and scale (intermittent discharge, 644ha of community complex area) it is considered that the proposed discharge does not have the potential to lead to an impact on this community complex during a reporting cycle (6 years). Furthermore, when considered in the context of wider project, no potential for in combination impacts are envisaged as the calculated maximum potential nutrient load into Sligo Harbour is calculated to be less than 1%.

The emergency overflow from PSE2 enters the receiving water in an area of *Sand to mixed sediment with amphipods community*. This community represents a relatively small proportion of the total habitat of the site (22ha). It is likely to be a relatively resilient community due to its location in the shallow sublittoral (depths of less than 1m) and associated species, including mobile species, which reflect the variable sediment type and exposed location.

No continuous impact would result from PSE2 and with due consideration of the nature (low nutrient load, strong tidal currents, exposed location, resilient community) and scale (intermittent discharge) it is considered that the proposed discharge does not have the potential to lead to an impact on this community complex during a reporting cycle (6 years). Furthermore, when considered in the context of wider project, no potential for in combination impacts are envisaged as the calculated maximum potential nutrient load into Sligo Harbour is calculated to be less than 1%.

All of the additional marine community types recorded for Cummeen Strand/Drumcliff Bay SAC and Cummeen Strand SPA are considered to be outside of the zone of influence of the proposed project and have no potential for impact.

A summary of the potential for impact ***on those elements that the screening assessment indicated potential for impact*** on the conservation objectives of Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Cummeen Strand SPA and Lough Gill SAC is provided in table 14.2.

Table 14.2 Summary of impact prediction with mitigation.

Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC (Site code: 000627)			
Feature of interest	Potential for impact	Summary of analysis of mitigation	Assessment of impact with mitigation
Estuaries [1130]	<p>Sediment mobilisation and surface run-off as a result of in road trenching and construction of the new pumping stations.</p> <p>Certain marine communities are vulnerable to impacts from changes in sediment structure and eutrophication. Such changes can arise from an increase in both sediment deposition and associated nutrient/chemical load.</p>	<p><u>Construction</u></p> <p>1. An outline Construction Environmental Management Plan (CEMP) has been prepared for this project. The plan provides for further project level detail and safe guards to be implemented on appointment of a construction contractor to carry out the works. The mitigation detailed in the CEMP is commensurate with the NIS mitigation measures and considered appropriate to avoid impacts on marine communities as a result of sediment and hydrocarbon run-off.</p> <p>2. The potential for silt run-off has been mitigated for in both the outline CEMP and mitigation measures detailed for the provision of silt fencing (Section 12.3). Impacts associated with dewatering have been mitigated by removal of pumped groundwater either through the use of silt dewatering bags and/or a tanker and off-site discharge to an appropriate facility (Section 12.4).</p> <p>4. There is no potential for spread of IAS impacting on the conservation objectives of the estuary habitat of this SAC. However, in line with good practice, management to avoid the further spread of IAS within and outside the project area has been specified in the NIS and outline CEMP.</p>	No potential for impact
	<p>Increased eutrophication of estuarine habitat due to storm overflow discharges.</p>	<p><u>Post construction emergency storm overflow</u></p> <p>Irish Water have carried out a detailed analysis of the potential nutrients loads discharging into the SAC as a result of the proposed project. As part of SLAMS modelling the calculation includes the consideration of the potential for increased rainfall patterns (e.g. resulting from climate change) and the contribution of diffuse nutrient sources (e.g. forestry and agriculture).</p> <p>These data, combined with further analysis of the marine communities within the zone of influence of the proposed project and local conditions, has demonstrated that the potential for impact on the estuarine habitat of this SAC is insignificant alone and in combination with other projects and plans.</p>	No significant impact

<p>Mudflats and sandflats not covered by seawater at low tide [1140]</p>	<p>Sediment mobilisation and surface run-off as a result of in road trenching and construction of the new pumping stations.</p> <p>Certain marine communities are vulnerable to impacts from changes in sediment structure and eutrophication. Such changes can arise from an increase in both sediment deposition and associated nutrient/chemical load.</p>	<p><u>Construction</u></p> <p>1. An outline Construction Environmental Management Plan (CEMP) has been prepared for this project. The plan provides for further project level detail and safe guards to be implemented on appointment of a construction contractor to carry out the works. The mitigation detailed in the CEMP is commensurate with the NIS mitigation measures and considered appropriate to avoid impacts on marine communities as a result of sediment and hydrocarbon run-off.</p> <p>2. The potential for silt run-off has been mitigated for in both the outline CEMP and mitigation measures detailed for the provision of silt fencing (Section 12.3). Impacts associated with dewatering have been mitigated by removal of pumped groundwater either through the use of silt dewatering bags and/or a tanker and off-site discharge to an appropriate facility (Section 12.4).</p> <p>3. There is no potential for spread of IAS impacting on the conservation objectives of the estuary habitat of this SAC. However, in line with good practice, management to avoid the further spread of IAS within and outside the project area has been specified in the NIS and outline CEMP.</p>	<p>No potential for impact</p>
	<p>Increased eutrophication of mudflats and sandflats habitat due to storm overflow discharges.</p>	<p><u>Post construction emergency storm overflow</u></p> <p>Irish Water have carried out a detailed analysis of the potential nutrients loads discharging into the SAC as a result of the proposed project. As part of SLAMS modelling the calculation includes the consideration of the potential for increased rainfall patterns (e.g. resulting from climate change) and the contribution of diffuse nutrient sources (e.g. forestry and agriculture).</p> <p>These data, combined with further analysis of the marine communities within the zone of influence of the proposed project and local conditions, has demonstrated that the potential for impact on the mudflats and sandflats habitat of this SAC is insignificant alone and in combination with other projects and plans.</p>	<p>No significant impact</p>
<p><i>Petromyzon marinus</i> (Sea Lamprey) [1095]</p>	<p>As this SAC includes only marine/estuarine habitats the NPWS conservation objectives for the site indicate that it is not anticipated that it contains suitable spawning or nursery</p>	<p><u>Construction</u></p> <p>1. An outline Construction Environmental Management Plan (CEMP) has been prepared for this project. The plan provides for further project level detail and safe guards to be implemented on appointment of a construction contractor to carry out the works. The mitigation detailed</p>	<p>No impact predicted</p>

	<p>habitat for Sea Lamprey. Migrating adult lamprey pass through the site en route to/from the Garavoge River, which flows out of Lough Gill. Lough Gill SAC, which is adjacent to this SAC, encompasses the freshwater elements of sea lamprey habitat. Potential barriers for migrating lamprey include anthropogenic physical barriers and chemical barriers e.g. oxygen depletion or discharge of noxious pollutants.</p>	<p>in the CEMP is commensurate with the NIS mitigation measures and considered appropriate to avoid impacts on migrating Sea Lamprey as a result of hydrocarbon or other noxious pollutant run-off.</p> <p>2. The potential for silt run-off and its associated transport of noxious pollutants (e.g. hydrocarbons) has been mitigated for in both the outline CEMP and mitigation measures detailed for the provision of silt fencing, the use of silt dewatering bags and/or a tanker and off-site discharge to an appropriate facility. (Section 12.3 and 12.4).</p>	
<p><i>Lampetra fluviatilis</i> (River Lamprey) [1099]</p>	<p>As this SAC includes only marine/estuarine habitats the NPWS conservation objectives for the site indicate that it is not anticipated that it contains suitable spawning or nursery habitat for River Lamprey. Migrating adult lamprey pass through the site en route to/from the Garavogue River, which flows out of Lough Gill. Lough Gill SAC, which is adjacent to this SAC, encompasses the freshwater elements of sea lamprey habitat. Potential barriers for migrating lamprey include anthropogenic physical barriers and chemical barriers e.g. oxygen depletion or discharge of noxious pollutants.</p>	<p><u>Construction</u></p> <p>1. An outline Construction Environmental Management Plan (CEMP) has been prepared for this project. The plan provides for further project level detail and safe guards to be implemented on appointment of a construction contractor to carry out the works. The mitigation detailed in the CEMP is commensurate with the NIS mitigation measures and considered appropriate to avoid impacts on migrating River lamprey as a result of hydrocarbon or other noxious pollutant run-off.</p> <p>2. The potential for silt run-off and its associated transport of noxious pollutants (e.g. hydrocarbons) has been mitigated for in both the outline CEMP and mitigation measures detailed for the provision of silt fencing, the use of silt dewatering bags and/or a tanker and off-site discharge to an appropriate facility. (Section 12.3 and 12.4).</p>	<p>No impact predicted</p>
<p>Lough Gill SAC (Site code: 004035)</p>			

<p><i>Petromyzon marinus</i> (Sea Lamprey) [1095]</p>	<p>Deterioration of water quality resulting from run-off due to construction activities.</p>	<p><u>Construction</u> 1. An outline Construction Environmental Management Plan (CEMP) has been prepared for this project. The plan provides for further project level detail and safe guards to be implemented on appointment of a construction contractor to carry out the works. The mitigation detailed in the CEMP is commensurate with the NIS mitigation measures and considered appropriate to avoid impacts on migrating Sea Lamprey as a result of hydrocarbon or other noxious pollutant run-off. 2. The potential for silt run-off and its associated transport of noxious pollutants (e.g. hydrocarbons) has been mitigated for in both the outline CEMP and mitigation measures detailed for the provision of silt fencing, the use of silt dewatering bags and/or a tanker and off-site discharge to an appropriate facility. (Section 12.3 and 12.4).</p>	<p>No potential for impact</p>
<p><i>Lampetra fluviatilis</i> (River Lamprey) [1099]</p>	<p>Deterioration of water quality resulting from run-off due to construction activities.</p>	<p><u>Construction</u> 1. An outline Construction Environmental Management Plan (CEMP) has been prepared for this project. The plan provides for further project level detail and safe guards to be implemented on appointment of a construction contractor to carry out the works. The mitigation detailed in the CEMP is commensurate with the NIS mitigation measures and considered appropriate to avoid impacts on migrating River Lamprey as a result of hydrocarbon or other noxious pollutant run-off. 2. The potential for silt run-off and its associated transport of noxious pollutants (e.g. hydrocarbons) has been mitigated for in both the outline CEMP and mitigation measures detailed for the provision of silt fencing, the use of silt dewatering bags and/or a tanker and off-site discharge to an appropriate facility. (Section 12.3 and 12.4).</p>	<p>No potential for impact.</p>
<p><i>Salmo salar</i> (Salmon) [1106]</p>	<p>Deterioration of water quality resulting from run-off due to construction activities.</p>	<p><u>Construction</u> 1. An outline Construction Environmental Management Plan (CEMP) has been prepared for this project. The plan provides for further project level detail and safe guards to be implemented on appointment of a construction contractor to carry out the works. The mitigation detailed in the CEMP is commensurate with the NIS mitigation measures and considered appropriate to avoid impacts on migrating salmon as a result of hydrocarbon or other noxious pollutant run-off. 2. The potential for silt run-off and its associated transport of noxious pollutants (e.g. hydrocarbons) has been mitigated for in both the outline</p>	<p>No potential for impact</p>

		CEMP and mitigation measures detailed for the provision of silt fencing, the use of silt dewatering bags and/or a tanker and off-site discharge to an appropriate facility. (Section 12.3 and 12.4).	
Cummeen Strand SPA (Site code: 004035)			
Wetland and Waterbirds [A999]	Impacts on wetlands as a result of changes in marine community types as a result of the potential for impact from construction work (in the absence of an environmental management plan) and from storm overflow discharge.	<p><u>Construction</u></p> <p>1. An outline Construction Environmental Management Plan (CEMP) has been prepared for this project. The plan provides for further project level detail and safe guards to be implemented on appointment of a construction contractor to carry out the works. The mitigation detailed in the CEMP is commensurate with the NIS mitigation measures and considered appropriate to avoid impacts on marine communities as a result of sediment and hydrocarbon run-off.</p> <p>2. The potential for silt run-off and its associated transport of noxious pollutants (e.g. hydrocarbons) has been mitigated for in both the outline CEMP and mitigation measures detailed for the provision of silt fencing, the use of silt dewatering bags and/or a tanker and off-site discharge to an appropriate facility. (Section 12.3 and 12.4).</p> <p><u>Post construction emergency storm overflow</u></p> <p>Irish Water have carried out a detailed analysis of the potential nutrients loads discharging into the SAC as a result of the proposed project. As part of SLAMS modelling the calculation includes the consideration of the potential for increased rainfall patterns (e.g. resulting from climate change) and the contribution of diffuse nutrient sources (e.g. forestry and agriculture).</p> <p>These data, combined with further analysis of the marine communities within the zone of influence of the proposed project and local conditions, has demonstrated that the potential for impact on the estuarine habitat of this SAC is insignificant alone and in combination with other projects and plans.</p>	No potential for impact

15. NIS Conclusion

This Natura Impact Statement has considered the potential impacts of the Rosses Point sewerage scheme on the *features of interest* and *conservation objectives* of Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Cummeen Strand SPA and Lough Gill SAC.

Uncertainty related to the potential for impact from SWO nutrient discharges has been removed. The potential for impact to certain sensitive habitats, in the absence of a CEMP, has been mitigated by the preparation of a CEMP which addresses the sensitivities of the site.

The NIS therefor concludes that, provided the mitigation measures described in this document are fully implemented, **no significant adverse impacts are expected on the *features of interest* and *Conservation objectives*** of any of the aforementioned Natura 2000 sites.

It is further concluded that there is no requirement to proceed to Stage 3 (Assessment of Alternative Solutions).

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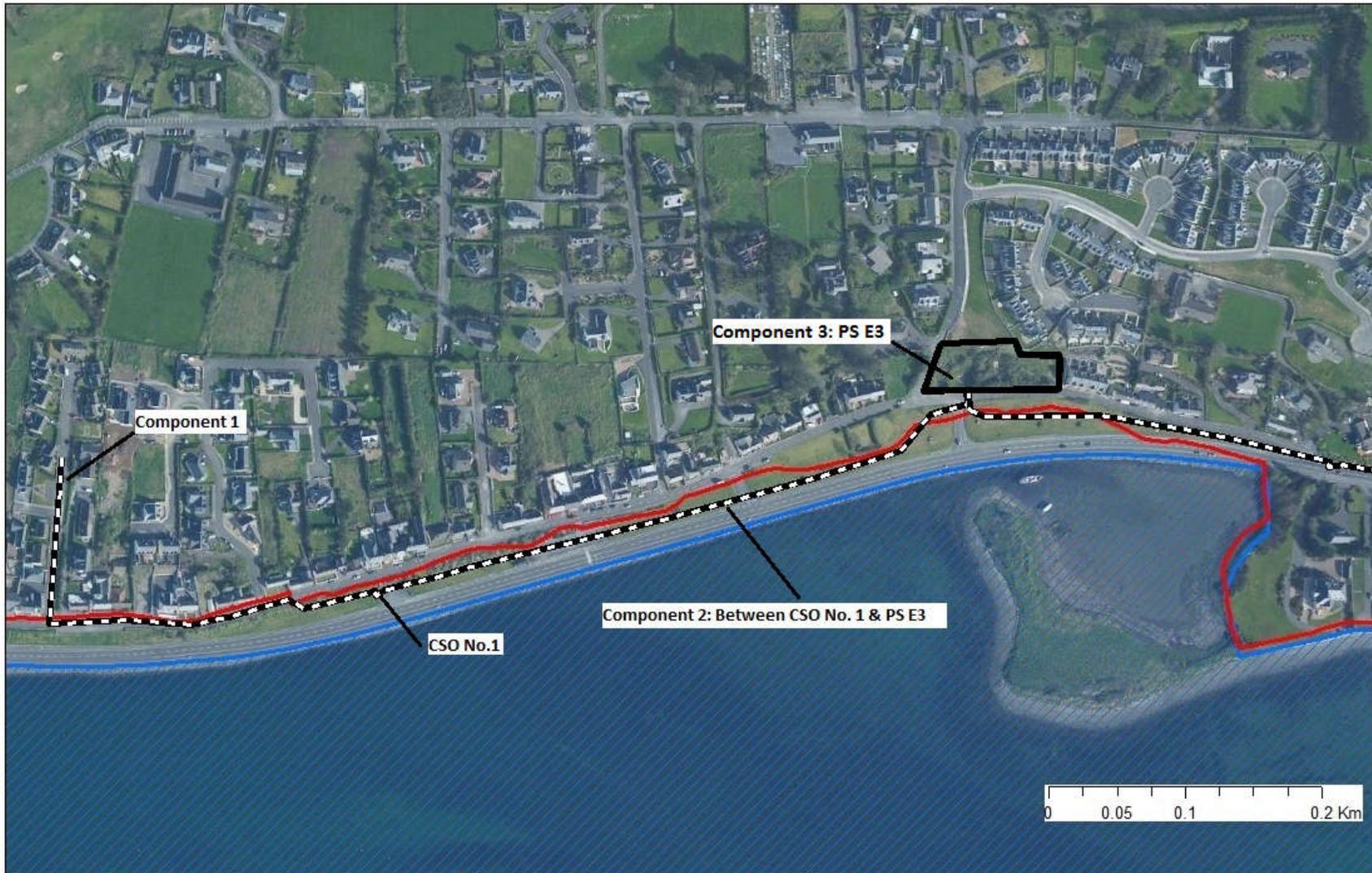
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Appendix 1. Figures: Project Component



<p>Legend</p> <ul style="list-style-type: none"> Proposed route Cummeen Strand/Drumcliff Bay (Sligo) Cummeen Strand SPA 	<p>Bing Maps Aerial - © 2019 Microsoft Corporation © 2019 DigitalGlobe © CNES (2019) Distribution Airbus DS</p>	<p>Date: 24/5/2019</p>	<p>MERC Consultants</p>
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A. 1.1 Components 1, 2 and 3.



A. 1.2 Component 4 and 5



<p>Legend</p> <ul style="list-style-type: none"> Proposed route Cummeen Strand/Drumcliff Bay (Sligo) Cummeen Strand SPA 	<p>Bing Maps Aerial - © 2019 Microsoft Corporation © 2019 DigitalGlobe © CNES (2019) Distribution Airbus DS</p>	<p>Date: 24/5/2019</p> <p style="text-align: center;">N </p>	<p style="text-align: center;"> MERC Consultants</p>
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A. 1.3 Component 6.



<p>Legend</p> <p>--- Proposed route</p> <p>— Cummeen Strand/Drumcliff Bay (Sligo)</p> <p>▨ Cummeen Strand SPA</p>	<p>Bing Maps Aerial - © 2019 Microsoft Corporation © 2019 DigitalGlobe © CNES (2019) Distribution Airbus DS</p>	<p>Date: 24/5/2019</p> <p>N</p> 	 <p>MERC Consultants</p>
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A. 1.4 Component 6 Continued.



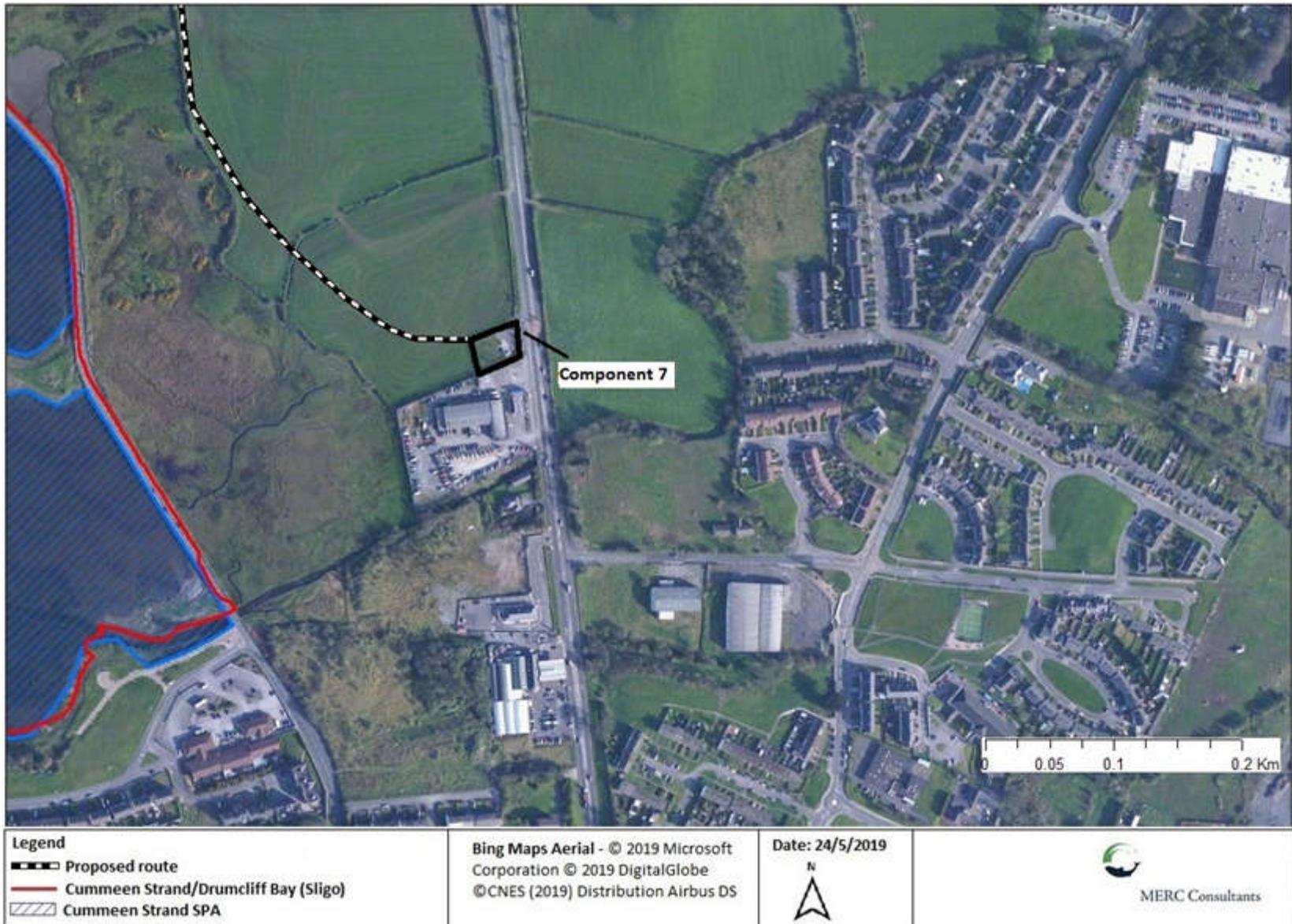
<p>Legend</p> <ul style="list-style-type: none">  Proposed route  Cummeen Strand/Drumcliff Bay (Sligo)  Cummeen Strand SPA 	<p>Bing Maps Aerial - © 2019 Microsoft Corporation © 2019 DigitalGlobe © CNES (2019) Distribution Airbus DS</p>	<p>Date: 24/5/2019</p> 	 <p>MERC Consultants</p>
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A. 1.5 Component 6 Continued.



<p>Legend</p> <ul style="list-style-type: none">  Proposed route  Cummeen Strand/Drumcliff Bay (Sligo)  Cummeen Strand SPA 	<p>Bing Maps Aerial - © 2019 Microsoft Corporation © 2019 DigitalGlobe © CNES (2019) Distribution Airbus DS</p>	<p>Date: 24/5/2019</p> 	 <p>MERC Consultants</p>
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A. 1.6 Component 6 Continued.



A. 1.7 Component 7.

Appendix 2. Location of silt fencing



A.2 Location of silt fence at PS E3.



A.3 Location of silt fence at component 7.

Appendix 3



Ultra-Dewatering Bags® Specifications

Material Specifications

Properties	ASTM Test	Value
Material: Non-Woven, Polyethylene Geotextile	-	-
Grab Tensile	D 4632	205 lbs
Elongation at break	D 4632	50%
Trapezoid Tear	D 4533	80 lbs
Puncture	D 4833	525 lbs
Mullen Burst	D 3786	420 psi
Permittivity	D 4491	1.5 sec ⁻¹
A.O.S. (U.S. sieve no.)/ mm	D 4781	80/0.18
UV Stability (strength retained %) 500 Hours	D 4355	70%
Fabric Weight (oz./yd ²)(typical)	D 5261	8 oz/yd ²
Flow Rate	D 4491	90 gpm/ft ²

Install the Ultra-Dewatering Bag® on a slope so incoming water flows downhill through the Ultra-Dewatering Bag® without creating more erosion. Strap the neck of the Ultra-Dewatering Bag® tightly to the discharge hose. To increase the efficiency of filtration, place the bag on an aggregate or hay bale bed to maximize water flow through the surface area of the bag.

The Ultra-Dewatering Bag® is full when it no longer can efficiently filter sediment or pass water at a reasonable rate. Flow rates will vary depending on the size of the Ultra-Dewatering Bag®, the type and amount of sediment discharged into the Ultra-Dewatering Bag®, the type of ground, rock or other substance under the bag and the degree of the slope on which the bag lies. Under most circumstances Ultra-Dewatering Bag® will accommodate flow rates of 1500 gallons per minute. Use of excessive flow rates or overfilling Ultra-Dewatering Bag® with sediment will cause ruptures of the bags or failure of the hose attachment straps.

Dispose of the Ultra-Dewatering Bag® as directed by the site engineer. If allowed, the Ultra-Dewatering Bag® may be cut open and the contents seeded after removing visible fabric.

The facts stated and the recommendations made herein are offered free of charge and are accurate to the best of our knowledge. UltraTech International, Inc. assumes no liability for the accuracy or completeness of this information or for the ultimate use by the purchaser. UltraTech disclaims any and all express, implied, or statutory standards, warranties or guarantees, including without limitation any implied warranty as to merchantability or fitness for a particular purpose or arising from a course of dealing or usage of trade as to any equipment, material, or information furnished herewith. Final determination of the use of any information or material, or how it is useful, and whether the use infringes any patents is the sole responsibility of the user.

Unit Specifications

Model	Fabric QTY	Max Flow Rate (GPM)	Sediment Capacity (Cu Ft)	Sediment Capacity (lbs.)	Oil Capacity
Oil & Sediment 3'x4' Part # 9729-O/S	24 sq ft	500	6	720	1.2 gal
Oil & Sediment 6'x6' Part # 9724-O/S	74 sq ft	500	36	4320	3.7 gal
Oil & Sediment 10'x15' Part # 9725-O/S	302 sq ft	500	150	18000	15.1 gal
Oil & Sediment 15'x15' Part # 9727-O/S	452 sq ft	500	225	27000	22.6 gal