



Irish Water

VARTRY WATER SUPPLY PROJECT

VARTRY RESERVOIR IMPROVEMENTS AA SCREENING REPORT



SEPTEMBER 2015



NICHOLAS O'DWYER LTD.

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AA SCREENING REPORT**

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SEPTEMBER 2015

PROJECT NO. 20586					
Revision	Reason for Revision	Prepared by	Reviewed by	Approved by	Issue Date
-	First Issue	J. Wright	CAS		01/10/2015
A					
B					
C					
D					

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1 INTRODUCTION

1.1 Background

This report provides an Appropriate Assessment (AA) of the Vartry Reservoir Improvements Works at Vartry Lower Reservoir, which comprises three main areas of work:

- Improvements to the dam spillway and downstream channel to increase its hydraulic capacity.
- Improvements to the existing draw-off arrangements due to the age and condition of the pipes and fittings.
- Installation of siphon pipes. This will maintain supplies to the adjacent water treatment works in the event of a sudden failure of the existing pipes and fittings, and allow the existing intake pipes to be taken out of service for the improvement works.

This report assess whether the construction and operation of the Vartry Reservoir Works alone or in combination with other plans and projects, are likely to have significant effects on a Natura 2000 Site(s) in view of best scientific knowledge and the conservation objectives of the site(s). Natura 2000 Sites are those identified as sites of European Community importance designated as Special Areas of Conservation under the Habitats Directive or as Special Protection Areas under the Birds Directive.

1.2 Legislative Context

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, better known as “*The Habitats Directive*”, provides legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000. These are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/ECC) as codified by Directive 2009/147/EC.

Articles 6(3) and 6(4), of the Habitats Directive, set out the decision-making tests for plans and projects likely to affect Natura 2000 sites (Annex 1.1). Article 6(3) establishes the requirement for Appropriate Assessment (AA):

Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site’s conservation objectives. In light of the

conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

Article 6(4) states:

If, in spite of a negative assessment of the implications for the [Natura 2000] site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, Member States shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

1.3 The Aim of this Report

This screening document has been prepared in accordance with current guidance (Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities [DEHLG, 2009, Revised February 2010]; EU Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC [EC, 2007]; Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC [EC, 2002] and Managing Natura 2000 Sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC [EC, 2000]) and provides an assessment of the ecological impacts of the construction and operation of the Vartry Reservoir improvements works.

This document provides the information required in order to establish whether or not the proposed reservoir improvement works is likely to have a significant impact on Natura 2000 sites in the context of their conservation objectives and specifically on the habitats and species for which the site has been designated. A baseline ecological survey was carried out at the site on 7th August 2015 by an experienced ecologist. The ecological survey assessed the habitats present within the site of the proposed reservoir works in accordance with the methodology set out in the "A Guide to Habitats in Ireland" (Fossitt, 2000). Habitats and features present within the works area (and in land immediately adjacent to the proposed reservoir works) were appraised for their suitability for use by protected species and other species of conservation concern.

By taking the ecological impact assessment in a step by step manner in relation to the habitats and species of the Natura 2000 sites, together with their conservation objectives, this report seeks to inform the screening process required as the first stage of the process pursuant to Article 6.3 of the EU Habitats Directive.

The report is laid out as follows:

Section 1 provides an introduction, Section 2 provides a description of the proposed works and Section 3 provides a description of the receiving environment. Section 4 details the Natura 2000 sites of relevance and their ecological characteristics, Section 5 details potential impacts of the reservoir works and Section 6 provides the Screening Assessment followed by the Screening Conclusion in Section 7.

1.4 Appropriate Assessment Process

Stage 1: Screening / Test of Significance

This process identifies whether the proposed works are directly connected to or necessary for the management of a Natura 2000 Site(s); and identifies whether the proposed works are likely to have significant impacts upon a Natura 2000 Site(s) either alone or in combination with other projects or plans.

The output from this stage is a determination for each Natura 2000 Site(s) of not significant, significant, potentially significant, or uncertain effects. The latter three determinations will cause that site to be brought forward to Stage 2.

Stage 2: Appropriate Assessment

This stage considers the impact of the proposed works on the integrity of a Natura 2000 Site(s), either alone or in combination with other projects or plans, with respect to (1) the site's conservation objectives; and (2) the site's structure and function and its overall integrity. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts is required.

The output from this stage is a Natura Impact Statement (NIS). This document must include sufficient information for the Competent Authority to carry out the appropriate assessment. If the assessment is negative, *i.e.* adverse effects on the integrity of a site cannot be excluded, then the process must consider alternatives (Stage 3) or proceed to Stage 4.

Stage 3: Assessment of Alternatives

This process examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 Site. This assessment may be carried out concurrently with Stage 2 in order to find the most appropriate solution. If no alternatives exist or all alternatives would result in negative impacts to the integrity of the Natura 2000 Sites then the process either moves to Stage 4 or the project is abandoned.

Stage 4: Assessment Where Adverse Impacts Remain

This process is an assessment of compensatory measures where, in the light of an assessment of Imperative Reasons of Overriding Public Interest (IROPI), it is deemed that the project or plan should proceed.

2 DESCRIPTION OF THE PROPOSED WORKS

2.1 Overview

The proposed Vartry Reservoir Works to be located at the Vartry Lower Reservoir (see **Figure 2.1** and **Figure 2.2.**) comprises three main areas of work:

- Improvements to the dam spillway and downstream channel to increase its hydraulic capacity.
- Improvements to the existing draw-off arrangements due to the age and condition of the pipes and fittings.
- Installation of siphon pipes. This will maintain supplies to the adjacent water treatment works in the event of a sudden failure of the existing pipes and fittings, and allow the existing intake pipes to be taken out of service for the improvement works.

Descriptions of each of the above areas of works are detailed in the sub-sections below.

2.2 Spillway Channel

The spillway channel runs from the dam weir at the south-eastern end of the Lower Vartry Reservoir at National Grid Reference (NRG) 321621E 201807N. The regrading works are proposed immediately south of the R764 road bridge at NGR 321635E 201789N to the area where there is a change in slope of the channel, a distance of about 170m, at NGR 321629E 201615N as shown in **Figure 2.2**. The channel slope will be 1 in 55 which maintains supercritical flow in the channel. It is estimated that works to the spillway would take 3 months to complete.

The base width of the channel will be maintained but not widened, however, some excavation of the sides of the channel will be needed for access and vegetation clearance. It is proposed that an access path be maintained on the west bank of the spillway to allow for visual inspection. Slope trimming, where required, is likely to be preferred on the east bank.

The works will consist of tree felling, ground clearance and rock excavation to achieve the new spillway profile. The spillway will have a minimum discharge capacity of 160 m³/s.

It is proposed that the Contractor's compound be located in the field to the east of the spillway, downstream of the road, with access established through where the existing toilet block is located which is to be demolished. A ramp will be constructed down the spillway east bank to facilitate plant access to the spillway channel. This will be retained for future maintenance access.

Preliminary works will be required to clear trees and ground vegetation on access routes and along the spillway channel. This will be carried out outside of the bird nesting season.

It is anticipated that the works would adhere to the following schedule:

- Demolish toilet block, create access to compound site and install site compound
- Excavate access ramp into the spillway on the east bank of the channel.
- Install pollution prevention bund in the river channel downstream of the works. Install pumping system to pump collected water to a silt settling lagoon/tank; with clear water returned to the reservoir.
- Excavate channel to agreed profile. Excavated rock is to be removed off-site for disposal or re-use, as appropriate. Rock is to be excavated by mechanical means, where possible. If blasting is proposed, this will need to be carried out with strict controls of noise and vibration.
- Felled trees and excavated rock should not be stockpiled in the channel. Plant shall not be stored within the spillway outside of working hours.
- The reservoir level will need to be controlled (To be determined at detailed design) below the spillway crest during the spillway works.

The following procedures will be implemented to prevent run-off / spillage into the Vartry River downstream of the works;

The reservoir water level will be controlled at a level below top water level during the spillway works. This will typically be set at least 0.5m drawdown. This will prevent waves overtopping the weir and minimise leakage through the weir. This should keep the working excavation zone predominantly dry.

To minimise the risk of pollution and siltation downstream of the working area a bund would be formed upstream of the working area. Any water draining to this bund would be either:

- a) Piped past the working area; or
- b) Pumped via a settlement tank to discharge back into the reservoir.

In addition:

- All plant will be re-fuelled in a designated area away from the spillway channel;
- All plant will use bio-oils;
- Static plant to be provided with drip trays;
- Spill kits will be maintained on site;

- Excavated material is not to be stockpiled in the spillway channel.

2.3 Siphon Pipes

The current proposal is to install siphon pipes to meet the following requirements:

- Maintain supplies to the water treatment works in the event of sudden failure of existing pipes and fittings;
- Maintain supplies whilst the existing intake pipes to be taken out of service for the upgrading works;
- Control the reservoir water level at a maximum nominal specified level below top water level whilst the spillway works are being carried out.

The minimum capacity of the siphon system will be 90 MI over 20 hours. (1.25 m³/s).

The siphon pipe installation would consist of:

- Three HDPE siphon pipes buried in the downstream face of the dam.
- Priming valves to be located at the highest point (in chamber within the crest road).

The actual location of the siphon pipes will be reviewed at detailed design taking into account site conditions and hydraulic considerations. It is estimated that the siphon pipes would take 6 weeks to install.

2.4 Draw-off tower and Dam Tunnel

The draw off tower and dam tunnel connecting to the water treatment plant is located at the south-eastern end of the Lower Vartry Reservoir at NGR 321421E 201708N as shown in **Figure 2.2**. It is estimated that the intake upgrade will take 9 months to complete.

The methodology for valves and fittings replacement will be similar to Dublin City Council's "Outline Scope of Works - Proposed Methodology & Sequencing. Revision E – Updated 04.02.2005" and will include the following:

- Isolate pipeline in draw-off tower. (Provide double isolation).
- Completely drain 33" & 48" pipes.
- Remove valve house main window and provide temporary support.
- Remove floor in valve chamber and supporting wall. Install supporting framework to replace horizontal support provided by ground floor arch.
- Remove valves and fittings and install temporary blank flanges on downstream end of 24", 33" & 48" pipes.
- Install temporary support structure and flooring.

- Construct gantry.
- Excavate down to crown of pipe 48" pipe and remove side fill material.
- Drill hole in spring line if required to enable attachment for pulling pipes apart. Remove pipe. Assuming existing CI pipes are spigot and socket, it may be possible to pull the pipes apart. The method will form part of the contractor's detailed method statement.
- Undertake metallurgical examination of pipe (specialist).
- Excavate down to crown of 33" pipe and remove side fill material.
- Drill hole in spring line to enable attachment for pulling pipes apart. Remove pipe.
- Excavate down to bedrock and remove all existing pipe supports *etc.*
- Carefully excavate around 33" and 48" pipe immediately downstream of stop wall. If spigot end exposed measure distance from spigot to stop wall.
- Measure pipes outside and inside diameters at a number of points to confirm out of roundness, pipes circumference and thickness.
- Cut pipes. (300mm to 400mm from face of stop wall will be required for connecting coupling).
- Geotechnical and structural assessment of wall, tunnel and bedrock.
- Install and grout anchors into central stop-wall and bedrock for new flange plate
- Install thrust flange plate, guard valves *etc.*
- Construct new invert to tunnel (TBC), construct pipe support plinths for 800mm dia and 1200mm dia pipes.
- Install 800mm dia and 1200mm dia pipes.
- Install high level walkway above 800mm dia pipe.
- Remove temporary flooring and supports in valve chamber.
- Install pipework, valves, flow meters, and telemetry lines to/from existing chemical/office building.
- Commission valves in valve chamber.
- Reinstate flooring and supports in valve chamber.

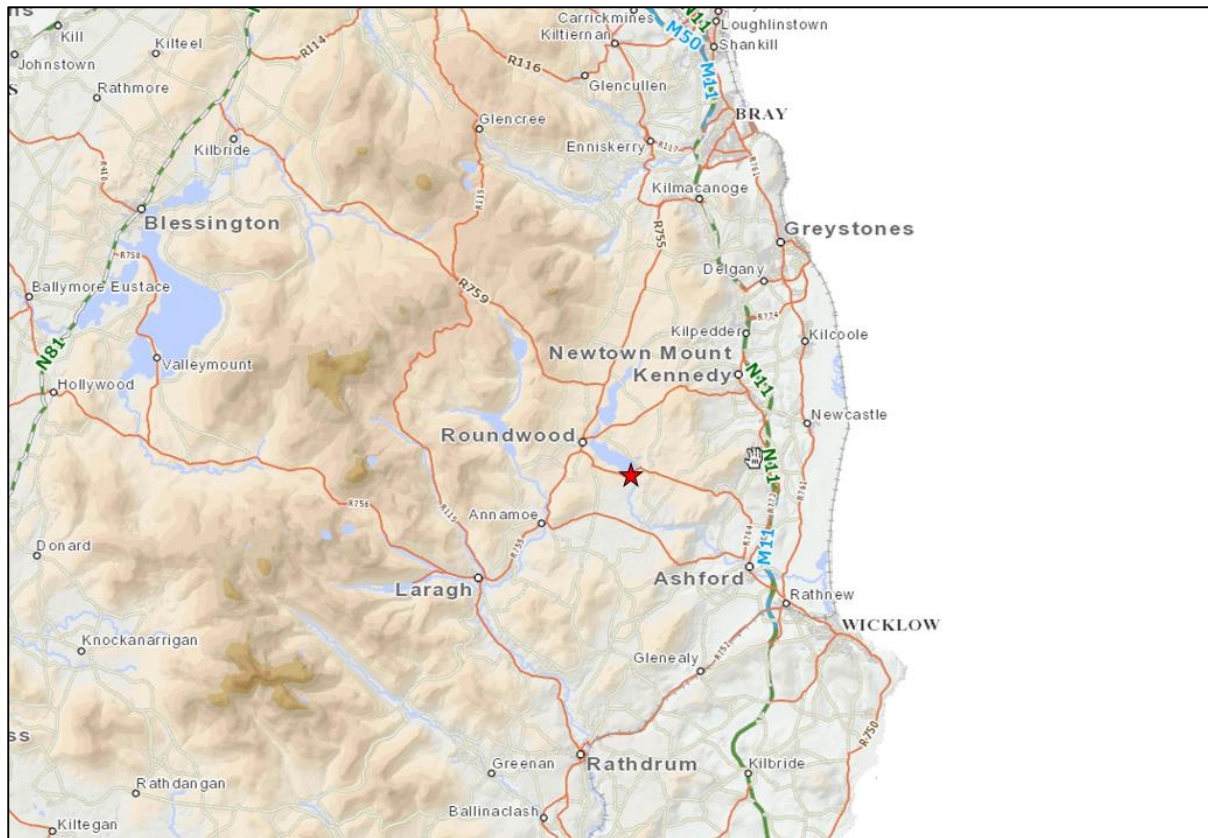


Figure 2.1: Location of the Proposed Works (Red Star) (Source: NPWS Mapping)

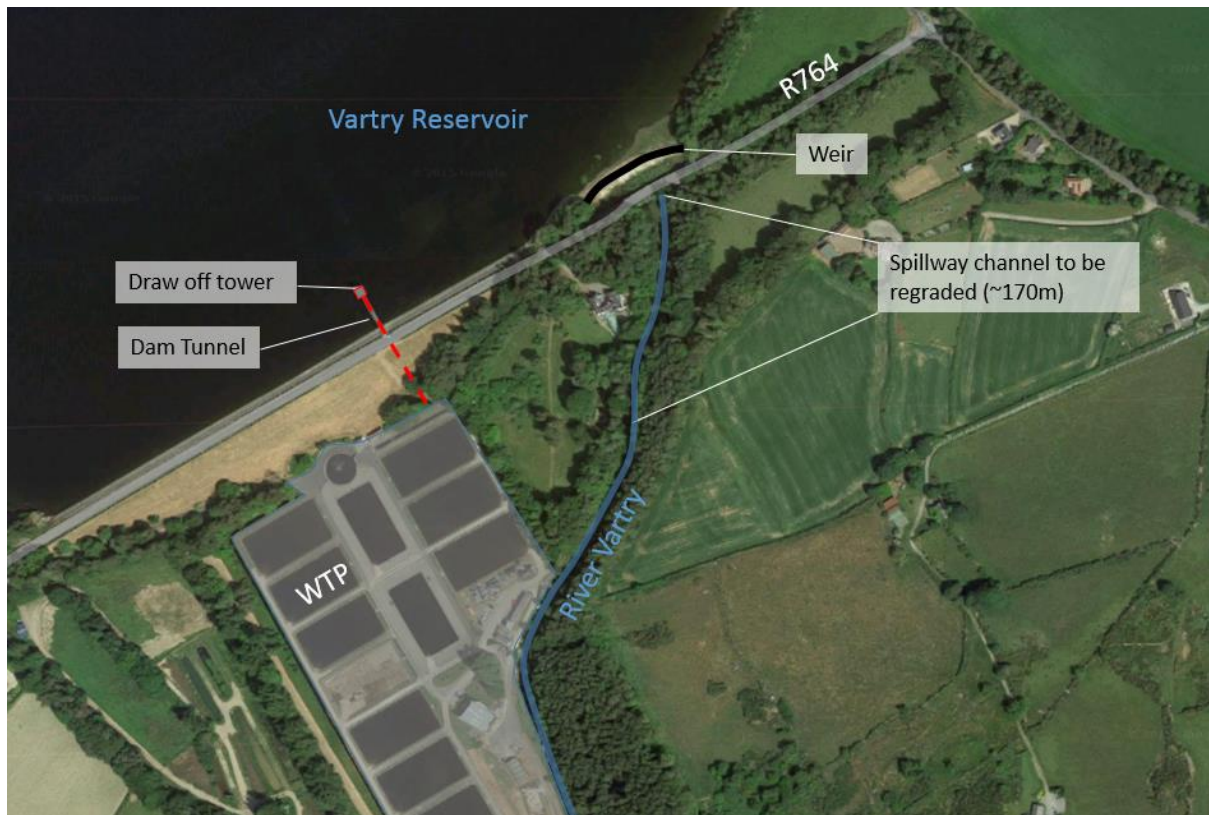


Figure 2.2: Aerial Photograph of the Proposed Works (Source: GoogleMaps)

3 DESCRIPTION OF THE RECEIVING ENVIRONMENT

The three components of the project are located at the Vartry Reservoir (Lower) dam and along the spillway which flows from the dam weir and forms part of the River Vartry.

The site lies within the Vartry river catchment and the soil type at the site consists of a loamy drift with igneous and metamorphic stones.

The Vartry Reservoir (Lower) was completed in 1863 and involved the partial redirection and damming of the River Vartry. The most recent EPA biological monitoring assessment (2010) identified that the Vartry Reservoir (Lower) had a 'Good' overall water status with 'Good' ecological status, 'Good' physio-chemical status, 'Good' nutrient enrichment status, 'High' chlorophyll status and 'High' macrophyte status. The waterbody is listed as being 'probably at risk' (1b) from achieving Good status by 2015 due to impoundment pressures. The objective of the Vartry Reservoir (Lower) is to protect its status by preventing deterioration.

The River Vartry rises in the Wicklow Mountains and travels south through the upper and lower Vartry Reservoirs near Roundwood, Co. Wicklow. From the reservoir lakes, it flows south-east under the Annagolan Bridge and down through Devil's Glen, through Ashford, and continues eastwards where it enters Broad Lough and The Murrough Wetlands SAC approximately 13 km east of the proposed development. Broad Lough drains southwards into the Irish Sea through Wicklow Town.

The River Vartry is designated a Salmonid Water under the European Communities (Quality of Salmonid Waters) Regulations, 1988. Salmon *Salmo salar*, brown trout *Salmo trutta* and sea trout *Salmo trutta* were recorded within the river during surveys north of Ballinamona in 2008 (Central and Regional Fisheries Board, 2008).

The most recent EPA biological monitoring assessment (2010) identified the River Vartry to have an overall 'Good' water quality status with a 'Good' ecological status, 'Good' fish status, 'Good' hydromorphology status, 'Good' general physio-chemical status and 'High' macroinvertebrate status. The River Vartry has been listed as being at risk of not achieving Good status based on water abstraction and impoundments (1a).

The section of the spillway to be regraded is predominantly dry at most times of the year with minimal water flow from seepage and groundwater sources. The spillway seasonally floods when the reservoir exceeds top water level during periods of sustained high precipitation. At the time of the ecological survey, the spillway channel was largely dry and supported abundant riparian vegetation within the section immediately south of the road bridge where sediment had been deposited during flood episodes. This area was categorised as reed and large sedge swamp FS1 as it was dominated by common reed *Phragmites australis* but also contained herbaceous plants such as watermint *Mentha*

aquatica, water forget-me-not *Myosotis scorpioides*, marsh pennywort *Hydrocotyle vulgaris*, fools watercress *Apium nodiflorum*, hard rush *Juncus inflexus*, jointed rush *Juncus articulatus*, bur-reed *Sparganium* sp., marsh ragwort *Senecio aquaticus*, marsh woundwort *Stachys palustris* and lesser spearwort *Ranunculus flammula*.

Further south along the spillway the channel bed comprised exposed siliceous rock ER1 that was dominated by mosses but also contained pockets of grasses, ferns and sapling trees.

The spillway contains steep/vertical earth and stone banks on the east and west side. The banks of the spillway support highly modified mixed woodland WD2 that includes beech *Fagus sylvatica*, ash *Fraxinus excelsior*, larch *Larix* sp., pine *Pinus* sp., oak *Quercus robur*, cherry laurel *Laurus laurocrasus*, holly *Ilex aquifolium*.

4 NATURA 2000 SITES

4.1 Identification of Relevant Natura 2000 Sites

This section of the screening process describes the Natura 2000 sites within the potential impact zone of the proposed improvement works. A 15 km buffer zone from the centre of the proposed works has been chosen, along with identifying any other receptor pathways (*i.e.* rivers, streams or ecological corridors) as a precautionary measure, to ensure that all potentially affected Natura 2000 sites are included in the screening process. This is in line with Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities produced by the Department of the Environment, Heritage and Local Government.

Figure 4.1 shows the location of all Natura 2000 sites within the 15 km zone of impact and those connected to the proposed works *via* receptor pathways. **Table 4.1** lists the Natura 2000 sites within this zone of impact, the qualifying interests of each of the identified Natura 2000 Sites, the potential impact and the initial screening determination. Those sites or individual qualifying interests that are screened out at this stage (primarily as a result of being too great a distance away and having different habitat requirements) are not assessed any further. Any Natura 2000 sites or qualifying interests that are screened in for further assessment are highlighted in **Table 4.1**.

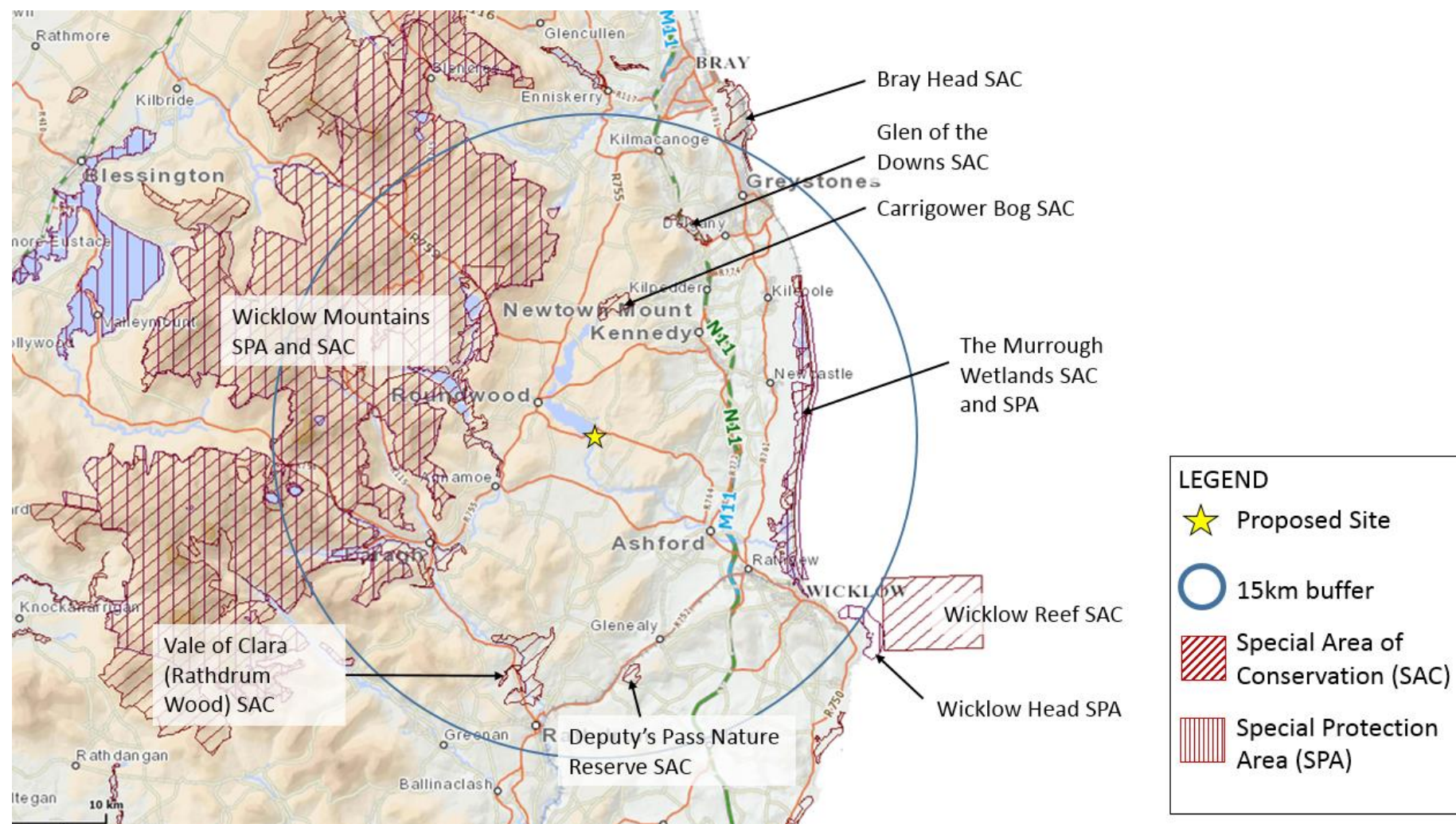


Figure 4.1: Natura 2000 Sites within 15 km of the Proposed Works

Table 4.1: Natura Sites located within the zone of Impact from the proposed works (*=priority habitat)

Site Code	Site Name (approx. distance from the proposed works)	Qualifying Interest	Potential Impact	Screened In/Out
002122	Wicklow Mountains SAC (4km)	[3130] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i>	None- due to distance and lack of potential impact pathway	Screened Out
		[3160] Natural dystrophic lakes and ponds		
		[4010] Northern Atlantic wet heaths with <i>Erica tetralix</i>		
		[4030] European dry heaths		
		[4060] Alpine and Boreal heaths		
		[6230] Species-rich <i>Nardus</i> grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)*		
		[7130] Blanket bogs (* if active bog)		
		[8110] Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>)		
		[1355] Otter <i>Lutra lutra</i>	Potential for disturbance to holts and resting places	Further Assessment Required
000716	Carriggower Bog SAC (5km)	[7140] Transition mires and quaking bogs	None- due to distance and lack of potential impact pathway	Screened Out
000733	Vale of Clara (Rathdrum Woods) SAC (9km)	[91A0] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	None- due to distance and lack of potential impact pathway	Screened Out
002249	The Murrough Wetlands SAC (9km)	[1210] Annual vegetation of drift lines	None – due to distance and lack of potential impact pathway	Screened Out
		[1220] Perennial vegetation of stony banks	None – due to distance and lack of potential impact pathway	
		[1330] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	Potential impact from pollution and sedimentation as River Vartry flows into the SAC	Further Assessment Required

Site Code	Site Name (approx. distance from the proposed works)	Qualifying Interest	Potential Impact	Screened In/Out
		[1410] Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	Potential impact from pollution and sedimentation as River Vartry flows into the SAC	
		[7210] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> *	Potential impact from pollution and sedimentation as River Vartry flows into the SAC	
		[7230] Alkaline fens	Potential impact from pollution and sedimentation as River Vartry flows into the SAC	
000719	Glen of the Downs SAC (10km)	[91A0] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	None- due to distance and lack of potential impact pathway	Screened Out
000717	Deputy's Pass Nature Reserve SAC (11km)	[91A0] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	None- due to distance and lack of potential impact pathway	Screened Out
000714	Bray Head SAC (14km)	[1230] Vegetated sea cliffs of the Atlantic and Baltic coasts	None- due to distance and lack of potential impact pathway	Screened Out
		[4030] European dry heaths		
002274	Wicklow Reef SAC (15km)	[1170] Reefs	None- due to distance and lack of potential impact pathway	Screened Out
004040	Wicklow Mountains SPA (6km)	[A098] Merlin <i>Falco columbarius</i>	None- due to distance and lack of suitable habitat at site	Screened Out
		[A103] Peregrine <i>Falco peregrinus</i>		
004186	The Murrough SPA (10km)	[A001] Red-throated Diver <i>Gavia stellata</i>	None – no interaction due to distance	Screened Out
		[A043] Greylag Goose <i>Anser anser</i>		
		[A046] Light-bellied Brent Goose <i>Branta bernicla hrota</i>		
		[A050] Wigeon <i>Anas penelope</i>		
		[A052] Teal <i>Anas crecca</i>		
		[A179] Black-headed Gull <i>Chroicocephalus ridibundus</i>		
		[A184] Herring Gull <i>Larus argentatus</i>		
004127	Wicklow Head SPA (14km)	[A195] Little Tern <i>Sterna albifrons</i>	None – no interaction due to distance	Screened Out
		[A188] Kittiwake <i>Rissa tridactyla</i>		

4.2 Designated Sites of Relevance

Table 4.1 above lists the Natura 2000 sites within the zone of impact of the proposed works area. There are eight SACs and three SPAs within this zone.

One feature of Qualifying Interest (QI) for the Wicklow Mountains SAC and four features of QI for The Murrough Wetlands were considered to have some potential for impact resulting from the proposed development and have been assessed in further detail:

Wicklow Mountains SAC [002122]

- [1355] Otter *Lutra lutra*

The Murrough Wetlands SAC [00249]

- [1330] Atlantic salt meadows *Glauco-Puccinellietalia maritimae*
- [1410] Mediterranean salt meadows *Juncetalia maritima*
- [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae**
- [7230] Alkaline fens

After an initial review of Natura 2000 sites, it was considered that “no pathway” exists by which the proposed works could impact upon any other designated site and therefore only the Wicklow Mountains SAC and The Murrough Wetlands SAC and the five QIs listed above were brought forward for further assessment.

4.3 Characteristics of the Designated Sites

The characteristics of the Wicklow Mountains SAC and The Murrough Wetlands SAC are described below. The Conservation Objectives of the features of qualifying interest are discussed in Section 6 - Screening Assessment in the context of the potential impacts on them.

Wicklow Mountains SAC [002122]

Wicklow Mountains SAC is a complex of upland areas in Counties Wicklow and Dublin, flanked by the Blessington reservoir to the west and Vartry reservoir in the east, Cruagh Mountain in the north and Lybagh Mountain in the south. Most of the site is over 300 m, with much ground over 600 m. The site has been designated due to the presence of Annex I habitats: oligotrophic to mesotrophic standing waters, dystrophic lakes, wet heath, dry heath, alpine and subalpine heaths, species-rich nardus grassland, active blanket bogs, siliceous scree, calcareous rocky slopes, siliceous rocky slopes, old oak woodlands. It is also designated due to the presence of otter *Lutra lutra*.

Otters predominantly live alongside rivers, lakes and other water bodies and use the water systems to hunt their preferred food; salmon, trout, perch and pike. They will also hunt

species such as frogs, small mammals and waterfowl. Otters can hold territories of varying size depending on the availability of food, coastal territories can be as small as 2 km and with upland territories as large as 20 km. They can have multiple holts throughout their territory, the holts are located on the bank-side of rivers and lakes where suitable vegetation exists to cover the burrows entrances.

The vegetation over most of Wicklow Mountains SAC is a mosaic of heath, blanket bog and upland grassland (mostly on peaty soil, though some on mineral soil), stands of dense Bracken *Pteridium aquilinum*, and small woodlands mainly along the rivers. Mountain loughs and corrie lakes are scattered throughout the site.

Conservation Objective: To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.

The Murrough Wetlands SAC [002249]

The Murrough is a coastal wetland complex which stretches for 15 km from Ballygannon to north of Wicklow town, and in parts, extends inland for up to 1 km. A shingle ridge stretches the length of the site and carries the mainline Dublin-Wexford railway. The site comprises a series of coastal habitats and brackish to freshwater marshes. Drainage directly to the sea is impeded along most of the site by a shingle ridge. There are two main outlets to the sea and there is seepage into the marshes under the shingle ridge and where breaches occur. Freshwater drains into the site via the Vartry River and many drains. Freshwater springs provide a permanent source of water for a complex fen system. Other habitats present on the site include salt marsh, tidal reed bed, freshwater reedswamp, wet grassland, wet woodland, mudflat, dry heath and dry grassland.

The site has been designated due to the presence of the following Annex I habitats: Annual vegetation of drift lines, Perennial vegetation of stony banks, Atlantic salt meadows *Glauco-Puccinellietalia maritimae*, Mediterranean salt meadows *Juncetalia maritima*, Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*, Alkaline fens.

This site is of importance as it is the largest coastal wetland complex on the east coast of Ireland. Although much affected by drainage, it still contains a wide range of coastal and freshwater habitats, some of which contain threatened plants. Areas on the site contain a rich invertebrate fauna, including several rarities. It is an important site for both wintering and breeding birds and supports a variety of species listed on Annex I of the E.U. Birds Directive.

Conservation Objectives:

1. To maintain the Annex I habitats for which the cSAC has been selected at favourable conservation status: Annual vegetation of drift lines; Perennial vegetation of stony banks; Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*); Mediterranean salt meadows (*Juncetalia maritimi*); Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*; Alkaline fens.
2. To maintain the extent, species richness and biodiversity of the entire site
3. To establish effective liaison and co-operation with landowners, legal users and relevant authorities.

4.3.1 Ecological Network Supporting Natura 2000 Sites

An analysis of the proposed Natural Heritage Areas and designated Natural Heritage Areas in terms of their role in supporting the species using Natura 2000 sites was undertaken. It was assumed that these supporting roles mainly related to mobile fauna such as mammals and birds which may use pNHAs and NHAs as “stepping stones” between Natura 2000 sites.

Article 10 of the Habitats Directive and the Habitats Regulations 2011 place a high degree of importance on such non-Natura 2000 areas as features that connect the Natura 2000 network. Features such as ponds, woodlands and important hedgerows were taken into account during the rest of the AA process.

Vartry Reservoir has been proposed as a Natural Heritage Area (Site Code: 001771). The draw-off tower / dam tunnel works and the siphon pipe installation are located within the pNHA boundary and the spillway works are located immediately adjacent to the pNHA.

Devil’s Glen pNHA (Site Code: 000718) is located 2.4 km south of the proposed works and comprises a section of the River Vartry downstream of the proposed spillway works. The pNHA encompasses an area of mixed woodland within the river valley.

5 POTENTIAL IMPACTS OF THE PROPOSED WORKS

The purpose of this section of the screening assessment is to examine the possibility that the proposed works, either individually or in combination with other plans and projects, may result in significant negative effects on the Conservation Objectives of any Natura 2000 site and its qualifying interest (QI).

The improvement works to the dam draw-off tower and tunnel and installation of the siphon pipes are self-contained and will not have any impact on the Natura 2000 sites identified in Section 4.

The potential impacts on Natura 2000 sites or their QIs resulting from the proposed improvement works to the spillway channel include:

- Impacts on habitats and water quality due to sediment run-off/pollution during the construction phase; and
- Disturbance to species during the construction phase.

5.1 Direct, Indirect or Secondary Impacts

None of the Natura 2000 sites lie within the boundaries of the proposed works area; therefore, no direct impacts will occur through landtake or fragmentation of habitats.

The regrading works to the spillway have the potential to have an indirect impact on the aquatic environment within the River Vartry due to the potential for accidental releases of fuels/oils/chemicals from construction plants and increased levels of sediment within the stream flow as a result of the excavation works. The liberation of sediment can also occur during the earthworks phase of construction due to the excavation of the channel bed. Excessive discharges of highly turbid water can cause water pollution and the settling out of large quantities of sediment can smother benthic organisms. Siltation can be particularly injurious to aquatic species such as juvenile Atlantic salmon. Releases of pollution and sediment would then enter the River Vartry and subsequent effects on water quality and associated local aquatic ecology could result.

The River Vartry flows into the Murrough Wetlands SAC approximately 13.5 km downstream of the works and otter, a QI of the Wicklow Mountains SAC, are known to forage within the River Vartry. There is therefore potential for indirect impacts on the Murrough Wetlands SAC and Wicklow Mountains SAC resulting from changes in water quality during construction.

These above risks relate to the construction phase of the improvement works only and are therefore temporary in nature. As part of the works, best environmental practice will be

adhered to and implemented at all times (e.g. construction only when spillway is dry, use of siltation bund etc. see **Section 2**). This will significantly reduce the risk of impacts on The Murrough Wetlands SAC and Wicklow Mountains SAC and their features of qualifying interest.

Increased levels of noise and vibration will occur during the construction phase of the spillway improvement works. This has the potential to disturb species within adjacent habitats such as otter, which is a QI of the Wicklow Mountains SAC. Otters can hold large territory ranges that will occasionally span river catchments. Due to their high mobility, otters associated with the Wicklow Mountains SAC could hold a territory that includes Vartry Reservoir and its surroundings. Any disturbance effects on any ex-situ otters associated with the SAC would be short-term (i.e. works to the spillway channel is estimated to take 12 weeks) and limited to the construction phase of the development.

5.2 Cumulative and in Combination Impacts

It is not anticipated that the proposed works will result in any impacts on any SPAs and SACs within the 15 km buffer zone or *via* any other receptor pathway. No other pathway has been identified by which any plan or project could have a significant '*in combination*' effect on any of the Natura 2000 sites.

6 SCREENING ASSESSMENT

6.1 Impacts on Habitats

6.1.1 Atlantic salt meadows *Glauco-Puccinellietalia maritima*

Atlantic salt meadows are a QI of the Murrough Wetlands SAC and the River Vartry flows in the wetlands 13.5 km downstream of the proposed spillway works. Sediment run-off generated during the excavation of the spillway channel has the potential to enter the River Vartry and could ultimately end up in the Murrough Wetlands. This run-off, along with any pollution or oil spill from construction machinery may affect suspended solid levels and water quality in the wetland habitats. Due to the distance from the proposed works along the potential impact pathway (13.5 km) to the designated site it is considered unlikely that the Atlantic salt meadows associated with the Murrough Wetlands would be significantly affected by increased pollution and sediment run-off at the site. Sediment controls, which form part of the construction methodology (see **Section 2**) will ensure that impacts on water quality are negated.

The Conservation Objectives for the Murrough Wetland SAC with regards to Atlantic salt meadows is to maintain or restore the favourable conservation condition of the habitat (NPWS, 2015). Favourable conservation status of a habitat is achieved when:

- Its natural range, and area it covers within that range, are stable or increasing, and
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable.

The implementation of the pollution and sediment control measures which form part of the design works will ensure that there will be no impacts on this qualifying interest and therefore impacts on this QI can be screened out.

6.1.2 Mediterranean salt meadows *Juncetalia maritima*

Mediterranean salt meadows are a QI of the Murrough Wetlands SAC and the River Vartry flows in the wetlands 13.5 km downstream of the proposed spillway works. Sediment run-off generated during the excavation of the spillway channel has the potential to enter the River Vartry and could ultimately end up in the Murrough Wetlands. This run-off, along with any pollution or oil spill from construction machinery may affect suspended solid levels and water quality in the wetland habitats. Due to the large distance from the proposed works along the potential impact pathway (13.5 km) to the designated site it is considered unlikely that the Mediterranean salt meadows associated with The Murrough

Wetlands would be significantly affected by increased pollution and sediment run-off at the site. Sediment controls, which form part of the construction methodology (see **Section 2**) will ensure that impacts on water quality are negated.

The Conservation Objectives for the Murrough Wetland SAC with regards to Mediterranean salt meadows is to maintain or restore the favourable conservation condition of the habitat (NPWS, 2015). Favourable conservation status of a habitat is achieved when:

- Its natural range, and area it covers within that range, are stable or increasing, and
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable.

The implementation of the pollution and sediment control measures will ensure that there will be no impacts on this qualifying interest and therefore impacts on this QI can be screened out.

6.1.3 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*

Calcareous fens are a QI of the Murrough Wetlands SAC and the River Vartry flows in the wetlands 13.5 km downstream of the proposed spillway works. Sediment run-off generated during the excavation of the spillway channel has the potential to enter the River Vartry and could ultimately end up in the Murrough Wetlands. This run-off, along with any pollution or oil spill from construction machinery may affect suspended solid levels and water quality in the wetland habitats. Due to the large distance from the proposed works along the potential impact pathway (13.5 km) to the designated site it is considered unlikely that the calcareous fens associated with The Murrough Wetlands would be significantly affected by increased pollution and sediment run-off at the site. Sediment controls, which form part of the construction methodology (see **Section 2**) will ensure that impacts on water quality are prevented.

The Conservation Objectives for the Murrough Wetland SAC with regards to calcareous fens is to maintain or restore the favourable conservation condition of the habitat (NPWS, 2015). Favourable conservation status of a habitat is achieved when:

- Its natural range, and area it covers within that range, are stable or increasing, and

- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable.

The implementation of the pollution and sediment control measures will ensure that there will be no impacts on this qualifying interest and the integrity of the SAC and therefore impacts on this QI can be screened out at this stage.

6.1.4 Alkaline fens

Alkaline fens are a QI of the Murrough Wetlands SAC and the River Vartry flows in the wetlands 13.5 km downstream of the proposed spillway works. Sediment run-off generated during the excavation of the spillway channel has the potential to enter the River Vartry and could ultimately end up in the Murrough Wetlands. This run-off, along with any pollution or oil spill from construction machinery may affect suspended solid levels and water quality in the wetland habitats. Due to the large distance from the proposed works along the potential impact pathway (13.5 km) to the designated site it is considered unlikely that the alkaline fens associated with The Murrough Wetlands would be significantly affected by increased pollution and sediment run-off at the site. Sediment controls, which form part of the construction methodology (see **Section 2**) will ensure that impacts on water quality are negated.

The Conservation Objectives for the Murrough Wetland SAC with regards to alkaline fens is to maintain or restore the favourable conservation condition of the habitat (NPWS, 2015). Favourable conservation status of a habitat is achieved when:

- Its natural range, and area it covers within that range, are stable or increasing, and
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable.

The implementation of the pollution and sediment control measures will ensure that there will be no impacts on this qualifying interest and therefore impacts on this QI can be screened out.

6.2 Impacts on Species

6.2.1 Otter *Lutra lutra*

Otter are a QI of the Wicklow Mountains SAC and, due to their large home ranges, individuals associated with the SAC could hold territories that also encompass the proposed works area (*i.e. ex situ* species).

Water pollution represents one of the principal threats to otter populations in Ireland (Reid *et al.*, 2013). Otters can tolerate significant levels of pollution (Chanin, 2003; Bailey & Rochford, 2005; Romanowski *et al.*, 2012) but poor water quality tends to result in reduced numbers and variety of fish species which in turn will have a negative impact on otter presence in polluted waterways. Any change in water quality as a result of pollution or increased sedimentation during construction, could potentially have indirect negative effects on otters (as a result of reduced food supply). Given that best practices in water quality control measures form part of the proposed works (see **Section 2**) and are considered to be sufficient to ensure that silt and other potentially harmful pollutants are prevented from entering the River Vartry downstream; no indirect impacts on otters who feed on water dependent species is considered likely.

Elevated noise and vibration levels during the construction phase of the project will occur. There is potential for otter adjacent to the proposed works to be subject to certain levels of disturbance. The main disturbance will be as a result of the increase in noise and vibration during excavation of the bedrock of the spillway channel. Otters are considered to be mainly nocturnal, particularly within freshwater territories, and are mainly active after dusk and before dawn (Hayden & Harington, 2000). Therefore, the noise and vibration disturbance associated with the construction works which will occur during daylight hours, will not have a significant adverse impact on otter populations.

The tree-lined earth and stone banks of the spillway contain several shallow cavities that are potentially suitable as daytime resting places for otters although, due to the lack of dense vegetation cover surrounding the cavities, they are considered to be sub-optimal. No otter holts were recorded along the spillway or within adjacent habitats during the ecological assessment. It is not anticipated that the construction activities will significantly affect available resting places or breeding sites for local otter populations.

The Conservation Objectives for the Wicklow Mountains SAC with regards to otter is to maintain or restore the favourable conservation condition of the species (NPWS, 2015). Favourable conservation status of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and

- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Impacts on this qualifying interest are not considered to be significant and therefore can be screened out at this stage.

7 SCREENING CONCLUSIONS

The Vartry Reservoir Works comprise improvements to the dam spillway and downstream channel to increase its hydraulic capacity, remedial works to the existing draw-off tower and dam tunnel and installation of siphon pipes at the dam.

The spillway is connected to the Murrough Wetlands SAC via the River Vartry approximately 13.5 km downstream from the proposed works. Given that best practices in water quality control measures form part of the proposal (see **Section 2**) and are considered to be sufficient to ensure that silt and other potentially harmful pollutants are prevented from entering the River Vartry downstream; no indirect impacts on the habitats associated with the Murrough Wetlands SAC is considered likely. Therefore potential impacts on Atlantic salt meadows, Mediterranean salt meadows, Calcareous fens and Alkaline fens can be screened out.

Elevated noise and vibration has the potential to have a disturbance effect on local otter populations during construction, however, due to the short-term duration of the spillway works (12 weeks) and the small scale nature of the disturbance from the works, it is not anticipated to be significant and will not have an impact on the Conservation Objectives of the otter; one of the Annex II species of qualifying interest for which the Wicklow Mountains SAC is designated.

On the basis of the findings of this Screening for Appropriate Assessment, it is concluded that the Proposed Vartry Reservoir Improvement Works will not have a significant effect on the Natura 2000 network and a Stage 2 Appropriate Assessment is not required.

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APPENDIX 1

Finding of No Significant Effects Report Matrix

Name of project or plan	Vartry Reservoir Improvements
Name and location of Natura 2000 site	Wicklow Mountains SAC (4km) The Murrough Wetlands SAC (9km)
Description of the project	<p>The proposed Vartry Reservoir Works to be located at the Vartry Lower Reservoir comprises three main areas of work:</p> <ul style="list-style-type: none"> • Improvements to the dam spillway and downstream channel to increase its hydraulic capacity. • Improvements to the existing draw-off arrangements due to the age and condition of the pipes and fittings. • Installation of siphon pipes. This will maintain supplies to the adjacent water treatment works in the event of a sudden failure of the existing pipes and fittings, and allow the existing intake pipes to be taken out of service for the improvement works.
Is the project or plan directly connected with or necessary to the management of the site?	No.
Are there other projects or plans that together with the project or plan being assessed could affect the site?	No.
The Assessment of Significance of Effects	
Describe how the project or plan (alone or in combination) is likely to affect the European Site(s).	<p>The purpose of this section of the screening is to examine the possibility that the proposed site works, either individually or in combination with other plans and projects, may result in significant negative effects on the Conservation Objectives and the integrity of the Natura 2000 Sites identified.</p> <p>There are no Natura 2000 sites that lie within the boundary of the proposed development area and, as such, there will be no direct impacts on any designated areas. Having established no direct impacts or habitat fragmentation, the assessment concentrates on potential indirect impacts.</p> <p>A worst case scenario would occur whereby the project would result in a significant detrimental change in water quality in the spillway channel during the construction process which is connected to The Murrough Wetlands SAC via the River Vartry. The effect would have to be considered significant in terms of changes in water quality which would affect the habitats for which the SAC are designated. Due to the distance between the proposed works and the designated site and the control measures that will be put in place this scenario is unlikely.</p>

	Increased levels of noise and vibration will occur during the construction phase of the spillway improvement works. This has the potential to disturb species within adjacent habitats such as otter, which is a QI of the Wicklow Mountains SAC. Otters can hold large territory ranges that will occasionally span river catchments. Due to their high mobility, otters associated with the Wicklow Mountains SAC could hold a territory that includes Vartry Reservoir and its surroundings.
Explain why these effects are not considered significant.	<p>The spillway is connected to the Murrough Wetlands SAC via the River Vartry approximately 13.5 km downstream from the proposed works. Given that best practices in water quality control measures form part of the proposal and are considered to be sufficient to ensure that silt and other potentially harmful pollutants are prevented from entering the River Vartry downstream; no indirect impacts on the habitats associated with the Murrough Wetlands SAC is considered likely.</p> <p>To minimise the risk of pollution and siltation downstream of the working area a bund would be formed downstream of the working area. Any water draining to this bund would be either:</p> <ol style="list-style-type: none"> Piped past the working area; or Pumped via a settlement tank to discharge back into the reservoir. <p>In addition:</p> <ul style="list-style-type: none"> All plant will be re-fuelled in a designated area away from the spillway channel; All plant will use bio-oils; Static plant to be provided with drip trays; Spill kits will be maintained on site; Excavated material is not to be stockpiled in the spillway channel. <p>Elevated noise and vibration has the potential to have a disturbance effect on local otter populations during construction, however, due to the short-term nature of the spillway works (12 weeks) and the small scale nature of the disturbance from the works it is not anticipated to be significant and will not have an impact on the Conservation Objectives of the otter; one of the Annex II species of qualifying interest for which the Wicklow Mountains SAC is designated.</p>
List of agencies consulted: provide contact name and telephone or e-mail address.	Consultation is not required with the NPWS when a proposed project has been screened out.
Response to consultation.	N/A
Data Collected to Carry Out the Assessment	
Who carried out the assessment?	Nicholas O'Dwyer
Sources of data	NPWS database; EPA database; WFD Ireland database; and Information from Irish Water.

	See also Chapter 8 of Screening Report.
Level of assessment completed	Desktop and Field walkover survey
Where can the full results of the assessment be accessed and viewed?	Irish Water
Overall Conclusion	Stage 1 Screening indicates that the Vartry Reservoir Improvements Works will not have a significant negative impact on the Natura 2000 network. Therefore, a Stage 2 'Appropriate Assessment' under Article 6(3) of the Habitats Directive 92/43/EEC is not required.



Irish Water

VARTRY WATER SUPPLY PROJECT

VARTRY WATER TREATMENT PLANT AA SCREENING REPORT



NOVEMBER 2015



NICHOLAS O'DWYER LTD.

VARTRY WATER SUPPLY PROJECT

VARTRY WATER TREATMENT PLANT
AA SCREENING REPORT

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NOVEMBER 2015

PROJECT NO. 20586					
Revision	Reason for Revision	Prepared by	Reviewed by	Approved by	Issue Date
-	First Issue for Internal Review	JW	RC/CAS	JO	01/10/2015
A	Second Issue following Client Review	JW	RC	JO	/11/2015
B					
C					
D					

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APPENDIX 1 – Waste Assimilative Capacity (WAC) Calculation

APPENDIX 2 - Finding of No Significant Effects Report

1 INTRODUCTION

1.1 Background

The Vartry Water Supply Scheme currently provides 14% of average daily demand in the Greater Dublin Water Supply Area (GDWSA), a domestic population equivalent of 196,000 customers. Due to its age, condition and strategic importance, the Vartry Water Supply Scheme is in urgent need of improvement and has been listed on the EPA Drinking Water Remedial Action List. This report provides an Appropriate Assessment Screening (AA) for the proposals to construct a new Water Treatment Plant (WTP) at the existing Vartry Reservoir (Lower) in Co. Wicklow.

This report assesses whether the construction and operation of the WTP, alone or in combination with other plans and projects, are likely to have significant effects on a Natura 2000 Site(s) in view of best scientific knowledge and the conservation objectives of the site(s). Natura 2000 Sites are those identified as sites of European Community importance designated as Special Areas of Conservation under the Habitats Directive or as Special Protection Areas under the Birds Directive.

1.2 Legislative Context

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, better known as "The Habitats Directive", provides legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000. These are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/ECC) as codified by Directive 2009/147/EC.

Articles 6(3) and 6(4), of the Habitats Directive, set out the decision-making tests for plans and projects likely to affect Natura 2000 sites (Annex 1.1). Article 6(3) establishes the requirement for Appropriate Assessment (AA):

Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

Article 6(4) states:

If, in spite of a negative assessment of the implications for the [Natura 2000] site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, Member States shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

1.3 The Aim of this Report

This screening document has been prepared in accordance with current guidance (Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities [DEHLG, 2009, Revised February 2010]; EU Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC [EC, 2007]; Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC [EC, 2002] and Managing Natura 2000 Sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC [EC, 2000]) and provides an assessment of the ecological impacts of the construction and operation of the new Vartry Water Treatment Plant.

A baseline ecological survey was carried out at the site on 7th August 2015 by an experienced ecologist. The ecological survey assessed the habitats present within the Vartry WTP site in accordance with the methodology set out in the "A Guide to Habitats in Ireland" (Fossitt, 2000). Habitats and features present within the works area (and in land immediately adjacent to the WTP site) were appraised for their suitability for use by protected species and other species of conservation concern.

By taking the ecological impact assessment in a step by step manner in relation to the habitats and species of the Natura 2000 sites, together with their conservation objectives, this report seeks to inform the screening process required as the first stage of the process pursuant to Article 6.3 of the EU Habitats Directive.

The report is laid out as follows:

Section 1 provides an introduction, Section 2 provides a description of the proposed works and Section 3 provides a description of the receiving environment. Section 4 details the Natura 2000 sites of relevance and their ecological characteristics, Section 5 details potential impacts and Section 6 provides the Screening Assessment followed by the Screening Conclusion in Section 7.

1.4 Appropriate Assessment Process

Stage 1: Screening / Test of Significance

This process identifies whether the proposed works are directly connected to or necessary for the management of a Natura 2000 Site(s); and identifies whether the proposed works are likely to have significant impacts upon a Natura 2000 Site(s) either alone or in combination with other projects or plans.

The output from this stage is a determination for each Natura 2000 Site(s) of not significant, significant, potentially significant, or uncertain effects. The latter three determinations will cause that site to be brought forward to Stage 2.

Stage 2: Appropriate Assessment

This stage considers the impact of the proposed works on the integrity of a Natura 2000 Site(s), either alone or in combination with other projects or plans, with respect to (1) the site's conservation objectives; and (2) the site's structure and function and its overall integrity. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts is required.

The output from this stage is a Natura Impact Statement (NIS). This document must include sufficient information for the Competent Authority to carry out the appropriate assessment. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must consider alternatives (Stage 3) or proceed to Stage 4.

Stage 3: Assessment of Alternatives

This process examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 Site. This assessment may be carried out concurrently with Stage 2 in order to find the most appropriate solution. If no alternatives exist or all alternatives would result in negative impacts to the integrity of the Natura 2000 Sites then the process either moves to Stage 4 or the project is abandoned.

Stage 4: Assessment Where Adverse Impacts Remain

This process is an assessment of compensatory measures where, in the light of an assessment of Imperative Reasons of Overriding Public Interest (IROPI), it is deemed that the project or plan should proceed.

2 DESCRIPTION OF THE PROPOSED WORKS

2.1 Outline

As part of the Vartry Water Supply Scheme, a new WTP is to be constructed at the existing Vartry WTP site in the townland of Roundwood, c. 2.8km south-west of Roundwood village (see Figure 2.1 for the site location, Figure 2.2 for an aerial photograph and Figure 2.3 for the proposed plant layout). The proposed site for the new WTP covers an area of c. 1.4ha within the Vartry WTP site boundary which covers c. 22ha.

The existing WTP at Vartry was constructed in the 1860's and a number of extensions and upgrading projects have been undertaken in the interim. It utilises a Slow Sand Filtration Process subsequent to which lime, chlorine and fluorine are added to the filtered water prior to flowing into a Covered Reservoir. The Vartry Water Supply Scheme is included in the current EPA's Remedial Action List (RAL) under the heading "EPA Audit Observation – Treatment and Management Issues".

The new Vartry WTP will replace the existing WTP and provide full water treatment facilities including processes that provide an effective barrier to diatomic algae that has caused seasonal reductions in production capacity in recent years. It will provide a Coagulation, Flocculation, Clarification and Rapid Gravity Filtration Process (FCF + RGF) with enhanced individual filtration control and monitoring. The treatment process will be capable of producing 85-90 MI/day of treated drinking water to the Greater Dublin Water Supply Area (GDWSA), in compliance with the Drinking Water Regulations. The proposed Vartry WTP will utilise diverted water from the existing stilling basin and will be served by the existing Vartry Reservoir raw water source. The daily, annual and peak abstraction from the Vartry Reservoir will be maintained as is at present.

Throughout the Design – Build works, the Contractor shall take account of relevant legislation and best practice UK CIRIA guidance including but not limited to the following:

- C532 Control of water pollution from construction sites: guidance for consultants and contractors;
- C648 Control of water pollution from linear construction projects;
- SP156 Control of water pollution from construction sites – guide to good practice.

During construction of the new WTP best practice environmental control measures will form part of the construction methodology for the site. These will be included in a Construction Management Plan (CEMP) for the site which will be agreed in advance with the statutory authorities and will include the following controls:

- Fuels, lubricants and hydraulic fluids for equipment used on the construction site, as well as any solvents and oils are to be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment. Fuelling and lubrication of equipment is not to be carried out close to any watercourse. Any spillage of fuels, lubricants or hydraulic oils is to be immediately contained and the contaminated soil removed from the site and disposed of through waste contractor licenced for the purpose. Waste oils and hydraulic fluids are to be collected in leak-proof containers and removed from the site for disposal or recycling.
- Felled trees and excavated spoil and rock will be stockpiled at least 30m from drainage ditches or high risk flood zones and 50m from the River Vartry.
- To avoid the introduction of invasive non-native species and fish pathogens, all plant and machinery utilised on site will be thoroughly cleaned and washed using high pressured steam cleaning before delivery to the site. A visual inspection for evidence of attached plant or animal material, or adherent mud or debris will be completed on all equipment that has come into contact with the water before leaving the site.

There will be a supernatant discharge from the new WTP into the River Vartry which will comply with the water quality parameters detailed in the existing discharge licence (ESS/14/14/294) for supernatant waters. A summary of the existing discharge licence compliance parameters is included within Table 2.1 below. A number of new parameters have been added and some adjustment to existing levels (i.e. Ammonia) require consideration in order to comply with applicable legislation. It is proposed to increase the volume of treated supernatant discharge from 1,700 m³ per day to 4,000m³ per day. Due to this proposed change in volume, an application to revise the current discharge consent will be made to Wicklow County Council. The total volume to be discharged shall not exceed 4,000m³ per day, subject to a maximum flow rate of 400m³ per hour.

The quality of the discharge will fully comply with the parametric values set out in Table 2.1 below.

Table 2.1 – Quality Standards for Supernatant Discharge

Determinand	Baseline Levels (Average)	Existing Limit (95% compliance)	Proposed Limit (95% compliance)	Comments
Aluminium	N/A	N/A	2 mg/l	
Turbidity	N/A	N/A	10 NTU	
pH	6.04 – 7.27	6.0 9.0	6.0 9.0	Proposed limit compliant with existing discharge licence

Determinand	Baseline Levels (Average)	Existing Limit (95% compliance)	Proposed Limit (95% compliance)	Comments
BOD ₅	0.6 mg/l	4 mg/l	4 mg/l	Proposed limit compliant with existing discharge licence
COD	N/A	N/A	125 mg/l	
Suspended Solids	2 mg/l	25 mg/l	25 mg/l	Proposed limit compliant with existing discharge licence
Ammonia (N)	0.011 mg/l	1.0 mg/l	0.34 mg/l	Proposed limit lowered to ensure compliance with Salmonid Regs
Nitrites (N)	0.003 mg/l	0.015 mg/l	0.015 mg/l	Proposed limit compliant with existing discharge licence.
Ortho Phosphate (OP)	0.007 mg/l	N/A	0.25 mg/l	Proposed limit compliant with existing discharge licence.

2.2 Waste Assimilative Capacity (WAC)

The supernatant discharge from the proposed WTP will be discharged directly into the River Vartry at the existing discharge locations (NGR 321572E 201493N and 321622E 201136N). Waste Assimilate Capacity calculations included in Section 3.4 of this report and Appendix 1 demonstrate compliance with the Environmental Quality Standards (EQSs) set out for "Good status" in the Surface Waters Regulations (S.I. No. 272 of 2009) and the EQS for Suspended Solids and Ammonia set out under the European Communities (Quality of Salmonid Waters) Regulations, 1988.

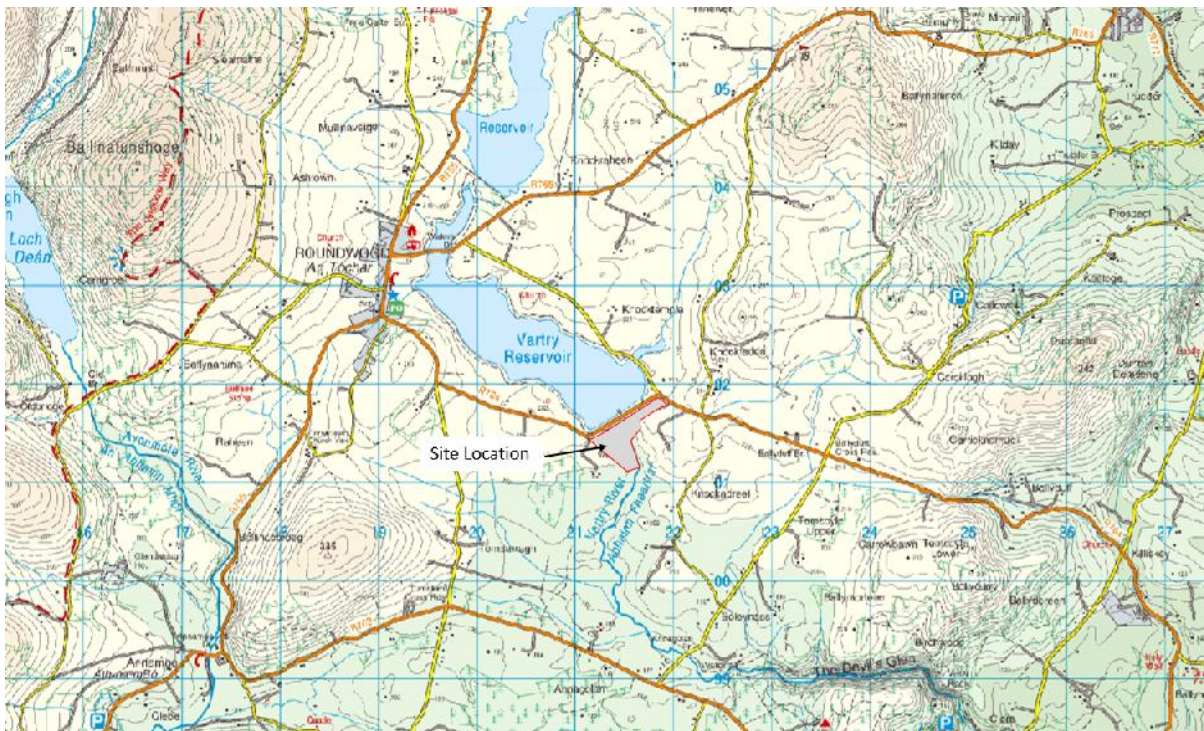


Figure 2.1 Map Showing Location of Vartry WTP



Figure 2.2 Aerial Photograph Showing Location of the Proposed WTP



Figure 2.3 Layout of the Proposed WTP

3 DESCRIPTION OF THE RECEIVING ENVIRONMENT

3.1 Overview

The Vartry WTP is situated within the Vartry River Catchment and the soil type consists of a loamy drift with igneous and metamorphic stones. The WTP is located immediately south of the Vartry Reservoir (Lower) and the River Vartry flows along the eastern and southern boundary of the site. The immediate surroundings are characterised by agricultural farmland and patches of semi-natural woodland to the east, south and west and Vartry Reservoir (Lower) to the north.

3.2 Existing WTP

The existing WTP is located in the center of the site boundary and comprises a series of Slow Sand Filter ponds FL8 with associated feeder channels FW4, Water Treatment Facility buildings and an access road BL3. The ponds are frequently bordered by species-rich grassy verges GS2 and occasionally ornamental shrubs WS3. Vartry Lodge BL3, a residential house associated with the WTP is located within the north-east section of the site and is surrounded by mixed broadleaved/conifer woodland WD2 and dry meadows GS2 with scattered trees WD5. The southern bank of the reservoir dam supports species-rich neutral grassland GS2 with some scattered trees WD5 and ornamental shrubs WS3 at the southern edge.

3.3 Proposed WTP Site

The proposed new WTP is situated within land at the western section of the site. This area is bordered by mixed broadleaf/conifer woodland WD2 with a mature mixed treeline WL2 bisecting the area north to south. The north-western area of the site is dominated by semi-improved neutral grassland GS1 with patches of scrub vegetation WS1 at the field margins. The eastern section of the proposed WTP area contains six settling ponds FL8 that vary in their water quality and abundance of emergent and submerged vegetation. North of the ponds is an area of recolonizing bare ground ED3 and patches of scrub WS1. A drainage ditch FW4 borders the proposed WTP site to the east and north which discharges directly into the River Vartry ca. 200 m south-east of the proposed works.

3.4 River Vartry

The River Vartry runs along the eastern boundary of the site and the existing WTP discharges into the river at two locations.

The spillway channel south of the reservoir weir and north of the supernatant discharge locations is predominantly dry at most times of the year with minimal water flow from seepage and groundwater sources. The channel bed supports reed and large sedge swamp FS1 in places with areas of exposed siliceous rock ER1 also present. The spillway seasonally floods when the reservoir exceeds top water level during periods of sustained

high precipitation. South of the supernatant discharge locations the river supports a moderate flow with a rocky substrate and is categorized as eroding river FW1. The river is bordered by mixed broadleaved/conifer woodland WD2.

Otter spraints were recorded on the bank of the Vartry Reservoir north of the site and immediately south of the R764 Road bridge within the spillway channel which confirm the presence of otters along the River Vartry.

The River Vartry downstream of the WTP is likely to contain good populations of fish species and provide optimal foraging resources for otter. Otter habitat preferences are not confined to waterways and this species is likely to travel through other habitats within the site boundary such as woodland and grassland on occasion.

No otter holts were recorded along the River Vartry within the vicinity of the WTP.

The River Vartry is designated a Salmonid Water under the European Communities (Quality of Salmonid Waters) Regulations, 1988. Salmon *Salmo salar*, brown trout *Salmo trutta* and sea trout *Salmo trutta* were recorded within the river during surveys north of Ballinamona in 2008 (Central and Regional Fisheries Board, 2008).

The most recent EPA biological monitoring assessment (2010) identified the River Vartry to have an overall 'Good' water quality status with a 'Good' ecological status, 'Good' fish status, 'Good' hydromorphology status, 'Good' general physio-chemical status and 'High' macroinvertebrate status. The EPA Biological Water Quality monitoring data upstream of the discharge at Ballinastoe Bridge was Q4 – Q5 (High Status) and the nearest monitoring point downstream at Annagolan Bridge was Q4 (Good status).

The River Vartry has been listed as being at risk of not achieving Good status based on water abstraction and impoundments (1a).

Monitoring data of the River Vartry from 2012 - 2014 both upstream (Ballinastoe Bridge) and downstream (Annagolan Bridge) of the WTP supernatant discharge locations demonstrates that the water quality within the River Vartry is in compliance with Schedule 5 of the European Communities Environmental Objectives (Surface Water) Regulations 2009 (S.I. No. 272 of 2009) as shown in Table 3.1 below. In terms of the European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. No. 293/1988), the upstream and downstream monitoring data is in compliance with the EQS for Suspended Solids.

Table 3.1 - Monitoring Data both Upstream and Downstream of WTP Discharge* *

Parameter	EQS* (mg/l)	Upstream	Downstream
BOD	2.6 (Surface Waters)	0.6	0.9

Parameter	EQS* (mg/l)	Upstream	Downstream
Ammonia	0.1 (Salmonid Waters)	0.011	0.016
Orthophosphate	0.075 (Surface Waters)	0.007	0.005
Suspended Solids	25 (Salmonid Waters)	2	2

*European Communities Environmental Objectives (Surface Waters) Regulations 2009, S.I. No. 272 of 2009 and European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. No. 293/1988) (95%ile standards presented)

** Data from 2012 - 2014 monitoring

3.4.1 Waste Assimilative Capacity

The assimilative capacity calculations shown in Table 3.2 are based on the 95%ile hydrometric estimate of flows of the River Vartry from the EPA and water quality standards specified within the European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (S.I. No. 272 of 2009) for BOD and Orthophosphate and the more onerous European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. No. 293/1988) for Ammonia and Suspended Solids. Assimilative capacity was calculated using both actual background concentrations and the 'notionally clean river' approach (see Table 3.2 below and Appendix 1).

Table 3.2 Assimilative capacity calculations for actual upstream background concentrations and for a notionally clean river.

Parameter		Background (mg/l)	Predicted downstream quality (mg/l)	EQS* (mg/l)
BOD	Actual Upstream Background	0.60	1.644	2.6
	Notionally Clean	0.260	1.304	
Ammonia	Actual Upstream Background	0.011	0.100	0.1
	Notionally Clean	0.008	0.097	
Orthophosphate	Actual Upstream Background	0.007	0.072	0.075
	Notionally Clean	0.005	0.070	
Suspended Solids	Actual Upstream Background	2	8.528	25
	Notionally Clean	N/A	N/A	

*European Communities Environmental Objectives (Surface Waters) Regulations 2009, S.I. No. 272 of 2009 and European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. No. 293/1988) (95%ile standards presented).

The estimated discharge from the new WTP (i.e. 4,000m³/d) comprises c. 35% of the daily flow of the River Vartry at the discharge location. Therefore, a potential localised impact

on the water quality within the River Vartry at this site is anticipated. This impact could be measurable up to the point of the next significant inflow to the River Vartry approximately 300m downstream from the discharge. However, based on the waste assimilative capacity calculation detailed above, the receiving water downstream has adequate waste assimilative capacity to accommodate the WTP discharge in terms of BOD, Orthophosphate, Ammonia and Suspended Solids, ensuring compliance with the Surface Water Regulations and Quality of Salmonid Waters Regulations.

4 NATURA 2000 SITES

4.1 Identification of Relevant Natura 2000 Sites

This section of the screening process describes the Natura 2000 sites within the potential impact zone of the proposed works. A 15 km buffer zone from the centre of the proposed works has been chosen, along with identifying any other receptor pathways (i.e. rivers, streams or ecological corridors) as a precautionary measure, to ensure that all potentially affected Natura 2000 sites are included in the screening process. This is in line with Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities produced by the Department of the Environment, Heritage and Local Government.

Figure 4.1 shows the location of all Natura 2000 sites within the 15 km zone of impact and those connected to the proposed works via receptor pathways. Table 4.1 lists the Natura 2000 sites within this zone of impact, the qualifying interests of each of the identified Natura 2000 Sites, the potential impact and the initial screening determination. Those sites or individual qualifying interests that are screened out at this stage (primarily as a result of being too great a distance away and having different habitat requirements) are not assessed any further. Any Natura 2000 sites or qualifying interests that are brought forward for further assessment are highlighted in Table 4.1.

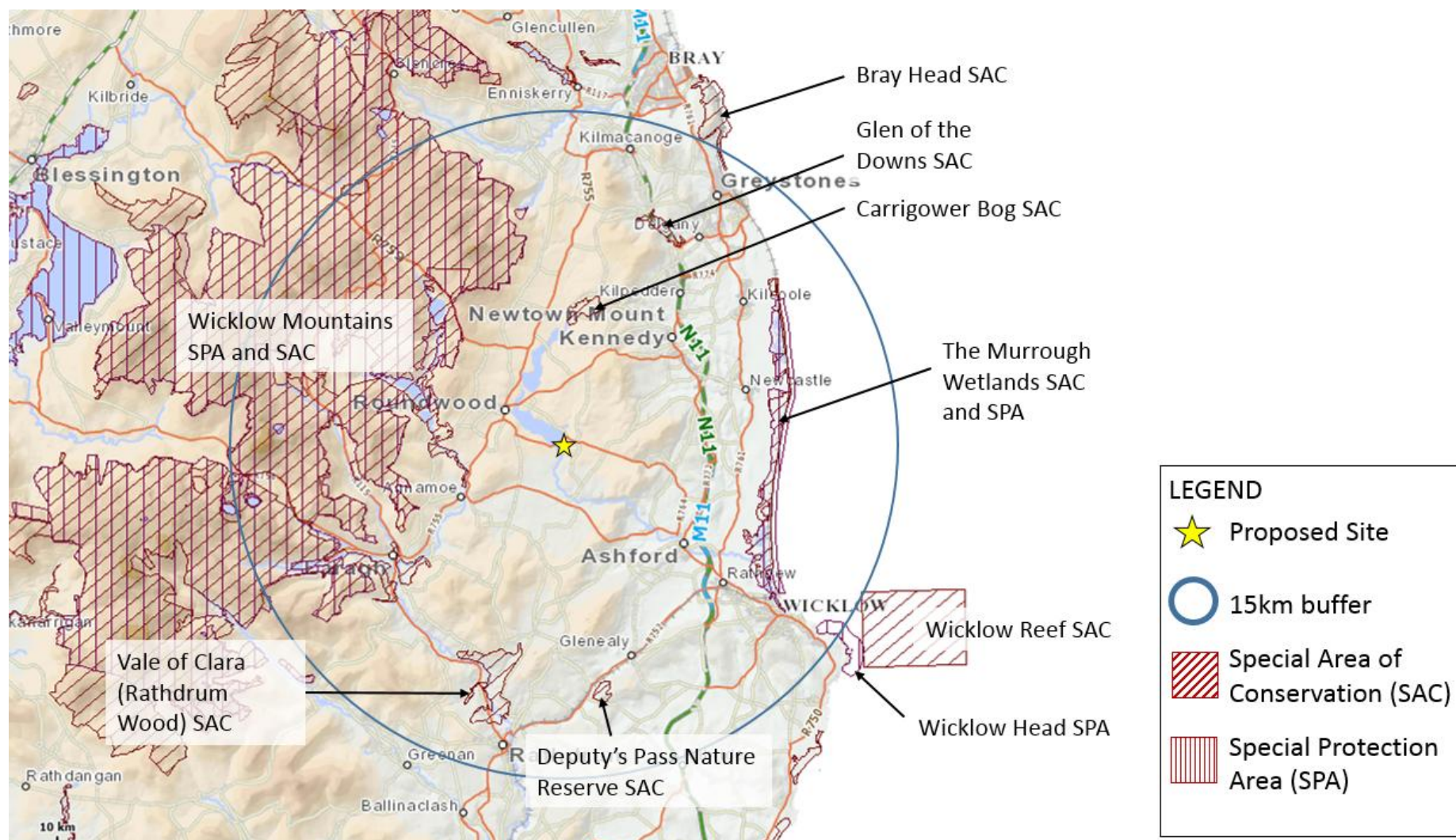


Figure 4.1: Natura 2000 Sites within 15 km of the Proposed Works

Table 4.1: Natura Sites located within the zone of Impact from the proposed works (*=priority habitat)

Site Code	Site Name (approx. distance from the proposed works)	Qualifying Interest	Potential Impact	Screened In/Out
002122	Wicklow Mountains SAC (4km)	[3130] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea	None- due to distance and lack of potential impact pathway	Screened Out
		[3160] Natural dystrophic lakes and ponds		
		[4010] Northern Atlantic wet heaths with Erica tetralix		
		[4030] European dry heaths		
		[4060] Alpine and Boreal heaths		
		[6230] Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)*		
		[7130] Blanket bogs (* if active bog)		
		[8110] Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)		
		[1355] Otter Lutra lutra	Potential for disturbance	Further Assessment Required
000716	Carriggower Bog SAC (5km)	[7140] Transition mires and quaking bogs	None- due to distance and lack of potential impact pathway	Screened Out
000733	Vale of Clara (Rathdrum Woods) SAC (9km)	[91A0] Old sessile oak woods with Ilex and Blechnum in the British Isles	None- due to distance and lack of potential impact pathway	Screened Out
002249	The Murrough Wetlands SAC (9km)	[1210] Annual vegetation of drift lines	None – due to distance and lack of potential impact pathway	Screened Out
		[1220] Perennial vegetation of stony banks	None – due to distance and lack of potential impact pathway	
		[1330] Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	Potential impact from pollution and sedimentation as River Vartry flows into the SAC	Further Assessment Required

Site Code	Site Name (approx. distance from the proposed works)	Qualifying Interest	Potential Impact	Screened In/Out
		[1410] Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	Potential impact from pollution and sedimentation as River Vartry flows into the SAC	
		[7210] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> *	Potential impact from pollution and sedimentation as River Vartry flows into the SAC	
		[7230] Alkaline fens	Potential impact from pollution and sedimentation as River Vartry flows into the SAC	
000719	Glen of the Downs SAC (10km)	[91A0] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	None- due to distance and lack of potential impact pathway	Screened Out
000717	Deputy's Pass Nature Reserve SAC (11km)	[91A0] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	None- due to distance and lack of potential impact pathway	Screened Out
000714	Bray Head SAC (14km)	[1230] Vegetated sea cliffs of the Atlantic and Baltic coasts	None- due to distance and lack of potential impact pathway	Screened Out
		[4030] European dry heaths		
002274	Wicklow Reef SAC (15km)	[1170] Reefs	None- due to distance and lack of potential impact pathway	Screened Out
004040	Wicklow Mountains SPA (6km)	[A098] Merlin <i>Falco columbarius</i>	None- due to distance and lack of suitable habitat at site	Screened Out
		[A103] Peregrine <i>Falco peregrinus</i>		
004186	The Murrough SPA (10km)	[A001] Red-throated Diver <i>Gavia stellata</i>	None – no interaction due to distance	Screened Out
		[A043] Greylag Goose <i>Anser anser</i>		
		[A046] Light-bellied Brent Goose <i>Branta bernicla hrota</i>		
		[A050] Wigeon <i>Anas penelope</i>		
		[A052] Teal <i>Anas crecca</i>		
		[A179] Black-headed Gull <i>Chroicocephalus ridibundus</i>		
		[A184] Herring Gull <i>Larus argentatus</i>		
		[A195] Little Tern <i>Sterna albifrons</i>	None – no interaction due to distance	Screened Out
		[A188] Kittiwake <i>Rissa tridactyla</i>		

4.2 Designated Sites of Relevance

Table 4.1 above lists the Natura 2000 sites within the zone of impact of the proposed works area. There are eight SACs and three SPAs within this zone.

One feature of Qualifying Interest (QI) for the Wicklow Mountains SAC and four features of QI for The Murrough Wetlands SAC were considered to have some potential for impact resulting from the proposed development:

Wicklow Mountains SAC [002122]

- [1355] Otter *Lutra lutra*

The Murrough Wetlands SAC [00249]

- [1330] Atlantic salt meadows *Glauco-Puccinellietalia maritima*
- [1410] Mediterranean salt meadows *Juncetalia maritima*
- [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae**
- [7230] Alkaline fens

After an initial review of Natura 2000 sites, it was considered that “no pathway” exists by which the proposed works could impact upon any other designated site and therefore only the Wicklow Mountains SAC and The Murrough Wetlands SAC and the five QIs listed above were brought forward for further assessment.

4.3 Characteristics of the Designated Sites

The characteristics of the Wicklow Mountains SAC and The Murrough Wetlands SAC are described below. The Conservation Objectives of the features of qualifying interest are discussed in Section 6 - Screening Assessment in the context of the potential impacts on them.

Wicklow Mountains SAC [002122]

Wicklow Mountains SAC is a complex of upland areas in Counties Wicklow and Dublin, flanked by the Blessington reservoir to the west and Vartry reservoir in the east, Cruagh Mountain in the north and Lybagh Mountain in the south. Most of the site is over 300 m, with much ground over 600 m. The site has been designated due to the presence of Annex I habitats: oligotrophic to mesotrophic standing waters, dystrophic lakes, wet heath, dry heath, alpine and subalpine heaths, species-rich nardus grassland, active blanket bogs, siliceous scree, calcareous rocky slopes, siliceous rocky slopes, old oak woodlands. It is also designated due to the presence of otter *Lutra lutra*.

Otters predominantly live alongside rivers, lakes and other water bodies and use the water systems to hunt their preferred food; salmon, trout, perch and pike. They will also hunt

species such as frogs, small mammals and waterfowl. Otters can hold territories of varying size depending on the availability of food, coastal territories can be as small as 2 km and with upland territories as large as 20 km. They can have multiple holts throughout their territory, the holts are located on the bank-side of rivers and lakes where suitable vegetation exists to cover the burrows entrances.

The vegetation over most of Wicklow Mountains SAC is a mosaic of heath, blanket bog and upland grassland (mostly on peaty soil, though some on mineral soil), stands of dense Bracken *Pteridium aquilinum*, and small woodlands mainly along the rivers. Mountain loughs and corrie lakes are scattered throughout the site.

Conservation Objective: To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.

The Murrough Wetlands SAC [002249]

The Murrough is a coastal wetland complex which stretches for 15 km from Ballygannon to north of Wicklow town, and in parts, extends inland for up to 1 km. A shingle ridge stretches the length of the site and carries the mainline Dublin-Wexford railway. The site comprises a series of coastal habitats and brackish to freshwater marshes. Drainage directly to the sea is impeded along most of the site by a shingle ridge. There are two main outlets to the sea and there is seepage into the marshes under the shingle ridge and where breaches occur. Freshwater drains into the site via the Vartry River and many drains. Freshwater springs provide a permanent source of water for a complex fen system. Other habitats present on the site include salt marsh, tidal reed bed, freshwater reedswamp, wet grassland, wet woodland, mudflat, dry heath and dry grassland.

The site has been designated due to the presence of the following Annex I habitats: Annual vegetation of drift lines, Perennial vegetation of stony banks, Atlantic salt meadows *Glauco-Puccinellietalia maritimae*, Mediterranean salt meadows *Juncetalia maritima*, Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*, Alkaline fens.

This site is of importance as it is the largest coastal wetland complex on the east coast of Ireland. Although much affected by drainage, it still contains a wide range of coastal and freshwater habitats, some of which contain threatened plants. Areas on the site contain a rich invertebrate fauna, including several rarities. It is an important site for both wintering and breeding birds and supports a variety of species listed on Annex I of the E.U. Birds Directive.

Conservation Objectives:

1. To maintain the Annex I habitats for which the cSAC has been selected at favourable conservation status: Annual vegetation of drift lines; Perennial vegetation of stony banks; Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*); Mediterranean salt meadows (*Juncetalia maritimi*); Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*; Alkaline fens.
2. To maintain the extent, species richness and biodiversity of the entire site
3. To establish effective liaison and co-operation with landowners, legal users and relevant authorities.

4.3.1 Ecological Network Supporting Natura 2000 Sites

An analysis of the proposed Natural Heritage Areas and designated Natural Heritage Areas in terms of their role in supporting the species using Natura 2000 sites was undertaken. It was assumed that these supporting roles mainly related to mobile fauna such as mammals and birds which may use pNHAs and NHAs as “stepping stones” between Natura 2000 sites.

Article 10 of the Habitats Directive and the Habitats Regulations 2011 place a high degree of importance on such non-Natura 2000 areas as features that connect the Natura 2000 network. Features such as ponds, woodlands and important hedgerows were taken into account during the rest of the AA process.

Vartry Reservoir has been proposed as a Natural Heritage Area (Site Code: 001771). The existing WTP is located adjacent to the southern boundary of the pNHA.

Devil's Glen pNHA (Site Code: 000718) is located 2.4 km south of the proposed works and comprises a section of the River Vartry downstream of the proposed spillway works. The pNHA encompasses an area of mixed woodland within the river valley.

5 POTENTIAL IMPACTS OF THE PROPOSED WORKS

5.1 Overview

The purpose of this section of the screening assessment is to examine the possibility that the proposed works, either individually or in combination with other plans and projects, may result in significant negative effects on the Conservation Objectives of any Natura 2000 site and its qualifying interest (QI).

The potential impacts on Natura 2000 sites or their QIs resulting from the proposed works to the WTP include:

- Impacts on water quality due to changes in quantity or composition of supernatant discharges during the operational phase and accidental spillages/pollution events during the construction phase.
- Impacts from noise and vibration during the construction phase.

None of the Natura 2000 sites lie within the boundaries of the proposed works area; therefore, no direct impacts will occur through landtake or fragmentation of habitats.

5.2 Construction Effects

5.2.1 Potential Pollution-Related Adverse Effects

Mobilisation of silt and sediment is one of the most likely pollutant pathways during construction works. The construction of the new Vartry WTP will involve movement of plant and materials within the development footprint. Although this is over 150m west of the River Vartry, there is a feeder channel which runs along the eastern boundary of the proposed WTP to the Vartry which provides ecological continuity with the river. The only Natura 2000 site with a potential impact pathway from the construction site is the Murrough Wetlands SAC which connects to the site via the River Vartry c. 9 km south-east of the works. Due to the distance from the proposed works it is considered highly unlikely that construction-related pollution / sedimentation would directly affect the SAC habitats to an extent which would affect the conservation objectives of the site, i.e. the maintenance of Annex I habitats at favourable conservation status (see Section 4).

The risks described above relate to the construction phase of the WTP works only and are therefore temporary in nature. As part of the construction works, best environmental practice will be adhered to and implemented at all times (See Section 2). This will significantly reduce/avoid the risk of impacts on The Murrough Wetlands SAC and its features of qualifying interest.

5.2.2 Potential Disturbance from Noise and Vibration

Increased levels of noise and vibration will occur during the construction phase of the proposed WTP. This has the potential to disturb species within adjacent habitats such as otter, which is a QI of the Wicklow Mountains SAC. Otters can hold large territory ranges that will occasionally span river catchments. Due to their high mobility, otters associated with the Wicklow Mountains SAC could hold a territory that includes Vartry Reservoir and its surroundings. Any disturbance effects on any ex-situ otters associated with the SAC would be short-term (i.e. 24 months) and limited to the construction phase of the development.

5.3 Operational Effects

The increase in supernatant discharge volume may affect the total loading of critical pollutants and cause a degree of water quality deterioration in the receiving watercourse if the EQS parameters are not adhered to. This could have indirect impacts on the water quality dependent Annex I habitats associated with The Murrough Wetland SAC and Annex II species associated with the Wicklow Mountains SAC.

Based on the WAC, as detailed in Section 2.2 and Appendix 1, which demonstrates sufficient assimilative capacity in the river in terms of Ammonia, BOD, Orthophosphate and Suspended Solids, no significant water quality impacts on the receiving waterbody are anticipated from the operation of the WTP.

5.4 Cumulative and in Combination Impacts

Cumulative impacts or effects are changes in the environment that result from numerous human-induced alterations. Cumulative impacts can be thought of as occurring through two main pathways: first, through persistent additions or losses of the same materials or resource, and second, through the compounding effects as a result of the coming together of two or more effects.

As part of the Screening for an Appropriate Assessment, in addition to the proposed works, other relevant projects and plans in the region must also be considered at this stage. This step aims to identify at this early stage any possible significant in-combination or cumulative effects/impacts of the proposed development with other such plans and projects on the Natura 2000 sites.

It is not anticipated that the proposed works will result in any impacts on any SPAs and SACs within the 15 km buffer zone or via any other receptor pathway. No other pathway has been identified by which any plan or project could have a significant 'in combination' effect on any of the Natura 2000 sites.

6 SCREENING ASSESSMENT

6.1 Impacts on Habitats

6.1.1 Atlantic salt meadows *Glauco-Puccinellietalia maritimae*

Atlantic salt meadows are a QI of the Murrough Wetlands SAC and the River Vartry flows into the wetlands 9 km south-east of the proposed WTP.

Sediment run-off generated during the construction phase of the proposed development has the potential to enter the River Vartry via the drainage ditch adjacent to the site and could ultimately end up in the Murrough Wetlands. This run-off, along with any pollution or oil spill from construction machinery may affect suspended solid levels and water quality in the wetland habitats. Due to the distance from the proposed works along the potential impact pathway (13.5 km) to the designated site it is considered unlikely that the Atlantic salt meadows associated with the Murrough Wetlands could be significantly affected by increased pollution and sediment run-off at the site. Sediment controls, which form part of the construction methodology (see Section 2) will ensure that impacts on water quality are negated.

Atlantic salt meadow habitats could potentially be impacted by any reduction in water quality as a result of the supernatant discharge to the River Vartry. However based on the WAC, as detailed in Section 2.2 and Appendix 1, which demonstrates sufficient assimilative capacity in the river in terms of Ammonia, BOD, Orthophosphate and Suspended Solids, no significant water quality impacts on the receiving waterbody are anticipated from the operation of the WTP. Therefore it is considered highly unlikely that this habitat would be impacted by the proposed works.

The Conservation Objectives for the Murrough Wetland SAC with regards to Atlantic salt meadows is to maintain or restore the favourable conservation condition of the habitat (NPWS, 2015). Favourable conservation status of a habitat is achieved when:

- Its natural range, and area it covers within that range, are stable or increasing, and
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable.

For the reasons outlined above, the conservation objectives for the Murrough Wetlands SAC to maintain the favourable conservation condition of the Atlantic salt meadow habitat (NPWS, 2015) will not be compromised as there will be no reduction in the habitat area and the community types will be conserved. Therefore, impacts on this qualifying interest can be screened out.

6.1.2 Mediterranean salt meadows *Juncetalia maritima*

Mediterranean salt meadows are a QI of the Murrough Wetlands SAC and the River Vartry flows into the wetlands 9 km south-east of the proposed WTP.

Sediment run-off generated during the construction phase of the proposed development has the potential to enter the River Vartry via the drainage ditch adjacent to the site and could ultimately end up in the Murrough Wetlands. This run-off, along with any pollution or oil spill from construction machinery may affect suspended solid levels and water quality in the wetland habitats. Due to the distance from the proposed works along the potential impact pathway (13.5 km) to the designated site it is considered unlikely that the Mediterranean salt meadows associated with the Murrough Wetlands could be significantly affected by increased pollution and sediment run-off at the site. Sediment controls, which form part of the construction methodology (see Section 2) will ensure that impacts on water quality are negated.

Mediterranean salt meadow habitats could potentially be impacted by a reduction in water quality as a result of supernatant discharge into the River Vartry. However based on the WAC, which demonstrates sufficient assimilative capacity in the river in terms of Ammonia, BOD, Orthophosphate and Suspended Solids, no significant water quality impacts on the receiving waterbody are anticipated from the operation of the WTP. Therefore it is considered highly unlikely that this habitat would be impacted by the proposed works.

The Conservation Objectives for the Murrough Wetland SAC with regards to Mediterranean salt meadows is to maintain or restore the favourable conservation condition of the habitat (NPWS, 2015). Favourable conservation status of a habitat is achieved when:

- Its natural range, and area it covers within that range, are stable or increasing, and
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable.

For the reasons outlined above, the conservation objectives for the Murrough Wetlands SAC to maintain the favourable conservation condition of the Mediterranean salt meadow habitat (NPWS, 2015) will not be compromised as there will be no reduction in the habitat area and the community types will be conserved. Therefore, impacts on this qualifying interest can be screened out.

6.1.3 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*

Calcareous fens are a QI of the Murrough Wetlands SAC and the River Vartry flows into the wetlands 9 km south-east of the proposed WTP.

Sediment run-off generated during the construction phase of the proposed development has the potential to enter the River Vartry via the drainage ditch adjacent to the site and could ultimately end up in the Murrough Wetlands. This run-off, along with any pollution or oil spill from construction machinery may affect suspended solid levels and water quality in the wetland habitats. Due to the distance from the proposed works along the potential impact pathway (13.5 km) to the designated site it is considered unlikely that the calcareous fens associated with the Murrough Wetlands could be significantly affected by increased pollution and sediment run-off at the site. Sediment controls, which form part of the construction methodology (see Section 2) will ensure that impacts on water quality are negated.

Calcareous fen habitats could potentially be impacted by a reduction in water quality as a result of supernatant discharge into the River Vartry. However based on the WAC, which demonstrates sufficient assimilative capacity in the river in terms of Ammonia, BOD, Orthophosphate and Suspended Solids, no significant water quality impacts on the receiving waterbody are anticipated from the operation of the WTP. Therefore it is considered highly unlikely that this habitat would be impacted by the proposed works.

The Conservation Objectives for the Murrough Wetland SAC with regards to Calcareous fens is to maintain or restore the favourable conservation condition of the habitat (NPWS, 2015). Favourable conservation status of a habitat is achieved when:

- Its natural range, and area it covers within that range, are stable or increasing, and
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable.

For the reasons outlined above, the conservation objectives for the Murrough Wetlands SAC to maintain the favourable conservation condition of the Calcareous fen habitat (NPWS, 2015) will not be compromised as there will be no reduction in the habitat area and the community types will be conserved. Therefore, impacts on this qualifying interest can be screened out.

6.1.4 Alkaline fens

Alkaline fens are a QI of the Murrough Wetlands SAC and the River Vartry flows into the wetlands 9 km south-east of the proposed WTP.

Sediment run-off generated during the construction phase of the proposed development has the potential to enter the River Vartry via the drainage ditch adjacent to the site and could ultimately end up in the Murrough Wetlands. This run-off, along with any pollution or oil spill from construction machinery may affect suspended solid levels and water quality in the wetland habitats. Due to the distance from the proposed works along the potential impact pathway (13.5 km) to the designated site it is considered unlikely that the alkaline fens associated with the Murrough Wetlands could be significantly affected by increased pollution and sediment run-off at the site. Sediment controls, which form part of the construction methodology (see Section 2) will ensure that impacts on water quality are negated.

Alkaline fen habitats could potentially be impacted by a reduction in water quality as a result of supernatant discharge into the River Vartry. However based on the WAC, which demonstrates sufficient assimilative capacity in the river in terms of Ammonia, BOD, Orthophosphate and Suspended Solids, no significant water quality impacts on the receiving waterbody are anticipated from the operation of the WTP. Therefore it is considered highly unlikely that this habitat would be impacted by the proposed works.

The Conservation Objectives for the Murrough Wetland SAC with regards to alkaline fens is to maintain or restore the favourable conservation condition of the habitat (NPWS, 2015). Favourable conservation status of a habitat is achieved when:

- Its natural range, and area it covers within that range, are stable or increasing, and
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable.

For the reasons outlined above, the conservation objectives for the Murrough Wetlands SAC to maintain the favourable conservation condition of the alkaline fen habitat (NPWS, 2015) will not be compromised as there will be no reduction in the habitat area and the community types will be conserved. Therefore, impacts on this qualifying interest can be screened out.

6.2 Impacts on Species

6.2.1 Otter *Lutra lutra*

Otter are a QI of the Wicklow Mountains SAC and, due to their large home ranges, individuals associated with the SAC could hold territories that also encompass the proposed works area (i.e. ex situ species, Annex IV species).

Water pollution represents one of the principal threats to otter populations in Ireland (Reid et al., 2013). Otters can tolerate significant levels of pollution (Chanin, 2003; Bailey & Rochford, 2005; Romanowski et al., 2012) but poor water quality tends to result in reduced numbers and variety of fish species which in turn will have a negative impact on otter presence in polluted waterways. Any change in water quality as a result of pollution or increased sedimentation during construction or changes to supernatant discharge during operation, could potentially have indirect negative effects on otters, as a result of reduced food supply. However based on the WAC, which demonstrates sufficient assimilative capacity in the river in terms of Ammonia, BOD, Orthophosphate and Suspended Solids, no significant water quality impacts on the receiving waterbody are anticipated from the operation of the WTP. Therefore it is considered highly unlikely that foraging resources for otters within the River Vartry will be reduced.

Elevated noise and vibration levels during the construction phase of the project will occur. There is potential for otters adjacent to the proposed works to be subject to certain levels of disturbance. The main disturbance will be as a result of the increase in noise and vibration during construction of the WTP. Otters are considered to be mainly nocturnal, particularly within freshwater territories, and are mainly active after dusk and before dawn (Hayden & Harington, 2000). Therefore, the noise and vibration disturbance associated with the construction works which will occur during daylight hours, will not have a significant adverse impact on otter populations.

The Conservation Objectives for the Wicklow Mountains SAC with regards to otter is to maintain or restore the favourable conservation condition of the species (NPWS, 2015). Favourable conservation status of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Impacts on this qualifying interest from the proposed works are not considered to be significant and therefore can be screened out at this stage.

7 SCREENING CONCLUSIONS

The proposed Vartry WTP will provide full water treatment facilities and will include processes that provide an effective barrier to diatomic algae that has caused seasonal reductions in production capacity in recent years.

The construction phase relating to the WTP will take place over 4 km from a Natura 2000 site (Wicklow Mountains SAC) and there will therefore be no direct impacts on this or any other Natura 2000 sites.

The WTP is connected to the Murrough Wetlands SAC via the River Vartry approximately 9 km south-east of the proposed works. In relation to the WTP supernatant discharge, it had been concluded that based on the WAC completed for Ammonia, BOD, Suspended Solids and Orthophosphate, along with the plant's compliance with the ELVs as detailed in Table 2.1 and 3.2, impacts from the supernatant discharge on the Murrough Wetlands SAC and the Wicklow Mountains SAC and their features of qualifying interests can be screened out.

Elevated noise and vibration has the potential to have a disturbance effect on ex-situ otter populations associated within the Wicklow Mountains SAC during construction. Due to the small-scale nature of the disturbance and the timing of works during daylight periods only, the disturbance associated with the construction phase of the development is not considered to be significant. Impacts on the Conservation Objectives of Wicklow Mountains SAC and their features of qualifying interest relating to disturbance can be screened out.

On the basis of the findings of this Screening for Appropriate Assessment, it is concluded that the construction and operation of the new Vartry WTP will not have a significant effect on the Natura 2000 network and a Stage 2 Appropriate Assessment is not required. This Report concludes the Appropriate Assessment process.

A Finding of No Significant Effects Report has been completed and is presented in Appendix 2 of this report.

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APPENDIX 1

Waste Assimilative Capacity Calculations

Waste Assimilative Capacity (WAC) Calculation				Calculation Sheet	
			Date	03/09/2015	
WTP Name	Vartry WTP				
Name of River	Vartry				
	m ³ /s	Data Source	m ³ /d		
Dry Weather Flow			0		
95% Flow (m ³ /s)	0.131	Hydro-tool EPA	11,318		
Mean Annual Flow			0		
Effluent Standards	mg/l				
Carbonaceous BOD	4.000	From 1994 discharge licence			
Ammonia	0.340	amended to comply with salmonid regs			
Ortho Phosphate (OP)	0.250	amended to comply with surface water regs			
Suspended Solids	25.000	From 1994 discharge licence			
Average Background Concentration (Notional)			Average Background Concentration (Actual)		
Parameter	mg/l	Data Source	mg/l	Data Source	
Carbonaceous BOD	0.260	EPA Notionally Clean	0.6	Wicklow Council data 2012 - 2014 Ballinastoe Br	
Ammonia	0.008	EPA Notionally Clean	0.011	Wicklow Council data 2012 - 2014 Ballinastoe Br	
Ortho Phosphate (OP)	0.005	EPA Notionally Clean	0.007	Wicklow Council data 2012 - 2014 Ballinastoe Br	
Suspended Solids		No data	2	Wicklow Council data 2012 - 2014 Ballinastoe Br	
Allowable Downstream Concentration (Surface Water Regulations)					
Parameter	95%ile mg/l	Mean mg/l	Data Ref		
Carbonaceous BOD	2.60	1.30	Surface Water Regs - Good Status (for compliance with FWPM Regs)		
Ammonia	0.10	0.040	Salmonid regs		
Ortho Phosphate (OP)	0.075	0.025	Surface Water Regs - Good Status (for compliance with FWPM Regs)		
Suspended Solids	25.000		Salmonid regs		
WTP Daily Flow					
	BOD	NH	OP		
m ³ /d	mg/l	mg/l	mg/l		
4,000	9.22	0.36	0.27		
WTP Daily Flow					
	BOD	WAC			
m ³ /d	kg/d	kg/d	kg/d		
4,000	36.89	1.44	1.09		
Resultant Concentration (Average Background Concentrations)					
WTP Daily Flow	BOD	NH	OP	SS	
m ³ /d	mg/l	mg/l	mg/l	mg/l	
4,000	1.644	0.100	0.0723	8.528	
	Acceptable	Acceptable	Acceptable	Acceptable	
Resultant Concentration (Actual)					
	1.304	0.097	0.0703	NA	
	Acceptable	Acceptable	Acceptable	NA	

APPENDIX 2

Finding of No Significant Effects Report

Name of project or plan	Upgrade to Vartry WTP
Name and location of Natura 2000 site	Wicklow Mountains SAC (4km) The Murrough Wetlands SAC (9km)
Description of the project	A new Water Treatment Plant (WTP) will replace the existing WTP and provide full water treatment facilities including processes that provide an effective barrier to diatomic algae that has caused seasonal reductions in production capacity in recent years. It will provide a Coagulation, Flocculation, Clarification and Rapid Gravity Filtration Process (FCF + RGF) with enhanced individual filtration control and monitoring.
Is the project or plan directly connected with or necessary to the management of the site?	No.
Are there other projects or plans that together with the project or plan being assessed could affect the site?	No.
The Assessment of Significance of Effects	
Describe how the project or plan (alone or in combination) is likely to affect the European Site(s).	<p>The purpose of this section of the screening is to examine the possibility that the proposed site works, either individually or in combination with other plans and projects, may result in significant negative effects on the Conservation Objectives and the integrity of the Natura 2000 Sites identified.</p> <p>There are no Natura 2000 sites that lie within the boundary of the proposed development area and, as such, there will be no direct impacts on any designated areas. Having established no direct impacts or habitat fragmentation, the assessment concentrates on potential indirect impacts.</p> <p>A worst case scenario would occur whereby the project would result in a significant detrimental change in water quality as a result of supernatant discharge into the River Vartry which flows into The Murrough Wetlands SAC 9 km south-east. The effect would have to be considered significant in terms of changes in water quality which would affect the habitats for which the SAC are designated. Due to the distance between the supernatant discharge and the SAC it is considered highly unlikely that there will be any significant detrimental impacts on its Conservation Objectives.</p> <p>Increased levels of noise and vibration will occur during the construction phase of the WTP upgrade. This has the potential to disturb species within adjacent habitats such as otter, which is a QI of the Wicklow Mountains SAC. Otters can hold large territory ranges that will occasionally span river catchments. Due to their high mobility, otters associated with the Wicklow</p>

	Mountains SAC could hold a territory that includes Vartry Reservoir and its surroundings.
Explain why these effects are not considered significant.	<p>The WTP is connected to the Murrough Wetlands SAC via the River Vartry approximately 9 km south-east of the proposed works.</p> <p>However, based on the waste assimilative capacity calculation, the receiving water downstream has adequate waste assimilative capacity to accommodate the WTP discharge in terms of BOD, Orthophosphate, Ammonia and Suspended Solids, thereby ensuring compliance with the Surface Water Regulations and Quality of Salmonid Waters Regulations. It is therefore considered highly unlikely that the SAC would be impacted by the proposals.</p> <p>Elevated noise and vibration has the potential to have a disturbance effect on local otter populations during construction. Due to the small-scale nature of the disturbance and the timing of works during daylight periods only, the disturbance associated with the construction phase of the development is not considered to be significant.</p>
List of agencies consulted: provide contact name and telephone or e-mail address.	Consultation is not required with the NPWS when a proposed project has been screened out.
Response to consultation.	N/A
Data Collected to Carry Out the Assessment	
Who carried out the assessment?	Nichols O'Dwyer on behalf of IW
Sources of data	NPWS database; EPA database; WFD Ireland database; and Information from Irish Water.
Level of assessment completed	Desktop and Field walkover survey
Where can the full results of the assessment be accessed and viewed?	Wicklow County Council Planning Department
Overall Conclusion	Stage 1 Screening indicates that the upgrade of Vartry WTP will not have a significant negative impact on the Natura 2000 network. Therefore, a Stage 2 'Appropriate Assessment' under Article 6(3) of the Habitats Directive 92/43/EEC is not required.